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German Research Foundation

Funding Ranking 2003
Institutions – Regions – Networks

DFG Approvals and Other Basic Data
on Publicly Funded Research

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DFG

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Despite great care being taken in the compilation of this report and the data on which it is based, it cannot be ruled out that isolated errors may not be noticed until after going to print. Information on any such errors may be found on the DFG website at http://www.dfg.de/en/ranking/service/errata.html.

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Foreword

Competition has been a characteristic element in science and the humanities for centuries, both for those directly involved in research and for their institutions. It has taken on new forms in the last few decades, and in doing so has also gained a new quality, certainly in Europe and especially in Germany. In connection with the establishment of the "European Research Area", the concept of benchmarking has gained in prominence; this refers to methods and techniques which are intended to identify, using a clear and transparent method, the best research institutions in their respective fields and to help determine best practices. Ranking lists have for some time been in great demand in Germany: New efforts to rank excellence are continually coming to the market. Even in the terminology that is used one can see signs of that "Americanisation" of academic life which Max Weber diagnosed as early as 1919. Be that as it may, however, the identification of institutions and centres of academic excellence has also become a fixed component of science policy in Germany, a condition which will not likely change in the foreseeable future.

It is therefore all the more important for the evaluations, which ultimately take the form of ranking lists and make it possible to discuss them publicly, to define best practices, to make the methods and base data reliable and to find reference characteristics which actually say something meaningful about the prime parameter "excellence". The Deutsche Forschungsgemeinschaft (DFG, German Research Foundation) and the Association of Universities and Other Higher Education Institutions in Germany (Hochschulrektorenkonferenz, HRK) have made this concern their own. Based on the statistics which the DFG uses for its own reports and for internal analysis, they have published two reports presenting the distribution of the financial resources of the DFG to the institutions in which research is conducted, differentiated by research area, as an indicator of academic activity and its quality. This was and is justified because the financial resources of the DFG are awarded only to those scientists and academics who, with their projects, join in the ever-intensifying competition between the best ideas and in some programmes also between the best structures for research and the training of young researchers.

The third report, which is now available, confirms a tradition that is coming into being and extends the time series of published figures. But it also undertakes to expand the base data and to include new, revealing aspects of the world of research – internationalism, network building and the international resonance of academic publications – in the analysis. This is not intended to bring the discussion of the evaluation of research, of the best-suited methods and indicators, to a close, but rather to place it on a broader basis.

We commend this report to the attention of all who are interested in science policy. And to all who have been involved in its development, we offer our thanks.

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President of the Association of Universities and Other
Higher Education Institutions in Germany
(Hochschulrektorenkonferenz)

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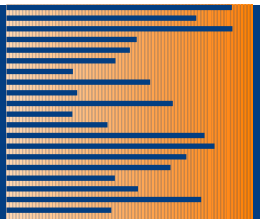

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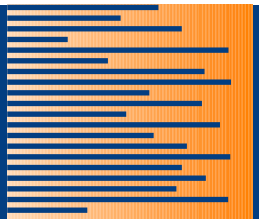
> The numbers of all tables and figures contained in the appendix are preceded by an A.

> Abbreviations used:

cum. %	=	Cumulative percent
k €	=	Thousands of euros
Mio. €	=	Millions of euros
n	=	Number
n/a	=	Not available
Prof.	=	Professor
Sci.	=	Scientist or academic
FernU	=	Distance Teaching University
FH	=	University of Applied Sciences
FU	=	Free University
HdK	=	University of the Arts
HU	=	Humboldt University
Kath. U	=	Catholic University
MedHo	=	Medical School
TiHo	=	School of Veterinary Medicine
TU/TH	=	Technical University
U	=	University
UdBW	=	University of the German Armed Forces

1. Introduction



The Deutsche Forschungsgemeinschaft (DFG, German Research Foundation) has reported on the distribution of its funds between German universities and non-university research institutions on two previous occasions (in 1997 and 2000)[1]. The strong and very positive response to these reports has encouraged the DFG to extend this form of presentation of its funding activities and establish it as a regular monitoring-style information service. The Donors' Association for the Promotion of Sciences and Humanities (Stifterverband für die deutsche Wissenschaft (SV)) has agreed to support the DFG in this endeavour. This support and collaboration with various partner institutions, have made it possible to significantly broaden the scope of this report in comparison to the previous editions. Whereas in the past – with the exception of reference to data provided by the Federal Statistical Office (Statistisches Bundesamt) on university staff – only the distribution of DFG approvals was reported on, the information presented here is based on a far wider data basis. On the one hand this relates to the DFG´s funding activities, but on the other additional data has been gathered in cooperation with the Alexander von Humboldt Foundation (Alexander von Humboldt-Stiftung, AvH), the German Academic Exchange Service (Deutscher Akademischer Austausch Dienst, DAAD), the European Liaison Office of the German Research Organisations (Koordinierungsstelle EG der Wissenschaftsorganisationen, KOWI) and the Federal Statistical Office. The following overview outlines the key topics:

> As was already the case in the previous reports, conclusions on the DFG's funding activities are reached in time-honoured fashion based on the volume of approvals obtained by each institution and research area (from 1999 to 2001). What is new is that figures providing information on the total sum of third party funding available to each university are also referred to. This data, covering 1999 and 2000, was provided by the Federal Statistical Office which collected and collated it in collaboration with the state statistical offices as part of annual university surveys. In comparison to the previous report the cartographical representation of the regional distribution of DFG approvals and the data on third party funding provided by the Federal Statistical Office has been expanded (cf. Chapter 3).

> On the basis of almost 500 coordinated programmes spanning multiple institutions conducted between 1999 and 2001 (Collaborative Research Centres, Priority Programmes, Research Units and Research Training Groups), the integration of over 350 universities and non-university institutions in so-called "cooperation networks" is analysed. Structures are considered to be networks of this kind if they result from joint participation of these institutions in individual coordinated programmes. Focussing on the institutions it is therefore possible to investigate the question of the establishment of so-called "research clusters" differentiated according to subject area. Groups of universities and non-university institutions which have interacted particu-

[1] Deutsche Forschungsgemeinschaft (1997): Bewilligungen nach Hochschulen. Bewilligungsvolumen 1991 bis 1995, Anzahl kooperativer Projekte im Jahr 1996 (Approvals to Universities from 1991 to 1995), Bonn. Deutsche Forschungsgemeinschaft (2000): DFG-Bewilligungen an Hochschulen und außeruniversitäre Forschungseinrichtungen 1996 bis 1998 (DFG approvals to universities and non-university research institutions from 1996 to 1998), Bonn. The previous reports, the current edition of the report and other related material are available online at http://www.dfg.de/en/ranking/.

larly actively in the DFG's coordinated programmes are considered to be "clusters" of this kind (cf. Chapter 4).

> Another novelty is to be found in Chapter 5. For the first time the DFG presents information on the institute of origin of DFG reviewers involved in the written review process. In the three years covered by the report (1999 to 2001) this amounted to approximately 1,000 peer reviewers elected for the periods 1996 to 1999 and 2000 to 2003, as well as almost 9,000 so-called "specialist reviewers", whose opinion was sought in connection with the preparation of recommendations. The number of DFG reviewers active at an institution in each research area as an indicator for scientific expertise is presented for discussion in this report.

> Science is characteristically international in nature. Despite the general significance attributed to international cooperation in research, it is, however, often difficult to convert this international aspect into a "measurable quantity": The different forms of international cooperation, which frequently vary between subjects, are too varied and it is seldomly possible to successfully apply an empirical analysis to these relationships. This also applies to international contacts resulting from DFG funding, which, although they significantly influence the way the research is carried out, have so far only been statistically documented rudimentarily with respect to the requirements of this report. In order to expand the information base presented in this report with data on the internationality of research in Germany, the following partner institutions were also recruited to participate in the preparation of this report:

  >> The Alexander von Humboldt Foundation (AvH)

  >> The German Academic Exchange Service (DAAD) and

  >> The European Liaison Office of the German Research Organisations (KOWI)

> The AvH supplied data giving information on the host institution (universities and non-university institutions) of international AvH prizewinners and fellowship recipients funded between 1997 and 2001, differentiated according to research area. The DAAD provided data for the report on the number of international scientists and academics, students and graduates funded by the DAAD who were active at German universities for scholarly or research purposes in 2000 and 2001, again differentiated according to research area. Finally, with the support of the KOWI it was possible to gather information on the international participation of universities in the Fifth European Community Framework Programme (1998 to 2002). This makes it possible, on the one hand, to reach conclusions on the participation of the various countries in the programme, as well as to perform an analysis of the number of project contracts signed differentiated according to German universities.

> In response to popular suggestion Chapter 7 concludes by presenting data which, for the first time, provides information in an exemplary way on research "output" – measured here by the number of publications in international scientific journals. The data used for this analysis has been drawn from two extensive studies:

  >> An evaluation carried out by the Swiss Center for Science and Technology Studies (Zentrum für Wissenschafts- und Technologiestudien, CEST) in Bern that provides information on the publication output generated between 1994 and 1999 by nearly 1,000 institutions worldwide, described as the "Champions League of Research Institutions", based on literature databases and information gathered from them on more than seven million papers containing over 120 million references. The publication output by scientists and academics at German universities is documented for a total of 47 institutions in this report.

  >> A study carried out by the Dutch Centre for Science and Technology Studies (CWTS) in Leiden, which similarly provides data on publications and citations in basic medical research. This study incorporates data on 39 German universities in total, documenting more than 90,000 publications in international medical journals between 1994 and 1998.

> In this report this data has been used to determine whether, and to what extent, there is a correlation between the key

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funding data mentioned above for each institution and the number of publications in international journals. This is introduced by an in-depth discussion of the limits and possibilities of such analyses.

The individual accounts described above are followed in Chapter 8 (Summary) by a comparison of the various findings. This takes a closer look at both the similarities and the differences between the various criteria – with respect to the universities examined in the report – and the most significant findings for each research area are summarised. The chapter "Perspectives" concludes the report by outlining how remaining gaps in the information may be filled and methodological problems might be reduced.

With its report entitled "Funding Ranking" the DFG has made another contribution to the discussion on benchmarking processes in reporting evaluation. We remain a long way, however, from an objective overall view, incorporating as wide a spectrum of information as possible and which also takes into account the circumstances, which can vary considerably from one subject area to another. The course and discussion will determine whether this type of report points in the right direction.

2. Data Basis and Methodology

2.1 Introduction

In addition to the figures provided by the Federal Statistical Office on regular university expenditure and scientists and academics working at universities, the following chapters primarily present data from research funding organisations – in this instance the German Research Foundation (DFG), the Alexander von Humboldt Foundation (AvH), the German Academic Exchange Service (DAAD) and the European Union (data on the Fifth European Community Framework Programme). In comparison to studies which are conducted as individual surveys, for example on potential recipients of third party funding, the opportunity to draw on this data proves to be of great advantage: There are neither problems with definitions – for example of the frequently scintillatingly used term "third party funding" – nor are the results patchy or distorted as a result of a lack of participation or incorrect details having been given by the respondents.

Such direct access to source information is, nevertheless, also accompanied by problems, for example with regard to the reference values for details on the subject area funded, or how representative the information, which can at best only assume to portray part of the overall funding activities, actually is. These and other methodological aspects are discussed below, where issues of the origin and nature of the underlying data, as well as the generation and compatibility of the compiled information, are also dealt with. Initially the data basis is briefly introduced. The following chapters then comment on the data in greater depth.

2.2 Data Basis

Data from the Federal Statistical Office

The Federal Statistical Office provided data in the form of special reports, compiled and edited in collaboration with the State Statistical Offices as part of annual surveys carried out at universities. This data provides information on regular university expenditure and scientific staff working at those universities.

Details on regular expenditure are given according to administrative income, third party income and regular core funds. The report covers the years 1999 and 2000. The financial data for locations as well as university hospitals, which are accounted for separately in the Federal Statistical Office statistics, have been combined to give sum totals per institution and type of income for this report. Financial data is available for 349 universities in total. The total volume amounts to 48.5 billion euros.

Details on staffing provided by the Federal Statistical Office relate to full time equivalent scientific staff working at universities in the year 2000. There were more than 157,000 scientists and academics working at the universities included in the scope of this report in that year.

Data on DFG Approvals

The report on DFG approvals is based on data concerning about 42,000 approved research projects or funding of individuals with a total volume of approx. 3.5 billion euros in the three year period covered by this report (1999 to 2001). These approvals were awarded to 142 universities and 445 non-university institutions. The data is presented on the one hand according to four programme groups (Individual Grants Pro-

gramme, Direct Promotion of Young Researchers, Coordinated Programmes and Scientific Prizes and on the other hand differentiated according to scientific discipline and research area. Conclusions reached relate to the volume of approvals for each institution. For coordinated programmes (such as Collaborative Research Centres) the amount of funding for individual projects or project sections is not attributed to the host university, but rather to the institution where each respective project is/was actually located. The distribution of these approvals is also documented using cartographical representations (maps).

DFG Reviewers

Details on the activities of DFG reviewers relate to almost 1,000 peer reviewers elected for the periods 1996 to 1999 and 2000 to 2003, as well as almost 9,000 so-called "special reviewers" consulted in the preliminary stages of decision making as experts on each research topic under consideration. The analyses are based on approx. 75,000 written reviews of projects on which a decision was reached between 1999 and 2001. Both the personal details (age, gender) and the institute of origin (425 universities and non-university institutions in total) of these reviewers were considered in the analyses.

Cooperation in DFG-funded Coordinated Programmes

Analyses of the integration of universities and non-university institutions in the DFG's coordinated programmes relate to a total of 1,129 Collaborative Research Centres (including Transfer Units and Transregional Collaborative Research Centres), Priority Programmes, Research Units (including Clinical Research Units), and Research Training Groups which received approvals between 1999 and 2001. Participation in these programmes is differentiated according to the types of programme mentioned above and according to scientific discipline.

For some of the 489 programmes spanning multiple institutions the structures resulting from such cooperation are also subjected to network analysis. The institutions which played a central role in these networks of cooperation are identified. Additionally, network visualisation techniques are used to highlight so-called "research clusters", which are characterised by especially close cooperation, both on a regional and national level, and incorporating universities and non-university research institutions. Similar analyses differentiate according to scientific discipline and partly according to research area. A total of 101 universities and 250 non-university institutes were involved in programmes spanning multiple institutions.

Data from the Alexander von Humboldt Foundation (AvH)

Data on AvH visiting scientists was made available in the form of a special report encompassing the period 1997 to 2001. This report provides anonymous information about fellows and prizewinners for each institution and DFG research area as well as details of the visiting scientists' country of origin.

In total there are details on approx. 2,500 fellows and 450 prizewinners. The visiting scientists were distributed amongst 80 universities and 155 non-university research institutions.

Data from the German Academic Exchange Service (DAAD)

The DAAD also provided two special reports which are incorporated in the analysis. Firstly there is information on the total funding volume for each DAAD member university for the years 2000 and 2001. This data allows an analysis at university level. Secondly, details on the number of international scientists and academics, students and graduates working or studying at German universities in 2000 and 2001 are given.

There are also anonymous details on over 2,900 scientists and academics and approximately 14,700 students and graduates, on the host university, the research area of the funding recipient, the duration of stay and their country of origin.

Data on the Fifth European Community Framework Programme

In cooperation with the European Liaison Office of the German Research Organisations (KOWI), based in Bonn and Brussels, it was possible to collect and collate information on the participation of universities in the Fifth European Community Framework Programme (1998 to 2002). Over 17,000 project contracts signed with scientists and academics at European and non-European universities are anonymously documented.

A total of 2,145 project contracts were signed with German universities. This data allows conclusions to be reached on the cooperation structures between countries where universities have participated in EU projects, as well as on the number of project contracts signed per university in Germany. Scientists and academics from a total of 110 countries participated in the Fifth Framework Programme and 113 German universities were involved.

Bibliometric Data

Data from two international studies carried out by the Center for Science and Technology Studies (CEST) (in Switzerland) (covering the period 1994 to 1999) and the Centre for Science and Technology Studies (CWTS) (in the Netherlands) (for the period 1994 to 1998) is drawn upon. The first of these enables conclusions to be reached on publications in international journals by 47 universities (without differentiating according to subject). The second study relates to publications in international medical journals (39 universities), although it also gives separate consideration to citation data.

2.3 Subject Classification of Data

This report is based on the DFG's four-tier subject classification system. This incorporates a total of 189 subjects, the 37 Review Committees, 16 research areas and finally four scientific disciplines, organised hierarchically. Table 2-1 illustrates the top three levels of this classification system, while Table A2-1 in the appendix documents the further classification according to subjects. The report makes use of the top two levels of classification. These research areas or scientific disciplines also form the terms of reference for the data from the other sources described above.

The classification system reflects the DFG's operative structures for the processing of proposals within its subjects and Review Committees. The DFG's peer reviewers are elected for these subjects on a four-yearly cycle (most recently in November 1999) by scientists and academics from member universities and other institutions recognised as eligible to vote. Peer reviewers from several subjects, which together comprise a Review Committee, then select a Review Committee chairman and vice chairman [1] from their own ranks.

When a proposal is received by the DFG for one of its General Research Support programmes – including, for example, Research Grants in the Individual Grants Programme, Research Units, the Priority Programme and the various programmes for promoting young researchers who hold a doctorate – the staff at the DFG head office decide which subject area the proposal should be assigned to in the first instance on the basis of the topic described. The subject classification is thus decisive in these DFG programmes. In other words, it has a direct influence on the processing (by the unit responsible for the respective subject) and the assessment (by the responsible Review Committee) of proposals. For Collaborative Research Centres, Research Training Groups and prizes on the other hand, the subject classification is only used for statistical and publicity purposes [2]. Collaborative Research Centre project sections are classified according to the Review Committee classification system, which consists of 37 categories. It is therefore possible for a single Collaborative Research Centre to be assigned to several Review Committees, depending on the subject orientation of the project sections belonging to it.

In order to highlight the overriding subject focus of a Collaborative Research Centre irrespective of this classification, the programme itself is classified according to the next level in the DFG's subject classification system hierarchy, which differentiates between 16 research areas. The same scheme is used for Research Training Groups.

In order to be able to correlate data from various sources, a complicated process was first of all used to compile a concordance within the framework of the subject classification. In the case of the Federal Statistical Office it was possible to refer back to previous work done for the last "DFG Ranking" [3]. For the DAAD subject classification system, which includes 218 subjects and seven sub-

[1] The elections for the period 2004 to 2007 will see the introduction of an extensive series of reforms (cf. Chapter 5 and http://www.dfg.de/en/dfg_profile/ structure/statutory_bodies/review_committees/reform.html

[2] Approvals granted in these programmes are listed according to subjects or Review Committee in the electronic version of the DFG's annual report (http://www.dfg.de/ jahresbericht/index.html) and in GEPRIS, an abstract database on DFG-funded projects (cf. http://www.dfg.de/ en/dfg_profile/facts_and_figures/projects_and_programmes/)

[3] Contrary to the initial classification decided upon, and following consultation with the Federal Statistical Office, the fields of teaching and research previously designated as "Not classified", 970 (Hospitals in general, Central Services), 980 (Hospital Social Services), 986 (other Hospital Teaching Units), and 990 (Institutions affiliated and not affiliated to hospitals) have now been allocated to the DFG research area of Medicine (cf. Table A2-2 in the appendix).

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Table 2-1:
DFG Systematics of Review Committees, Research Areas and Scientific Disciplines

Review Committee	Research Area	Scientific Discipline
103 Jurisprudence	Social sciences	Humanities and Social Sciences
115 Geography		
118 Economics		
119 Social sciences		
107 Ancient and Oriental cultures (Antiquity)	History and fine arts studies	
108 Ancient and Oriental cultures (Oriental studies)		
111 History		
112 Fine arts studies		
113 Ethnology		
114 History of science, medicine, and technology		
109 Linguistic and literary studies and contemporary ethnology (Group A)	Linguistic and literary studies	
110 Linguistic and literary studies and contemporary ethnology (Group B)		
101 Protestant theology	Psychology, education, philosophy, theology	
102 Roman Catholic theology		
116 Philosophy		
117 Education		
120 Psychology		
201 Theoretical medicine	Medicine	Biology/ Medicine
202 Clinical medicine		
203 Biology	Biology	
207 Biological chemistry and biophysics		
205 Veterinary medicine	Veterinary medicine	
204 Agriculture and horticulture	Agriculture and forestry science	
206 Forestry and wood science		
301 Solid earth sciences	Geosciences	Natural Sciences
306 Hydrology and water management		
302 Chemistry	Chemistry	
303 Physics	Physics	
304 Mathematics	Mathematics	
401 General engineering sciences	General engineering sciences and mechanical engineering	Engineering Sciences
408 Mechanical engineering and production technology		
409 Mechanical engineering and process engineering		
402 Architecture, urban development, and regional planning	Architecture, urban development, civil engineering	
403 Civil engineering		
404 Mining and metallurgy	Mining and metallurgy	
406 Electrical engineering	Electrical engineering, computer science	
407 Computer science		

ject groups, the DAAD subjects were allocated to the 16 DFG research areas. Subjects used for the classification of arts fellowships (such as "Harp, guitar, lute", or "Free art") were designated as "Not classified".

In the case of the Alexander von Humboldt Foundation (AvH), which differentiates between over 1,800 research areas, which are assigned to 205 sections and then to three overriding departments, classification to the 16 research areas used by the DFG was carried out in close consultation with employees of the AvH. Because the rules for classification used by the AvH and the DFG are not universally congruent, especially in the humanities and engineer-

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ing sciences, some discrepancies arise between similar publications by the AvH.

This work was carried out in order to guarantee adequate compatibility between the different data. However, this "unification" does not guarantee that the information from the different sources necessarily apply to precisely the same "thing". Thus a visiting scientist classified as belonging to the AvH subject area of "pharmaceutical studies" may either have worked at a "pharmaceutical institute" (belonging to the research area "chemistry"), or at an institute designated as belonging to "medicine"; or a project funded by the DFG in the subject area of "technical chemistry" (research area "chemistry") may have been initiated by a researcher working at an "institute for thermal and chemical engineering" (research area "mechanical engineering and process engineering"), just as a member of university administrative staff responsible for compiling staff statistics may allocate a researcher to the subject area of "chemical didactics" (research area "chemistry") who is actually teaching and conducting research at an institute of educational science.

So the classification systems used here are all very highly structured, but a concordance attempting to do justice to this degree of differentiation in as much detail as possible would hardly be practicable: It can, however, be assumed that problematic situations, such as those described above, are not the general rule. The risk of "apparent accuracy" does nevertheless increase with the level of detail of classification.

Just as was the case in the previous "DFG Rankings", the presentation of results according to subjects is therefore limited to differentiating between the 16 DFG research areas mentioned above. Grey areas – for instance between closely related research areas such as "biology", "medicine" and "chemistry" – are possible, but they are tolerable in order to achieve as much detail as possible. Comments in the text are generally restricted to the four scientific disciplines which these research areas fall into. Overviews according to research areas are documented by the tables and maps in the appendix.

This classification system is probably being used for the last time in this report. The fundamental reform of the peer review system (cf. Chapter 5), which will be introduced from 2004 onwards, will be accompanied by extensive changes to the subject grouping of the statutory review bodies, which will then be called "Review Boards"[4]. These changes, which not least reflect the way the German research system is split into disciplines, also have repercussions for the subject classification system used by the DFG for statistical purposes. The complex reorganisation – which needs to take into consideration the necessity for as smooth a transition from the old system as possible (for example for time-line analyses) and the need for transferability of data from other sources, which already applied to this report – is to be completed this year.

2.4 Institutional Classification of Data

In 2002 the DFG began compiling a database of institutes which provides hierarchically structured address data for nearly 20,000 university institutes and non-university research institutions in Germany[5]. The integration of this database into the DFG's proposal database, which is planned for early 2004, will first and foremost ease the processing of proposals (for example for database-driven collection of applicant and reviewer addresses). Once this has been integrated into the GEPRIS abstract database, a possible application would be to carry out targeted searches for projects at selected institutes or departments. The subject classification of these institutes will also make it possible to create subject-related documentation – for instance in the form of overviews providing information on current DFG projects at "computer science" institutes.

In cooperation with the DAAD there are also plans to publish this database on the Internet as a simple address database. For this purpose both the descriptions of the institutes and the subjects of the Federal Statistical Office's subject classification system (cf. Table A2-2 in the appendix) have been recorded bilingually (German/English) to make it easier for international users to access the information contained in this source. Currently the database contains a valid Internet address for 98 percent of all institutes. Using these links it is possible to access further information on an institute "from the source".

[4] For the reorganisation of the Review Boards see the updated classification system at http://www.dfg.de/wahlen2003/.

[5] In general up to four hierarchy levels are taken into consideration (e.g. institution > department > institute > part of an institute), but in individual cases further subdivision is possible.

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On the one hand data will be updated "on the job" (following integration into the DFG's proposal database), since each proposal received by the DFG can potentially be accompanied by changes in address details. On the other hand, annual updates carried out by external service providers are planned for universities and for institutes belonging to the large research organisations (FhG, HGF, MPG, WGL), as well as for federal and state research institutions. For the part of the review relating to universities, the cooperation with the Association of Universities and Higher Education Institutions in Germany, which provides regularly updated address details of the head offices of its member institutions, has proved worthwhile.

Another motive in compiling this database was to be able to use the database institutional codes for statistical analysis. With data collected from 2004 onwards, it will thus be possible to draw conclusions on approvals granted, not only at university level, as was the case for this report, but also to draw conclusions for individual departments or institutes, as well as to present data spanning multiple institutions, for example on approvals granted to institutes from a particular subject area.

Further possibilities also result for the correlation of data from different sources. This report represents the first application of this type of usage. For example, the database institutional codes were used to standardise the classification of all of the data on universities and non-university institutes referred to in this report. AvH visiting scientists who were conducting research at the Technical University of Aachen, for instance, were allocated to institute code "64044", just as DFG projects carried out at this institution were. A concordance has been compiled for both of the university code systems used by the Federal Statistical Office (which uses staff and financial data according to different systems)[6], as well as for the data provided by the DAAD and the European Union. In total this concordance currently incorporates about 700 universities and non-university institutions.

The advantages of this method of coverage are obvious. For instance, using this database it was possible to refer to the institutions' short names consistently for almost all of the figures and tables. The information included in the database on the type of institution (university, WGL institute, Fraunhofer institute, etc.) and on the state, which allowed a uniform statistical evaluation of corresponding data irrespective of origin, was also useful. Finally, details on the location and on the respective urban or rural district were drawn on in order to generate the maps contained in the appendix to this report.

The not insignificant effort required to compile these concordances is viewed as an investment: In future analyses including data from the participants in this study it will be possible to directly access this classification system. Adjustments will only be necessary for institutions which are added or which have changed their organisational structure, or for data from partners who use codes which have not yet been taken into consideration.

2.5 Scale Factor Reference Values

Alongside the examination of absolute figures, another important element of "ranking" studies, which are, after all, designed for drawing comparisons, is the comparison using figures which put the size of an institution into perspective. For this study scaling of this kind is restricted to the part of the review relating to universities. Reference is made to the number of scientific staff working at an institution for this purpose.

The variety of information available on funding is also put into perspective by classifying the institutions into a total of four groups according to the volume of approvals received from the DFG.

The principle on which these reference values are based is described below.

2.5.1 University Staff

The data provided by the Federal Statistical Office contain information about full time equivalent scientific and artistic staff at each university and also for each field of teaching and research and staff unit. For the year 2000 it is possible to correlate all of the funding data used in this report from the DFG (1999 to 2001), DAAD (1999 and 2000), AvH (1997 to 2001), and the EU (Fifth Framework Programme) (1998 to 2002).

[6] Whereas the Federal Statistical Office reports on financial details for locations and university hospitals separately (each with their own location code), staff data for each institution are aggregated.

This report uses details on university staff as a weighting factor for analysis concerning the relative amount of funding. Comparisons are drawn in relation to the number of professors working at a university as well as the total number of scientists and academics employed. For this purpose all scientists and academics belonging to the salary bracket C2 to C4 as well as full and associate professors paid according to the BAT[7] (Bundesangestelltentarifvertrag, Federal Collective Agreement for Public Employees) pay scale are counted as professors.

As a rule, comparisons are restricted to a selection of 79 universities in total which received at least half a million euros in approvals from the DFG between 1999 and 2001 and for which staff details are available.

Table 2-2 presents information on the staffing levels at these universities and draws a comparison between the number of "professors" and "scientists and academics in total". Allocation to the 16 DFG research areas was carried out on the basis of the concordance contained in the appendix (cf. Table A2-2).

In total there were almost 38,000 professors and 157,000 scientists and academics working full time equivalent at 347 universities on which data was collected by the Federal Statistical Office in 2000. The 79 universities on which this overview is based employed more than 21,000 professors and 134,000 scientists and academics in total in the year 2000, and thus approximately 60 percent of all professors teaching, and 85 percent of all scientists and academics working at German universities[8].

The proportion of scientific staff consisting of professors at these 79 universities was precisely 15.9 percent, so remaining at almost the same level as that reported for 1998 in the last "DFG Ranking" (16.2 percent) (cf. DFG 2000: 32)[9]. As was already the case then, significant differences between research areas are evident: Whilst professors make up between a quarter and a third of the scientists and academics belonging to a research area in the humanities and social sciences, for example, the proportion lies between only 11 and 18 percent in engineering sciences. The proportion of professors is lowest in "medicine" (8 percent), while it is highest in "mathematics" and in "history and fine arts studies" (both over 30 percent).

It is primarily these differences in the proportion of professors which justify the dual operationalisation of university size. To limit the extent of comments on this subject the text generally only refers to the number of professors working at a university. This limitation is also justified by the greater overall reliability in comparison to the figures for scientists and academics. The definition of who, according to the Federal Statistical Office, should be recorded as staff employed full time by the universities[10], is taken into account to a varying degree by the various universities, as became evident from feedback on the previous editions of the "DFG Ranking".

2.5.2 DFG Approval Groups

Another reference value developed for this report is based on the volume of approvals received by universities from the DFG. Of the total of 142 universities which received approvals from the DFG between 1999 and 2001, precisely 80 institutions achieved a volume exceeding half a million euros. For comparative purposes these universities are grouped into four ranking groups of 20 universities. This grouping makes it possible to draw much more concentrated conclusions on the relative performance of the universities.

Using this method of classification it is possible, for instance, to determine whether universities which are in the top twenty in terms of the absolute volume of approvals received from the DFG also achieved above-average results in terms of other reference values for outstanding research activity. By relating the figures to the number of scientific staff at the universities in each of these groups it is possible to draw conclusions which take the size of the universities grouped in this way into account. In this way it is possible, for example, to determine whether the number of international DAAD or AvH visiting scientists at universities in a particular group is simply a result of their

[7] Cf. Federal Statistical Office (2002), Subject-Matter Series 11, Education and Culture, Series 4.4, Personnel at institutions of higher education (2000), Wiesbaden: p. 40.

[8] Tables A2-3 and A2-4 in the appendix list the number of professors and the total number of scientists and academics employed at universities according to institution and scientific discipline.

[9] Here 72 universities with an approval volume of more than three million DM (1996 to 1998) constituted the basis of comparison.

[10] Further details on the staff groups taken into consideration in the surveys are to be found in: Federal Statistical Office (2002): Subject-Matter Series 11, Education and Culture, Series 4.4, Personnel at institutions of higher education (2000), Wiesbaden: pp. 7-8.

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Table 2-2:
Proportion of professors in the total number of scientific staff for each DFG research area (status: 2000)

Research Area	Professors	Scientific staff in total	Proportion of professors in %
Social sciences	3,312	13,095	25.3
History and fine arts studies	1,405	4,052	34.7
Linguistic and literary studies	2,023	8,371	24.2
Psychology, education, philosophy, theology	2,130	7,134	29.9
Humanities and Social Sciences	**8,870**	**32,652**	**27.2**
Medicine	3,309	40,782	8.1
Biology	928	5,680	16.3
Veterinary medicine	207	1,009	20.5
Agriculture and forestry science	530	3,231	16.4
Biology/Medicine	**4,974**	**50,702**	**9.8**
Geosciences	415	2,212	18.8
Chemistry	1,070	8,451	12.7
Physics	1,153	7,385	15.6
Mathematics	1,225	4,001	30.6
Natural Sciences	**3,863**	**22,049**	**17.5**
General engineering sciences and mechanical engineering	996	8,839	11.3
Architecture, urban development, civil engineering	914	5,258	17.4
Mining and metallurgy	67	501	13.4
Electrical engineering, computer science	1,205	7,781	15.5
Engineering Sciences	**3,182**	**22,379**	**14.2**
Not classified	399	6,364	6.3
In total	**21,288**	**134,146**	**15.9**

Based on: 79 universities which received a total of more than half a million euros in approvals from the DFG between 1999 and 2001 (excluding the University of Witten-Herdecke [no staff data]).

Source: Federal Statistical Office (2002), Full time employment scientific and artistic staff according to organisational classification, university, fields of teaching and research and staff unit (status: 2000), special report.

size, or whether it correlates more to the research activity or appeal, as reflected by the volume of DFG approvals.

At the end of the report this type of comparison is expanded in a summary, which, for the 40 universities with the highest volume of approvals from the DFG, determines whether, and to what extent, the results reported so far follow an overall pattern. Can a correlation be observed between the various measures of research activity and appeal which can be used to characterise individual universities as high performers overall? This question is investigated both in terms of the various absolute reference values as well as in relation to the number of scientific staff working at a particular university.

3. DFG Approvals

3.1 Introduction

This chapter presents information on the scope of funds granted to scientists and academics at universities and non-university institutions by the DFG in the form of approvals between 1999 and 2001. It is thus a continuation of the results published in 1997 and 2000 for the periods 1991 to 1995 and 1996 to 1998[1]. Just as was the case in the previous edition, the presentation of the data differentiates between universities and non-university research institutions. As was also the case in the previous edition of the ranking, the findings are again presented as maps, although the scope of this has been significantly extended (cf. Figure 3-8 and A3-1 to A-3-20 in the appendix). A new development in this edition is the inclusion of information on the total third party funding income of universities. Data collected as part of annual surveys of university administrations was provided by the Federal Statistical Office for this purpose. Financial data covering 1999 and 2000 was available for inclusion in this report. Since the data provided by the Federal Statistical Office also contains information on the proportion of the total university income constituted by third party funding it is also possible to draw conclusions on its significance according to research area and university. Especially the analyses according to research area provide significant points for discussion of the issue of whether, and to what extent, third party funding is an equally suitable indicator of research achievement for all disciplines.

3.2 Data Basis and Methodology

Financial statistical conclusions reached on the DFG's funding activity relate to approvals, whereas conclusions pertaining to time relate to the years in which these approvals were granted. The analysis is based on more than 42,000 decisions made between 1999 and 2001 for approvals ranging in value from a few thousand to several million euros. Approvals of a few thousand euros – these may, for instance, be grants to cover printing costs or run-out funding for projects which will be completed soon. Approvals of several million euros – amongst these are approvals to Research Units, Centres of Excellence or Humanities Research Centres or, last but not least, prize recipients in the Gottfried Wilhelm Leibniz Programme (this prize is generally worth 1.55 million euros).

As was already the case in the last edition of the ranking, conclusions on the approvals granted relate to each individual project funded. For coordinated programmes – such as Collaborative Research Centres, for instance – these are the project sections which are funded as part of a so-called "framework programme". So for Collaborative Research Centres spanning multiple institutions, for example, the approvals are not awarded en bloc to the respective host university, but rather are split and allocated to the institution where the principal investigator of each project section was working at the time the approval was granted.

For Research Training Groups partial approvals to different institutions that are jointly involved in supporting a group are only granted in exceptional cases. Such exceptions were taken into account and are shown in Table A4-5 in the appendix. For all other Research Training Groups the amount approved is apportioned to the host university.

In total the DFG databases contain information on approvals to exactly 142 higher

[1] Previous editions of the ranking are available for download in PDF format (in German only) from http://www.dfg.de/ranking/archiv/index.html.

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education institutions (98 universities, 32 universities of applied sciences, and 12 academies of art) and 445 non-university institutions for the period 1999 to 2001. Overall statistical representations relate to these institutions, for instance on the proportions awarded to non-university research institutes depending on their organisational affiliation. For tabular overviews on the other hand – as was the case in the previous editions of the ranking – only institutions which attracted a certain minimum amount of funding in the form of approvals are taken into consideration. In comparison to the previous years (when a total of three million Deutschmark over three years was specified) the threshold was reduced to half a million euros[2] – not least to ensure a sufficiently broad basis for the reference to data from other sources at various places throughout this report. Approvals amounting to more than half a million euros over three years were granted to a total of 80 universities and 168 non-university research institutions.

Table 3-1 shows how the approvals on which this report is based are distributed amongst the various DFG funding programmes[3]. This table distinguishes between the "Individual Grants Programme", "Coordinated Programmes", measures related to "Direct Promotion of Young Researchers" and "Scientific Prizes". This classification is also used for the overviews according to programme group, to be found in the appendix.

The data on which this is based covers almost the entire range of subject-specific

Table 3-1:
DFG approvals 1999 to 2001 by programme (in millions of euros)

Programme	Number of programmes	Number of individual projects	Mio. €	%
Individual Grants Programme[1]				
Research Grants		15,860	1,413.8	39.9
Publication Allowances		1,903	12.8	0.4
Sabbaticals		68	2.3	0.1
Coordinated Programmes				
Collaborative Research Centre and Programme Variations	372	14,475	1,012.9	28.7
of which Collaborative Research Centres	*334*	*14,094*	*986.4*	*27.8*
of which Transfer Units	*30*	*153*	*9.7*	*0.3*
of which Cultural Studies Research Centres	*4*	*156*	*12.1*	*0.3*
of which Transregional Collaborative Research Centres	*4*	*72*	*4.6*	*0.1*
DFG Research Centres	3	16	6.6	0.2
Research Training Groups	436	436	220.0	6.2
Priority Programmes	159	5,301	489.2	13.8
Research Units	148	1,351	145.9	4.1
Clinical Research Units	14	102	10.7	0.3
Humanities Research Centres		6	21.3	0.6
Centres of Excellence[2]		2	0.5	0.0
Direct Promotion of Young Researchers				
Research Fellowships		1,541	52.0	1.5
Heisenberg Programme		319	35.3	1.0
Habilitation Fellowships[2]		708	23.7	0.7
Emmy Noether Programme		314	47.5	1.3
of which Fellowships Abroad		*180*	*9.6*	*0.3*
of which Independent Junior Research Groups		*134*	*38.0*	*1.1*
Independent Junior Research Groups in Biological Sciences		4	0.7	0.0
Scientific Prizes				
Gottfried Wilhelm Leibniz Programme		35	41.4	1.2
Gerhard Hess Programme [2]		74	10.8	0.3
Heinz Maier-Leibnitz Prize		12	0.2	0.0
Communicator Award		2	0.1	0.0
In total	**1,148**	**42,529**	**3,547.7**	**100.0**

[1] Approvals are granted as part of the Individual Grants Programme.
[2] Completed or discontinued in 2001.

[2] For an average of approx. 83,000 euros per project funded, calculated for the funding programmes on which this is based, this corresponds to about six approvals over three years.

[3] Further information on the specific orientation of these programmes can be found on the DFG website at http://www.dfg.de/en/research_funding/index.html.

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funding programmes offered by the DFG. In total the approvals awarded, over the three years covered by this report, 1999 to 2001, and which are taken into consideration here, amount to 3.5 billion euros. This corresponds to 98 percent of the total volume of approvals awarded during this period. Funds for maintaining international scientific contacts and funds used for general infrastructure funding (Central Research Facilities[4]) and library funding) are not taken into consideration.

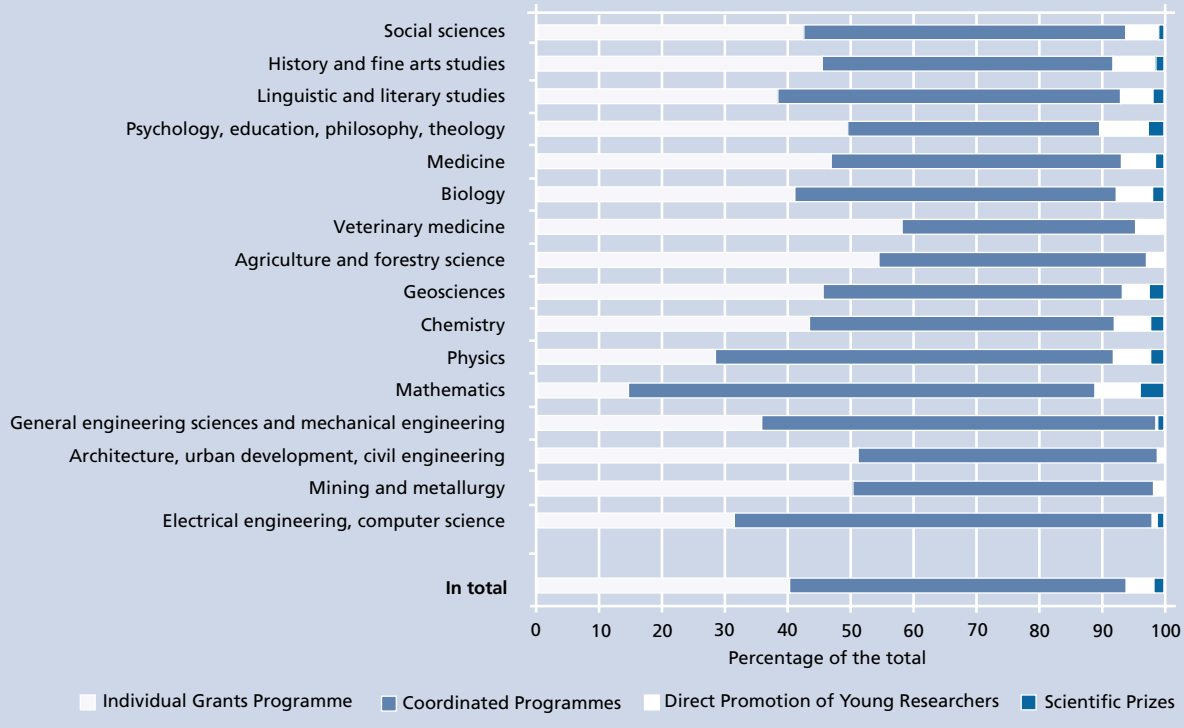
Research Grants in the Individual Grants Programme accounted for the highest absolute amount during this period, totalling over 1.4 billion euros. This corresponds to almost 40 percent of the total amount. The Collaborative Research Centre programme, including all programme variations (over a billion euros), and the Priority Programme (almost 500 million euros) also accounted for substantial proportions of the total.

Figure 3-1 shows how the programmes, split into four groups, were drawn on by scientists and academics from the individual research areas[5]).

In total almost 40 percent of the approvals are accounted for by the "Individual Grants Programme" and 54 percent of the funds were provided for "Coordinated Programmes". "Direct Promotion of Young Researchers" accounts for about four percent and, last of all, "Scientific Prizes" account for about one percent of the volume of approvals:

> The **Individual Grants Programme**, in which Research Grants are primarily awarded for projects, is used first and foremost in the smaller research areas to a particularly great extent. Worth mentioning are "veterinary medicine" and "agriculture and forestry science", for instance, as well as the subject groups "architecture, urban development, civil engineering" and "mining and

Figure 3-1:
DFG approvals 1999 to 2001 by programme group and research area (in percent)



[4] This marks a change from the previous edition of the ranking, justified by the decision to only include subject-related programmes in the analysis. This has the most impact in relation to the "research vessel Meteor", which is funded as a Central Research Facility and was apportioned to the University of Hamburg in the last edition of the ranking, where the "Meteor coordinating office" is located. However, only a small part of the funds can, in actual fact, be apportioned to the university. The approval volume provided for the Meteor by the DFG between 1999 and 2001 as part of the Central Facilities programme amounted to a total of 22 million euros.

[5] Chapter 3.5 (Table 3-5) contains information on the amounts approved per research area.

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metallurgy". In each of these areas this classical form of DFG funding constitutes more than 50 percent of all funding granted. The Individual Grants Programme plays a comparatively insignificant role, on the other hand, in "mathematics" (14 percent) and research in "physics" also relies to a relatively small proportion of funds provided by the Individual Grants Programme.

> The DFG's **coordinated programmes** are, most significant for "electrical engineering/ computer science", "mathematics", "physics" and "general engineering sciences and mechanical engineering", constituting a proportion in excess of 65 percent in each of these research areas.

> The **direct promotion of young researchers** is particularly significant in the research area "psychology, education, philosophy, theology" (eight percent) as well as in "mathematics" and in "history and fine arts studies" (seven percent each).

> Finally, **scientific prizes** account for an above-average proportion most markedly in "mathematics" (four percent).

3.3 General Significance of Third Party Funding Income to Universities

Before going on to describe the distribution of DFG approvals between universities and non-university research institutes in the following sections, we will first of all investigate the question of the general significance of third party funding to university research. Most important for answering this question is the subject-specific consideration.

The figures provided by the Federal Statistical Office as a special report enable analysis according to research area and university. This report distinguishes between the three main income groups "administrative income (including income from health care)", "third party funding income" and "regular core funds". According to the Federal Statistical Office's definition, these three taken together are used to cover "regular expenditure". The survey is carried out annually and differentiates between a total of 77 fields of teaching and research [6].

It should be kept in mind that the figures on which this report is based do not distinguish between expenditure on teaching and research. This report is therefore actually based on the total funds available to universities. Although even for third party funding it is impossible to clearly allocate the funding to research tasks, since according to the definition of the Federal Statistical Office all financial resources which are received "for the support of research and development and for promoting young researchers and teaching in addition to the regular university budget (core support) from public or private sources" [7] come under this heading, it may, however, be assumed that for the universities under consideration here, explicitly non-research related third party support (for example in the form of donations or foundations), influences the pattern of revenue only to a comparatively limited extent.

The figures provided by the Federal Statistical Office document the income of 349 German universities in total for the years 1999 and 2000. As is also the case for the other sources of information used by this report, the figures reported for these years contribute to the calculation in total. In other words, no annual averages are calculated.

In total the regular expenditure of these 349 universities in 1999 and 2000 added up to more than 48.5 billion euros. They are met by 17 billion euros in administrative income, 5.4 billion euros in third party funding income and 26.1 billion euros in regular core funds. In Table 3-2 only those universities are included that received at least half a million euros in approvals from the DFG between 1999 and 2001. The total regular expenditure by these universities amounted to 42.9 billion euros. This corresponds to 89 percent of the total expenditure by all German universities. The third party funding attracted by these universities (5.2 billion euros), meanwhile, comprise 96 percent of the total.

In average, for the 80 universities on which this report is based, 39 percent of the regular expenditure is accounted for by administrative income (primarily income by university hospitals), 12 percent by third party funding income and 49 percent by regular core funds.

The highest expenditure overall was recorded for "medicine". At 22.8 billion euros over two years, the expenses incurred by this subject area alone represent more than half of the total university expenditure.

[6] The subject classification system for the fields of teaching and research used by the Federal Statistical Office is shown in Table A2-2 in the appendix.

[7] Cf. Federal Statistical Office (2000), Subject-Matter Series 11, Education and Culture, Series 4.3.2, Monetary key data on institutions of higher education, Wiesbaden: p. 9.

Table 3-2:
Regular university expenditure 1999 and 2000 by DFG research area (in millions of euros)

DFG Research Area	Regular expenditure (=Total)	Administrative income		Third party funding income		Regular core funds	
		Mio. €	% of total	Mio. €	% of total	Mio. €	% of total
Social sciences	1,853.9	25.2	1.4	257.0	13.9	1,571.7	84.8
History and fine arts studies	603.9	2.5	0.4	77.8	12.9	523.6	86.7
Linguistic and literary studies	1,162.4	4.0	0.3	130.5	11.2	1,027.9	88.4
Psychology, education, philosophy, theology	1,027.1	11.8	1.1	130.6	12.7	884.8	86.1
Humanities and Social Sciences	**4,647.3**	**43.4**	**0.9**	**595.9**	**12.8**	**4,007.9**	**86.2**
Medicine	22,766.8	16,172.2	71.0	1,321.6	5.8	5,273.0	23.2
Biology	1,014.5	6.3	0.6	263.5	26.0	744.7	73.4
Veterinary medicine	253.6	36.0	14.2	28.0	11.0	189.7	74.8
Agriculture and forestry science	642.3	39.9	6.2	151.0	23.5	451.4	70.3
Biology/Medicine	**24,677.1**	**16,254.4**	**65.9**	**1,764.0**	**7.1**	**6,658.7**	**27.0**
Geosciences	407.5	2.8	0.7	129.7	31.8	275.0	67.5
Chemistry	1,311.3	11.2	0.9	307.6	23.5	992.5	75.7
Physics	1,185.2	5.7	0.5	391.7	33.0	787.8	66.5
Mathematics	606.2	3.1	0.5	110.1	18.2	493.1	81.3
Natural Sciences	**3,510.2**	**22.7**	**0.6**	**939.1**	**26.8**	**2,548.4**	**72.6**
General engineering sciences and mechanical engineering	1,686.0	44.3	2.6	707.6	42.0	934.1	55.4
Architecture, urban development, civil engineering	804,0	45.4	5.6	193.6	24.1	565.0	70.3
Mining and metallurgy	102.6	1.7	1.6	55.7	54.3	45.2	44.1
Electrical engineering, computer science	1,274.5	27.4	2.1	370.0	29.0	877.1	68.8
Engineering Sciences	**3,867.1**	**118.7**	**3.1**	**1,327.0**	**34.3**	**2,421.4**	**62.6**
Not classified	6,210.2	277.4	4.5	525.1	8.5	5,407.6	87.1
In total	**42,911.9**	**16,716.7**	**39.0**	**5,151.1**	**12.0**	**21,044.1**	**49.0**

Based on: 80 universities which received a total of more than half a million euros in approvals from the DFG between 1999 and 2001.

Source: Federal Statistical Office (2002), Regular expenditure, administrative income, third party funding income and regular core funds according to organisational classification, university, fields of teaching and research (1999 to 2000), special report.

This finding is put starkly into perspective, however, by the fact that medicine can also account for the majority of university administrative income, resulting primarily from the operation of university hospitals. Nearly 97 percent of the total of 17 billion euros apportioned to "administrative income" is for income from medicine.

Comparing the third party funding proportions, shown in Table 3-2, which are of particular interest here, then some considerable differences between the various research areas become apparent. In total a third party funding rate of 12 percent is reported. The highest proportion, almost 54 percent, is attained by the smallest research area in terms of total income, "mining and metallurgy", whereas for the larger research areas a proportion of between 20 and 30 percent is typical. Research areas which have a high proportion of third party funding are primarily amongst the natural and engineering sciences, with "geosciences" and "physics" (32 and 33 percent) and especially "general engineering sciences" (42 percent) particularly worth highlighting. Above average proportions are also reported for "biology" (26 percent), "chemistry" (24 percent) and "electrical engineering/computer science" (29 percent). Third party funding income is average in relation to total income, on the other hand, for the humanities and social sciences – spanning a relatively narrow range from 11 percent (for "linguistic and literary studies") to 14 percent (for "social sciences").

This impression of considerable variation in the significance of third party funding between subjects is reinforced if – as is also shown in Table 3-3 – these third party funds are related to the number of scientists and academics working in any particular research area. Whereas a good 66,000 euros per professor goes to the humanities and social sciences on average over two years (again with relatively moderate variations between the various research areas belonging to this field), the corresponding average in engineering sciences is nearly 417,000 euros, more than six times as much. Measured in terms of third party funding income per professorial chair, particularly

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high totals of per-capita third party funding income are attained in the research area with the smallest number of staff, "mining and metallurgy" (831,000 euros per professor). The engineering sciences are the most third party funding oriented scientific discipline in terms of per-capita volume, whereby alongside "mining and metallurgy" the "general engineering sciences" stand out most prominently, declaring some 710,000 euros per professor. But the rate is also well above the general average for all research areas (221,000 euros) for "medicine", at almost 400,000 euros per professor, followed by "physics" (339,000 euros per professor) and "geosciences" (313,000 euros per professor). This order hardly changes if the volume of third party funding per scientist or academic is considered instead; however, "medicine" is below average here, as a result of the high number of people working in the academic "Mittelbau" (comprising all research students and junior research-active and teaching university staff, but not undergraduate students, senior academic staff or administrative staff) (32,000 euros per scientist or academic in comparison to an average of 36,000 euros per scientist or academic). Measured in terms of per-capita third party funding volume, the four research areas belonging to the humanities and social sciences are well below the remainder overall (between 61,300 and 75,500 euros per professor or 15,600 and 19,200 euros per scientist or academic).

The evaluation presented here leads to the conclusion that – both in absolute terms and in relation to the number of scientific staff – the significance of third party funding varies greatly between research areas. The simple formula "high third party funding levels = high research activity" is basically valid. However, it only describes the true situation in the so-called "third party funding

Table 3-3:
Third party funding university income 1999 and 2000 by DFG research area in relation to the total number of professors/scientists and academics (status: 2000)

Research Area	Mio. €	Professors		Scientists and academics in total	
		n	k € per prof.	n	k € per sci.
Social sciences	250.0	3,312	75.5	13,095	19.1
History and fine arts studies	77.8	1,405	55.3	4,052	19.2
Linguistic and literary studies	130.5	2,023	64.5	8,371	15.6
Psychology, education, philosophy, theology	130.6	2,130	61.3	7,134	18.3
Humanities and Social Sciences	**589.0**	**8,870**	**66.4**	**32,652**	**18.0**
Medicine	1,315.4	3,309	397.5	40,782	32.3
Biology	262.2	928	282.5	5,680	46.2
Veterinary medicine	28.0	207	135.1	1,009	27.7
Agriculture and forestry science	151.0	530	284.9	3,231	46.7
Biology/Medicine	**1,756.6**	**4,974**	**353.1**	**50,702**	**34.6**
Geosciences	129.7	415	312.6	2,212	58.7
Chemistry	306.3	1,070	286.3	8,451	36.2
Physics	391.0	1,153	339.1	7,385	52.9
Mathematics	108.0	1,225	88.2	4,001	27.0
Natural Sciences	**935.0**	**3,863**	**242.1**	**22,049**	**42.4**
General engineering sciences and mechanical engineering	707.2	996	710.0	8,839	80.0
Architecture, urban development, civil engineering	193.6	914	211.9	5,258	36.8
Mining and metallurgy	55.7	67	831.1	501	111.1
Electrical engineering, computer science	370.0	1,205	307.1	7,781	47.6
Engineering Sciences	**1,326.5**	**3,182**	**416.9**	**22,379**	**59.3**
Subtotal	**4,607.1**	**20,889**	**220.6**	**127,782**	**36.1**
Not classified	518.7	399		6,364	
In total	**5,125.8**	**21,288**		**134,146**	

Based on: 79 universities which received a total of more than half a million euros in approvals from the DFG between 1999 and 2001 (excluding the University of Witten-Herdecke [no staff data]).

Sources:
Federal Statistical Office (2002), Regular expenditure, administrative income, third party funding income and regular core funds according to organisational classification, university, fields of teaching and research (1999 to 2000), special report.

Federal Statistical Office (2002), Full time employment scientific and artistic staff according to organisational classification, university, fields of teaching and research and staff unit (status: 2000), special report.

subjects", for which the amounts sourced in this way constitute a significant portion of the (primarily research-related) costs, rather than for subjects where third party funding plays a fundamentally secondary role. In particular, it would be entirely wrong to conclude that the humanities and social sciences, with their comparatively low proportionate levels of third party funding, are amongst the subjects with the lowest levels of research activity.

Table A3-1 in the appendix shows the financial data provided by the Federal Statistical Office differentiated according to universities in alphabetical order – again restricted to those universities which received more than half a million euros in approvals from the DFG over three years (1999 to 2001).

Looking at the third party funding income per university results in the figures shown by the map in Figure A3-2 and given in detail in Table A3-2 in the appendix, differentiated according to scientific discipline. The list of the largest recipients of third party funding is led by the Technical University of Munich (München), which in the two year period 1999 to 2000 attracted a total of nearly 270 million euros in third party funding – predominantly for engineering sciences (93 million euros), although the disciplines "biology/medicine" and "natural sciences" also reported significant proportions (75 million euros and 79 million euros respectively). This is followed by the Technical University of Aachen (248 million euros, of which 182 million euros went to engineering sciences), the University of Munich (213 million euros, of which 138 million euros went to biology/medicine), and the University of Stuttgart (191 million euros, of which 127 million euros went to engineering sciences). Some way behind, scientists and academics at the Humboldt University in Berlin attracted 155 million euros in third party funding (of which 100 million euros went to biology/medicine), and – with almost 28 million euros, also attained the second highest total in a comparison of all universities for humanities and social sciences (after the University of Munich, which received 30 million euros). The University of Erlangen-Nürnberg is next, with 152 million euros (of which 52 million euros went to biology/medicine and 58 million euros to engineering sciences) and the Technical University of Dresden with 143 million euros (of which 88 million euros went to engineering sciences). Here 18 universities account for almost half of the total third party funding income of all German universities.

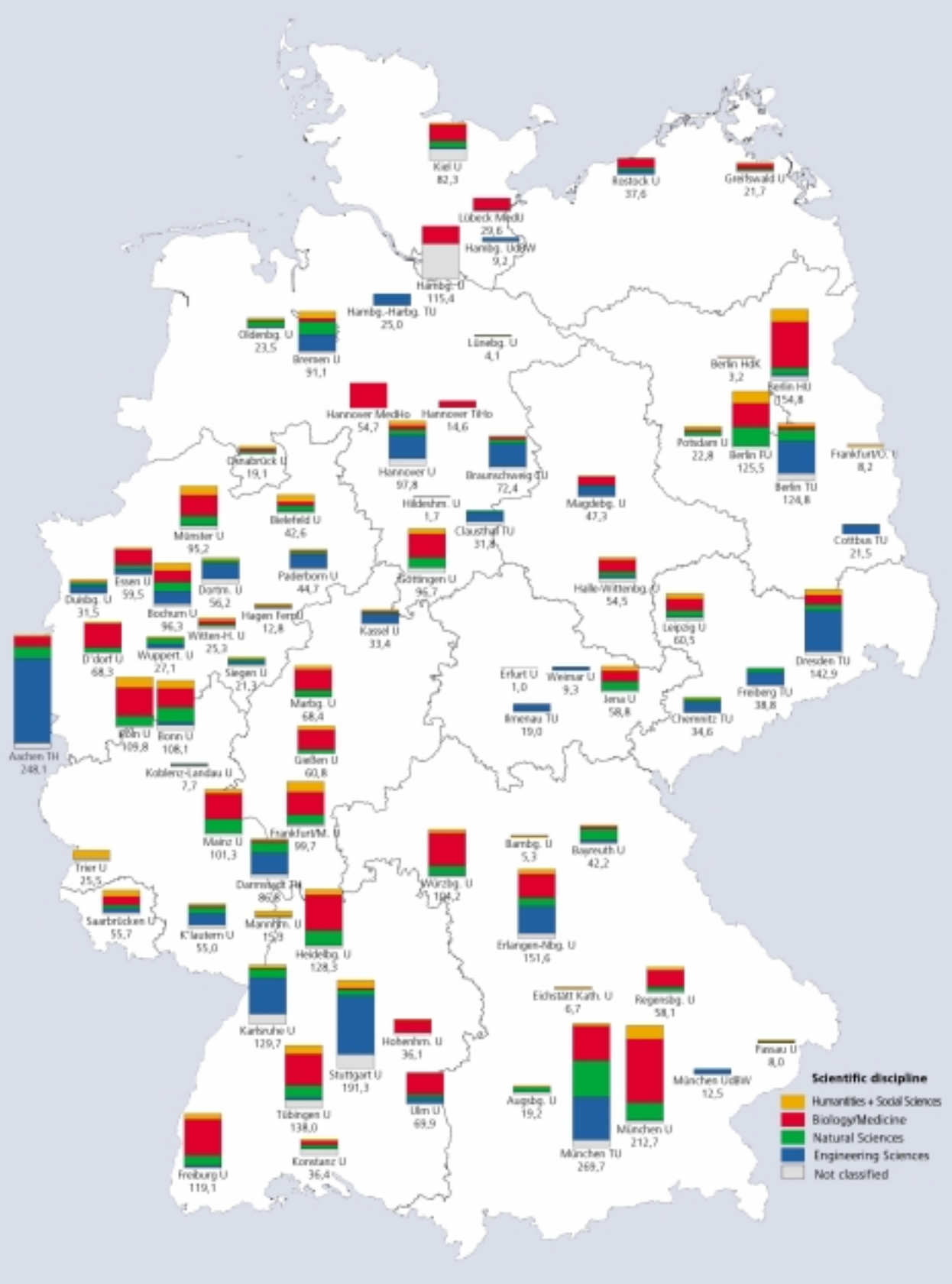
For the interpretation of the amounts reported by university and scientific discipline one peculiarity of varying importance for each location needs to be borne in mind: As already shown in Table 3-3, almost 520 million euros, thus about ten percent of the third party funding for the universities on which this report is based, were not classified according to subject. The final column in Table A3-2 in the appendix highlights how high this un-classified portion is for each university. In particular the so-called "central funds" fall into this category, which are used by the universities themselves, and the third party funding for "sport studies", which only accounts for a negligible proportion of the total volume and cannot be allocated specifically to any one of the 16 DFG research areas. "Central funds" generally consist of third party funding income for central libraries and other central facilities, as well as income from university computer centres, for instance. There is a trend among some universities, however, to post subject-related third party funding income to their general budget. This restricts the scope of statistical comparisons according to subjects, however. FFor instance, if, of the universities mentioned above, the University of Stuttgart books 16 percent of its funds separately from its subject statistics, the Technical University of Aachen, on the other hand, just 5 percent, this already results in a considerable difference. This situation is particularly extreme at the University of Hamburg, where about 67 percent of the third party funding income is not allocated to specific subjects.

A more detailed analysis of these figures according to scientific discipline and university – for instance as league tables ranking the universities according to their third party funding for each scientific discipline (or even research area) – cannot and was not intended to be performed as part of this report.

3.4 Third Party Funding University Income According to Origin

As well as regular surveys of the total third party funding attracted per university and field of teaching and research the Federal Statistical Office also conducts surveys which provide roughly categorized information on the origin of this third party funding. This data is collected separately – with the serious disadvantage that consequently no conclusions can be reached on the significance of the various third party funding bodies differentiated by subject. Additionally,

Figure 3-2:
Third party funding income 1999 and 2000 by university[1] and DFG scientific discipline (in millions of euros)



[1] Only universities with more than 1 million euros in third party funding income in the period stated are shown. The data on which this figure is based are taken from Table A3-2 in the appendix. For the allocation to fields of teaching and research by the Federal Statistical Office to DFG scientific disciplines cf. Table A2-2.

Source: Federal Statistical Office (2002), Regular expenditure, administrative income, third party funding income and regular core funds according to organisational classification, university, fields of teaching and research (1999 to 2000), special report.

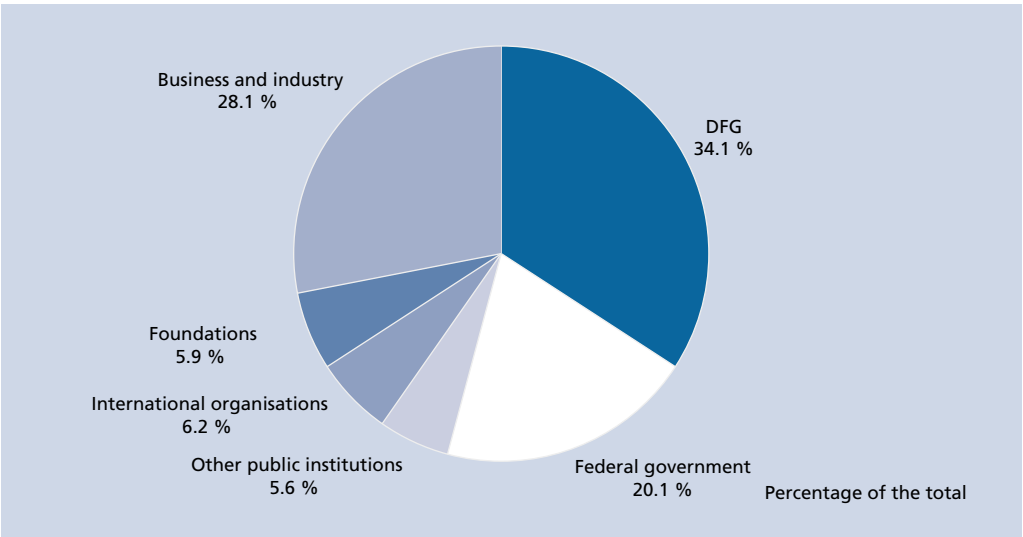
this data has up until now only been published rounded up – for comparison according to federal states – (cf. table A3-3 in the appendix).

If this data is taken as the basis, then the proportion which DFG funds constitute of university third party funding income in total, for the period 1999 to 2000, amounts to at least 34 percent. The federal government makes up 20 percent of the total, and business and industry accounts for a total proportion amounting to 28 percent. The DFG is thus the largest single funding body for third party funded university research in Germany (cf. Figure 3-3).

Considering the figure reported for the DFG first of all in terms of quality assurance, then there is relatively good agreement with the DFG's own calculations: Excluding administrative expenditure, the DFG provided a total of 2.2 billion euros for research purposes in 1999 and 2000. Excluding expenditure for projects at non-university institutions (which account for approximately eleven percent (cf. Figure 3-6 in Chapter 3.7) then a total of almost 2 billion euros remains. If the total amounts paid as contributions to international organisations or used to fund bilateral cooperation, as well as funds used to meet general international obligations and hence flow out of Germany, are then subtracted, then a total remains which only exceeds the amount calculated by the Federal Statistical Office by about five or six percent.

The Federal Statistical Office's overview is based on annual surveys carried out at university administrations in collaboration with the state statistical offices. The degree of coverage achieved by these administrations in collecting statistical data on the funds attracted by scientists and academics working at a university has improved significantly in recent years. This is not least due to the fact that more and more universities are tending towards viewing third party funding income as a performance indicator and are thus taking this into account in their internal allocation of core support funds [8]. Last but not least, reporting of these details is controlled by and obligatory under university administration guidelines as a general rule.

Figure 3-3:
Third party funding income of universities 1999 and 2000 by source (in percent)



Source: Federal Statistical Office (2003), Third party funding income of universities by source and federal state (1999 to 2000), special report.

[8] For example, the University of Bonn introduced a process from the beginning of 2003, to give scientists and academics who endeavour to bring in external research funding a bonus of up to five percent in future. "The higher the hurdles en route to the moneypots", it says in a press release on the subject, "the greater the support from the university will be in future. Consequently a Collaborative Research Centre can count on receiving an additional five percent from the Vice Chancellor's fund, and research funds from one of the numerous private foundations will be supplemented by an additional 2.5 percent" (cf. http://www.uni-bonn.de/Aktuelles/Presseinformationen/2003/013.html (only available in German)). That the University of Bonn is not unique in this respect is shown by the research map of university medicine (cf. http://hochschulmedizin.gesundheitsforschung-bmbf.de/), a compendium providing an overview of the research focus of all medical faculties, developed by the Fraunhofer Institute for Systems and Innovation Research ISI (Fraunhofer-Institut für Systemtechnik und Innovationsforschung ISI) based in Karlsruhe, for the Federal Ministry of Education and Research (Bundesministerium für Bildung und Forschung, BMBF) and the Medizinischer Fakultätentag (the German Medical Faculty Association). The majority of the faculties included on this map have mechanisms of performance-related allocation of funds, whereby DFG funds are generally viewed as having the greatest importance.

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Equally, it can be assumed that certain DFG funding activities are under-accounted for on location. This applies to personal grants to cover publication costs for instance [9]. Although these only make up a relatively small proportion of the total (during the period under consideration almost 13 million euros were granted for this purpose (0.4 percent of the total amount approved)), their almost exclusive use by humanists and social scientists means that this has the most impact on subjects in this scientific discipline. Another aspect that may be frequently underestimated at the majority of universities is probably the funds granted as personal fellowships in programmes for direct promotion of young researchers: These approvals are also granted personally. They are frequently used by the fellows belonging to an institution to fund a research stay abroad. Such funds are however barely registered as "third party funding income" in the stricter sense at the home university of the recipient in the majority of cases10).

3.5 A Comparison of DFG Approvals and Third Party Funding Income at Universities

A criticism which has repeatedly been levelled at the previous editions of the "DFG Ranking" related to their limitation to consideration of DFG approvals alone. Although it is generally accepted that these approvals may, as a result of the strict conditions for allocation employed by the DFG, be afforded a high degree of significance for drawing conclusions on third party funding as a whole, it remains completely unclear as to whether, and to what extent, the amounts approved by the DFG realistically reflect the typical third party funding income for the various subjects and universities. For instance, a popular argument is that universities with a lower volume of DFG approvals prefer to draw their income from other sources, so that there is an institutional pattern of claiming DFG funds. Elsewhere it is pointed out that the "proximity" to the DFG as a funding body varies between subjects.

Using the data provided by the Federal Statistical Office it has been possible, for the first time, to investigate the relevance of these arguments, at least to some extent. To do so, the amounts approved by the DFG per university between 1999 and 2001 are compared to the level of third party funding income reported for each university in 1999 and 2000. Due to the difference in the periods covered by the different reports and the fundamental difference between approvals (which generally apply to periods of several years), and income in terms of financial years, this comparison is carried out in the form of a scatter diagram, which can be used to draw conclusions on relative similarities in the distribution pattern of the figures displayed in this manner, even when using different terms of reference .

Figure 3-4 is based on data on a total of 80 universities with an approval volume of more than half a million euros from the DFG over 3 years. For practical display purposes only institutions with more than 10 million euros in DFG approvals are named.

The x axis plots the total third party funding income attracted by each university, while the y axis plots the volume of DFG approvals granted to each university. The diagonal line, which has been added as a guide, shows where the universities would be positioned on the graph on the basis of the relationship between their DFG approvals and third party funding income if both of these quantities were distributed completely evenly.

The actual distribution shows that the correlation between the total third party funding income and the total granted in DFG approvals is very close indeed. The Spearman's r correlation coefficient of 0.96 can hardly be exceeded.

In keeping with this very high correlation there are only a few "outliers" overall, although oddly enough these are mainly amongst the top ranking universities. Scientists and academics at the Technical University of Aachen, the Technical University of Munich and – although already somewhat less markedly – the Universities of Munich and Stuttgart, attract significant – and above-average – sums from other sources, in addition to the large amounts of funding received from the DFG. To a certain extent this also applies to the universities of Dresden and Bremen in the middle of the

[9] The award guidelines for grants to cover printing costs were fundamentally revised in late 2001. Since that time it has been possible to apply to the DFG for funding towards publication costs directly in conjunction with a project or a fellowship, with the choice of publication medium left to the discretion of the applicant (cf. http://www.dfg.de/aktuelles_presse/pressemitteilungen/2001/presse_2001_53.html (only available in German)).

[10] The DFG statistics also show gaps in this respect, since many fellowships are not allocated to the university where the fellow was last based, but rather – if the recipient immediately commences a stay abroad funded using a DFG fellowship as is often the case – fall under the general heading "approvals abroad".

Figure 3-4:
DFG approvals 1999 to 2001 and third party funding income 1999 and 2000 by university

For DFG approvals refer to Table A-3-10, for details on the source and basis of third party funding income refer to Table A3-2. For practical display purposes, only universities which received more than 10 million euros in DFG approvals are named.

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field. Conversely, universities such as Würzburg and Konstanz exhibit a greater tendency towards being DFG "customers".

In addition to this, Table 3-4 presents the total amount of third party funding income broken down into the four DFG approval ranking groups (cf. Chapter 2.5) in comparison to the "per-capita" income in each group. This makes it possible, for example, to determine whether universities with a high volume of DFG approvals are also very active in terms of third party funding, relatively speaking[11].

In total the universities ranked 1 to 20, which had the highest volumes of DFG approvals, attracted a total of more than 2.8 billion euros in third party funding in the years 1999 and 2000. For the 79 universities on which the table is based this corresponds to a proportion of about 55 percent. At first sight this large amount may initially be interpreted simply as an effect of size – at the 20 highest placed universities there were over 9,200 professors and 65,500 scientists and academics employed in total, whereas at the 19 universities in the fourth ranking group (excluding the University of Witten-Herdecke, for which the staff data is not available) only around 2,200 professors and 8,700 scientists and academics were employed in total. The totals in relation to these staff numbers, however, indicate another correlation to the DFG third party funding activity: In actual fact, the total amount of third party funding attracted per professor in the group of "top 20" DFG universities amounted to over 313,000 euros, whilst – decreasing from one group to the next in the ranking – for the group of universities on places 61 to 79 it was a mere 105,000 euros per professor. There is a similar trend if the number of scientists and academics is taken as the weighting factor.

It can therefore be stated as a general "rule", in view of this very clear correlation between DFG approvals and total third party funding income, that: In the majority of cases investigated by this report, the relative difference between the total third party funding income and the income from DFG approvals is hardly suitable to support the argument of typical "DFG closeness" or "DFG distance" for any given university. Universities which received a large amount of funding as DFG approvals also received an above average amount of third party funding overall – both in absolute terms and relatively speaking. DFG approvals thus prove to be a reliable indicator for a university's general third party funding activity.

What is the situation, on the other hand, regarding the argument of differences in the "DFG closeness" of different research areas? Are there subjects which on principle use DFG funds to finance their research activities preferentially to funds from other funding bodies? And conversely, are other subjects less reliant on the DFG, because a large number of sources are available to them (which are not available to the first group)? A rough answer to this question is made possible by Table 3-5.

Table 3-4: Third party funding income 1999 and 2000 by DFG approval ranking group in relation to the number of professors/scientists and academics in total at universities (status: 2000)

DFG approvals ranking group	Mio. €	Professors		Scientists and academics in total	
		n	k € per prof.	n	k € per sci.
Place 1 to 20	2,819.0	9,240	305.1	65,509	43.0
Place 21 to 40	1,419.7	6,250	227.2	40,804	34.8
Place 41 to 60	652.2	3,570	182.7	19,123	34.1
Place 61 to 79	234.9	2,228	105.4	8,710	27.0
In total	**5,125.8**	**21,288**	**240.8**	**134,146**	**38.2**

Based on: Universities which received a total of more than half a million euros in approvals from the DFG between 1999 and 2001 (excluding the University of Witten-Herdecke [no staff data]). A further 295.6 million euros in third party funding went to 283 other universities. The allocation to a ranking group is calculated from the sum total value of DFG approvals granted (cf. Table A3-10).

Sources:
Federal Statistical Office (2002), Regular expenditure, administrative income, third party funding income and regular core funds according to organisational classification, university, fields of teaching and research (1999 to 2000), special report.

Federal Statistical Office (2002), Full time employment scientific and artistic staff according to organisational classification, university, fields of teaching and research and staff unit (status: 2000), special report.

[11] Table A3-4 in the appendix shows the corresponding total third party funding income in relation to the number of professors/scientists and academics in total by university.

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If the proportion of the total volume which individual research areas comprise – for both third party funding income and DFG approvals – then similarly minor differences are to be found as a rule. For instance, with 15.3 in comparison to 15.2 percent, the proportion which "general engineering sciences and mechanical engineering" constitute of the total third party funding and of DFG approvals is almost identical. The frequently expressed assumption that it is especially engineering sciences which take recourse to non-DFG sources of funding more often than average, thus turns out to be refuted. Rather, there are clues which give strength to a second assumption apportioning a particular DFG orientation (albeit not "DFG reliance") to the arts and humanities – particularly evident in "history and fine arts studies" for example. They take a 4.3 percent slice of the "DFG cake", in comparison to just 1.7 percent of total third party funding, thus clearly exhibiting comparatively strong DFG orientation. The "social sciences" however, although in the same scientific discipline, exhibit an exception to this "rule", since other funding bodies are drawn on more strongly than the DFG for financing research projects in this area (5.6 percent in comparison to 4.0 percent).

Substantial quantitative differences arise primarily in "biology" and "medicine". Although the latter research area accounts for a proportion of total third party funding amounting to 28.6 percent, it accounts "only" for 18.4 percent of all DFG approvals. "Biology", on the other hand, is listed at 5.7 percent, but accounts for a proportion of 15.1 percent in the DFG figures.

This discrepancy may partially be due to inaccuracies in the subject classification

Table 3-5:
Comparison of university third party funding income 1999 and 2000 and DFG approvals 1999 to 2001 by research area

Research area	Total volume				Annual average Mio.		
	Total third party funding 1999 – 2000		DFG approvals 1999 – 2001		Third party funding	DFG approvals	DFG approvals per 1 Mio. € third party funding
	Mio. €	%	Mio. €	%	Mio. €	%	k €
Social sciences	257.0	5.6	124.0	4.0	128.5	41.3	322
History and fine arts studies	77.8	1.7	133.2	4.3	38.9	44.4	1,142
Linguistic and literary studies	130.5	2.8	119.3	3.9	65.3	39.8	609
Psychology, education, philosophy, theology	130.6	2.8	113.4	3.7	65.3	37.8	579
Humanities and Social Sciences	**595.9**	**12.9**	**489.9**	**15.9**	**298.0**	**163.3**	**548**
Medicine	1,321.6	28.6	566.3	18.4	660.8	188.8	286
Biology	263.5	5.7	466.6	15.1	131.7	155.5	1,181
Veterinary medicine	28.0	0.6	10.4	0.3	14.0	3.5	248
Agriculture and forestry science	151.0	3.3	62.4	2.0	75.5	20.8	275
Biology/Medicine	**1,764.0**	**38.1**	**1,105.7**	**35.8**	**882.0**	**368.6**	**418**
Geosciences	129.7	2.8	135.4	4.4	64.9	45.1	696
Chemistry	307.6	6.6	216.8	7.0	153.8	72.3	470
Physics	391.7	8.5	299.0	9.7	195.8	99.7	509
Mathematics	110.1	2.4	84.6	2.7	55.0	28.2	512
Natural Sciences	**939.1**	**20.3**	**735.8**	**23.8**	**469.6**	**245.3**	**522**
General engineering sciences and mechanical engineering	707.6	15.3	467.9	15.2	353.8	156.0	441
Architecture, urban development, civil engineering	193.6	4.2	49.7	1.6	96.8	16.6	171
Mining and metallurgy	55.7	1.2	34.9	1.1	27.8	11.6	417
Electrical engineering, computer science	370.0	8.0	201.7	6.5	185.0	67.2	363
Engineering Sciences	**1,327.0**	**28.7**	**754.1**	**24.4**	**663.5**	**251.4**	**379**
Subtotal	**4,626.0**	**100.0**	**3,085.6**	**100.0**	**2,313.0**	**1,028.5**	**445**
Not classified	525.1				262,5		
In total	**5,151.1**		**3,085.6**		**2,575.6**	**1,028.5**	**399**

Based on: 80 universities which received a total of more than half a million euros in approvals from the DFG between 1999 and 2001.

[1] Please note that this comparison only allows conclusions to be drawn on general trends, since approvals granted by the DFG generally run for a period of several years, whilst the figures on third party funding income reported by the Federal Statistical Office relate to individual financial years. Although these differences are more-or-less averaged out when a large enough dataset is taken into consideration (since the sums paid in any given financial year may in turn relate to approvals which were announced in previous years), a 1:1 correlation is not possible.

Source: Federal Statistical Office (2002), Regular expenditure, administrative income, third party funding income and regular core funds according to organisational classification, university, fields of teaching and research (1999 to 2000), special report.

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of these research areas, which in some areas are very closely related. This is illustrated well by taking the example of the Hannover Medical School: Whereas the university generally classifies both its staff and its income under "medicine" in the statistics reported to the Federal Statistical Office, the DFG – by strictly scrutinising the focus of the research objectives in the individual projects funded – assigns some 15 percent of the approvals granted to this university to "biology" (a further 3 percent are classified as "veterinary medicine" and other research areas).

These differences can only partially (and to a small extent) explain the discrepancies, however. Particularly medicine, as an especially application-oriented research discipline, which is almost certainly met with the most interest by society at large, has a relatively large number of alternative sources of funding, over and above the extensive funds made available by the DFG.

Finally, taking the annual average figures in the final column of the table, it is possible to draw conclusions on the relative proportion of total third party funding constituted by DFG-third party funding.

On average there are almost 400,000 euros in DFG approvals per million euros of third party funding granted annually to the 80 universities on which these figures are based. In comparison to this average figure, primarily "social sciences", "medicine", "veterinary medicine", "agriculture and forestry science" and "architecture, urban development, civil engineering" turn out to be relatively "DFG distant", whereas the remaining humanities and social sciences research areas (especially "history and fine arts studies") as well as "biology" and "geosciences" take advantage of DFG funds overproportionately.

So the suspicion that there is an element of subject-specific DFG orientation is indeed confirmed by these figures.

3.6 Approvals to Universities

The overviews of approvals granted to universities presented in this report primarily refer to institutions which received over 500,000 euros in DFG approvals in the period 1999 to 2001. This criterion is met by precisely 80 higher education institutions (79 universities and 1 academy of art). These universities account for 3.1 billion euros and thus 87 percent of the total of over 3.5 billion euros of funds approved by the DFG during the period under consideration for the programmes listed in Table 3-1. Two percent (10 million euros) are distributed amongst 62 further higher education institutions – of which 19 universities, 32 universities of applied sciences and 12 academies of art, eleven percent (400 million euros) were awarded to non-university funding recipients. A further 52 million euros went to scientists and academics (mostly fellows) working abroad and to individuals not affiliated to an institution.

3.6.1 Approvals by Scientific Discipline and Research Area

Figure 3-5 shows the 40 universities with the highest approval volumes differentiated according to scientific discipline. The tables in the appendix give the data on which this figure is based [12].

The distribution shows a relatively steady gradient, there is only a small difference from one position in the ranking to the next. The highest approval volume is displayed by the Technical University of Aachen, which received approvals totalling precisely 119.2 million euros between 1999 and 2001, closely followed by the University of Munich (116.9 million euros) and the Technical University of Munich (116.3 million euros).

The ten universities to which the highest amounts were approved account for slightly over 32 percent of the total funding volume approved to universities by the DFG. The 50 percent mark is already nearly reached by the top 17 universities. In other words, every other euro approved by the DFG between 1999 and 2001 was granted to a scientist or academic working at one of these 17 universities.

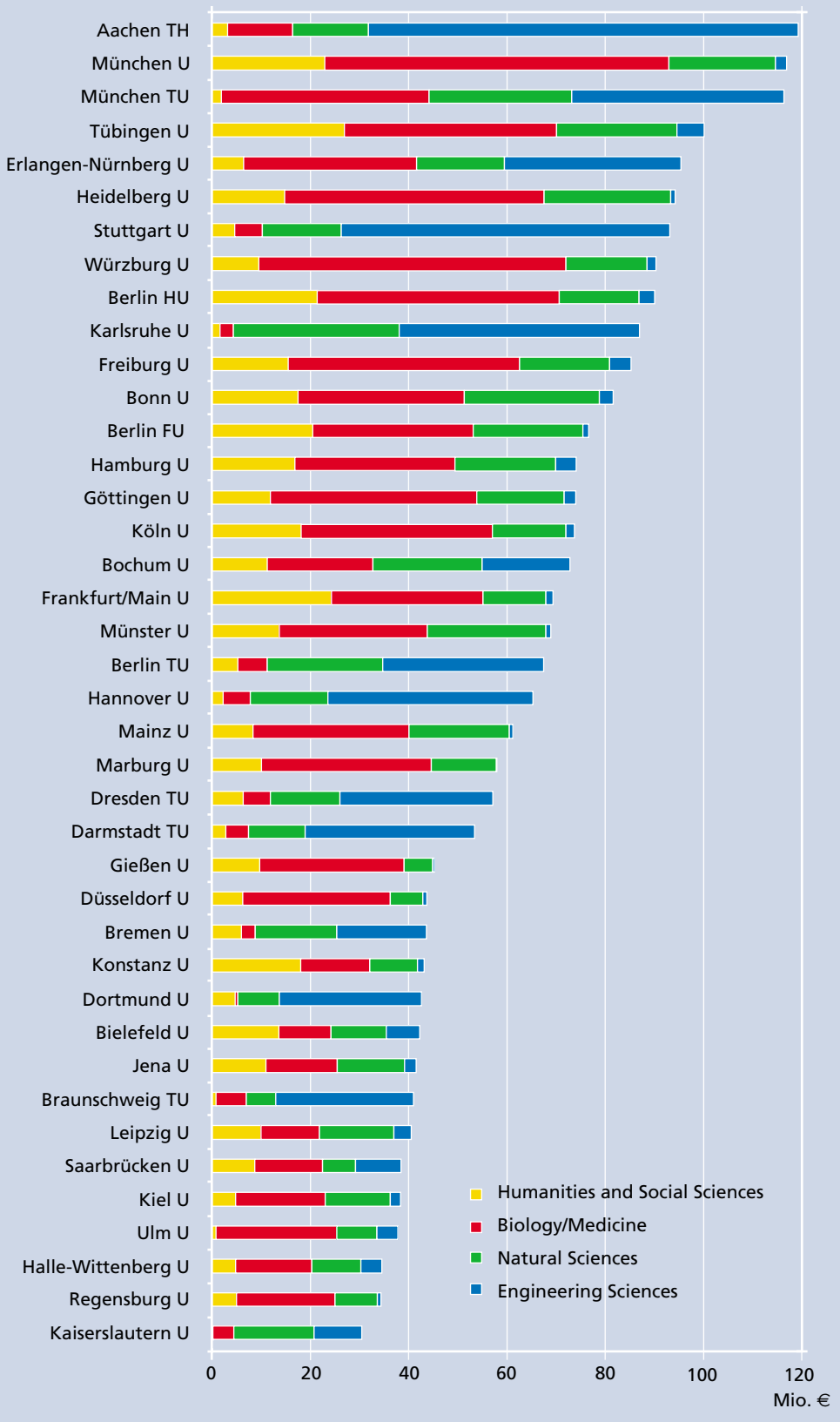
In addition to the pure volume approved, the subject profile demonstrated by the universities with regard to their use of the funds received from the DFG is particularly of interest. Figure 3-5 gives a first impression on this topic, more detailed overviews differentiating according to scientific discipline [13] and 16 research areas are provided in Table 3-5 and Tables A3-6 to A3-9 in the appendix.

> From the point of view of the subject profile, the Technical University of Aachen

[12] Refer to Table A3-5 for approvals by scientific discipline and Table A3-10 for approvals by programme group.

[13] The tables A3-10 to A3-14 in the appendix show how the total approvals, by scientific discipline and by university, are distributed between the four programme groups.

Figure 3-5:
DFG approvals 1999 to 2001 by university [1] and scientific discipline (in millions of euros)



[1] Only universities which received more than 30 million euros in DFG approvals in total in the period stated (for other universities cf. Table A3-5).

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which received the highest total amount of third party funding during the period under consideration, is particularly interesting. This leading position can first and foremost be attributed to approvals to researchers in engineering sciences, which make up about 73 percent of the total income from approvals in Aachen. Differentiating according to research area (cf. Table A3-9 in the appendix) the strengths of the Technical University of Aachen are particularly evident in "general engineering sciences and mechanical engineering", but also in "mining and metallurgy", which lead the ranking of approval recipients by a long way (ahead of Clausthal, Erlangen-Nürnberg and Freiberg).

> Conversely, researchers at the University of Munich for example (with the second highest approval volume), attracted the highest amount of funding in the three year period covered by this report in biology/medicine, both in comparison to all other universities and also in relation to the funding volume granted to the University of Munich for projects in humanities and social sciences and in natural and engineering sciences: Almost 60 percent of all approvals awarded to the University of Munich were granted to scientists and academics working on projects with a biological/medical research focus. Other universities in southern Germany are also especially strong in this area, for instance Würzburg, Heidelberg, Freiburg and Tübingen. In addition to this, the scientific discipline of biology/medicine is also influential for the Humboldt University in Berlin and for the University of Göttingen.

> At the Technical University of Munich the funds are primarily distributed between biology/medicine and the engineering sciences (both disciplines receiving over 40 million euros) and natural sciences (22 million euros). The University of Erlangen-Nürnberg sets a similar course, but over and above these areas also reports a not insignificant amount in humanities and social sciences. The University of Tübingen, on the other hand, is predominantly active in biology/medicine, but also gives good coverage to the humanities and social sciences and the natural sciences.

> Looking at the figures shown in Table A3-7 (in the appendix) for the volume of approvals at the two large research areas "biology" and "medicine" which are definitive for the discipline of life sciences (which also consists of the research areas of "veterinary medicine" and "agriculture and forestry science") then the ranking for medicine is led by the University of Würzburg (ahead of the University of Munich and the Humboldt University in Berlin), for biology the three highest approval volumes went to the universities of Munich, Würzburg and Heidelberg.

> It is worth noting that universities with a high income from approvals in biology generally also occupy the top positions in the ranking for medicine. This underlines the close relationship between these two research areas.

> For natural sciences (cf. Table A3-8 in the appendix) – defined by the DFG as consisting of "geosciences", "chemistry", "physics" and "mathematics" – the highest amount approved went to the University of Karlsruhe (34 million euros), followed by the Technical University of Munich in second place, ahead of the University of Bonn. The University of Karlsruhe exhibited particular strength in "physics" (in first place), "geosciences" (second place after Tübingen) and "chemistry" (second place). The Technical University of Munich achieved particularly high approval volumes in "chemistry" (first place) and "physics" (third place, after Karlsruhe and Hamburg). At the University of Bonn natural sciences are relatively strong in all branches: Bonn achieved the second highest amount for "mathematics" (after Heidelberg), for "geosciences" Bonn is ranked sixth, for "physics" it is ranked eighth and for "chemistry" it is in tenth place.

> In the discipline humanities and social sciences, which consists of "history and fine arts studies", "social sciences", "linguistic and literary studies" and "psychology, education, philosophy, theology", the University of Tübingen, the University of Frankfurt am Main and the University of Munich have the highest volumes of approvals (27, 24 and 23 million euros respectively). In the last edition of the "DFG Ranking" the University of Munich, the Humboldt University in Berlin and the Free University in Berlin (in that order) had the highest amounts. In "psychology, education, philosophy, theology" the ranking

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is led by the University of Tübingen (ahead of the universities of Heidelberg and Bonn) which is in second place in "linguistic and literary studies" – behind the University of Konstanz and ahead of the University of Munich – just as it is in "history and fine arts studies" (after Frankfurt am Main and ahead of Cologne (Köln)). In "social sciences", last of all, it comes in at place 20. In this research area the Humboldt University in Berlin leads, ahead of the University of Mannheim and Frankfurt am Main (cf. Table A3-6 in the appendix). The University of Frankfurt am Main, in second place (24 million euros), places particular emphasis on "history and fine arts studies" and "social sciences", whilst the University of Munich, in third place (23 million euros) reports comparatively high amounts of approvals in all four research areas.

3.6.2 Changes in Ranking Over the Course of Time

Table 3-6 shows how the ranking positions for the period 1999 to 2001, calculated from the total amount of approvals received, have changed in comparison to the places reported in the previous editions of the ranking published in 1997 and 2000, covering the periods 1991 to 1995 and 1996 to 1998.

The correlation coefficient shown at the bottom of the table (Spearman's r = 0.97 or 0.98) indicate a very good initial agreement between the rankings, thus also indicating that development is not very dynamic. This is also shown by the colour highlighting in the table. This groups the universities under consideration into four groups of 20 universities each, according to the amounts received in each period.

There are however individual changes here and there. Worth mentioning is the University of Tübingen, for instance, which has climbed consistently from the first to the last period reported on, climbing from 12th to 6th place and now to 4th place. A similar trend can be observed for the University of Erlangen-Nürnberg (ranked on places 13, 8, 5) and Würzburg (places 14, 10, 8), while amongst the top 20 approval recipients the University of Cologne also showed an improvement (places 21, 19, 16), as well as the newcomer to this group, the University of Münster (places 25, 23, 19).

While the Humboldt University in Berlin and the Free University in Berlin were able to hold their positions in comparison to the previous "DFG Ranking", the Technical University of Berlin, by contrast, showed a continual drop (places 9, 16, 20).

A relative drop in approvals is evident for the University of Göttingen (places 8, 11,

Table 3-6:
Comparison of the university ranking[1] in terms of DFG approvals 1991 to 1995, 1996 to 1998 and 1999 to 2001

University	Reporting Period			Change	
	1991-1995	1996-1998	1999-2001	1996-1998 to 1991-1995	1999-2001 to 1996-1998
Aachen TH	1	2	1	-1	+1
München U	2	1	2	+1	-1
München TU	3	3	3	0	0
Tübingen U	12	6	4	+6	+2
Erlangen-Nürnberg U	13	8	5	+5	+3
Heidelberg U	4	4	6	0	-2
Stuttgart U	7	5	7	+2	-2
Würzburg U	14	10	8	+4	+2
Berlin HU	29	9	9	+20	0
Karlsruhe U	6	14	10	-8	+4
Freiburg U	10	15	11	-5	+4
Bonn U	15	12	12	+3	0
Berlin FU	5	13	13	-8	0
Hamburg U[2]	17	7	14	+10	-7
Göttingen U	8	11	15	-3	-4
Köln U	21	19	16	+2	+3
Bochum U	11	20	17	-9	+3
Frankfurt/Main U	19	25	18	-6	+7
Münster U	25	23	19	+2	+4
Berlin TU	9	16	20	-7	-4

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University	Reporting Period			Change	
	1991-1995	1996-1998	1999-2001	1996-1998 to 1991-1995	1999-2001 to 1996-1998
Hannover U	16	21	21	-5	0
Mainz U	18	17	22	+1	-5
Marburg U	20	18	23	+2	-5
Dresden TU	35	24	24	+11	0
Darmstadt TU	26	22	25	+4	-3
Gießen U	30	32	26	-2	+6
Düsseldorf U	27	26	27	+1	-1
Bremen U	32	31	28	+1	+3
Konstanz U	28	30	29	-2	+1
Dortmund U	38	37	30	+1	+7
Bielefeld U	24	29	31	-5	-2
Jena U	42	35	32	+7	+3
Braunschweig TU	23	28	33	-5	-5
Leipzig U	40	38	34	+2	+4
Saarbrücken U	31	33	35	-2	-2
Kiel U	22	27	36	-5	-9
Ulm U	36	34	37	+2	-3
Halle-Wittenberg U	44	39	38	+5	+1
Regensburg U	41	40	39	+1	+1
Kaiserslautern U	43	43	40	0	+3
Essen U	33	36	41	-3	-5
Bayreuth U	34	41	42	-7	-1
Hannover MedHo	46	44	43	+2	+1
Magdeburg U	56	47	44	+9	+3
Freiberg TU	49	50	45	-1	+5
Chemnitz TU	48	42	46	+6	-4
Duisburg U	45	46	47	-1	-1
Hamburg-Harburg TU	39	48	48	-9	0
Paderborn U	51	51	49	0	+2
Potsdam U	64	53	50	+11	+3
Clausthal U	37	45	51	-8	-6
Trier U	55	55	52	0	+3
Oldenburg U	62	58	53	+4	+5
Rostock U	54	54	54	0	0
Osnabrück U	50	52	55	-2	-3
Mannheim U	60	60	56	0	+4
Augsburg U	63	62	57	+1	+5
Hohenheim U	47	49	58	-2	-9
Greifswald U	61	63	59	-2	+4
Siegen U	52	56	60	-4	-4
Lübeck MedU	57	59	61	-2	-2
Wuppertal U	53	61	62	-8	-1
Kassel U	59	57	63	+2	-6
Ilmenau U	67	64	64	+3	0
Hannover TiHo	58	67	65	-9	+2
Weimar U	-	71	66	-	+5
Cottbus TU	68	65	67	+3	-2
München UdBW	66	66	68	0	-2
Bamberg U	65	68	69	-3	-1
Passau U	69	69	70	0	-1
Hamburg UdBW	70	72	71	-2	+1
Frankfurt/Oder U	-	-	72	-	-
Koblenz-Landau U	-	-	73	-	-
Hagen FernU	-	70	74	-	-4
Witten-Herdecke U	-	-	75	-	-
Berlin HdK	-	-	76	-	-
Lüneburg U	-	-	77	-	-
Eichstätt Kath. U	-	-	78	-	-
Erfurt U	-	-	79	-	-
Hildesheim U	-	-	80	-	-
Spearman's r:				0.97	0.98

Place 1 to 20 | Place 21 to 40 | Place 41 to 60 | Place 61 to 80

[1] Only universities which received a total of more than half a million euros in approvals from the DFG between 1999 and 2001.

[2] The fluctuations in ranking exhibited by the University of Hamburg are due mainly to changes in the data basis. Only during the period 1996 to 1998 was the research vessel METEOR (which is used by a large number of research institutions), which is funded by the DFG as a so-called "Central Research Facility", included in the calculation base (in the period 1999 to 2001 the DFG spent a total of 22 million euros on this central facility).

15), whilst the relatively strong fluctuations by the University of Hamburg (places 17, 7, 14) are, as mentioned in the footnote to the table, almost entirely due to methodological reasons.

In the last edition of the ranking the often considerable improvement by universities in eastern Germany was emphasised in particular. Has this trend continued? In the case of the Humboldt University in Berlin there is, as already mentioned, no change in the ranking placement compared to the period 1996 to 1998 (place 9) and the same applies to the Technical University of Dresden (place 24) and the University of Rostock (place 54). Most of the other eastern German universities, on the other hand, still show an upwards trend – for example Jena (places 42, 35, 32), Leipzig (places 40, 38, 34), Magdeburg (places 56, 47, 44) and Potsdam (places 64, 53, 50).

Significant changes compared to the period 1996 to1998 are finally reported for the University of Frankfurt am Main (which climbed from place 25 to place 18), the University of Giessen (place 32 to place 26) and the University of Dortmund (place 37 to place 30).

Looking also at the changes in ranking placement within the four scientific disciplines distinguished between by the DFG (not shown in the tables) there is also quite a high degree of stability to be seen. There are a few individual movements, however:

> **Humanities and social sciences:** As far as the two leading universities in the current ranking (1999 to 2001) are concerned, Tübingen was ranked fourth in both previous periods, 1991 to 1995 and 1996 to 1998, whereas Frankfurt has achieved a steady improvement, rising from seventh to fifth position before attaining second place in the current ranking. Other "climbers" are the University of Cologne (places 11, 8, 6), Konstanz (places 12, 10, 7), Jena (places 41, 36, 17), and Leipzig (places 32, 27, 20). A drop in ranking was evident for universities such as the Free University in Berlin (places 1, 3, 5), the University of Bonn (places 5, 6, 8) and the University of Bielefeld (places 2, 7, 13).

> **Biology/medicine:** There were almost no significant changes amongst the top ten universities. There were just slight improvements for the University of Cologne (places 12, 11, 9) and Erlangen-Nürnberg (places 14, 12, 10), whereas the University of Göttingen dropped slightly (places 5, 6, 8). A substantial climb is noted for the universities of Bonn (places 18, 18, 12) and Jena (places 36, 30, 26). Drops are reported for the Free University in Berlin (places 6, 10, 13) and the University of Düsseldorf (places 10, 9, 18).

> **Natural sciences:** Here the majority of changes are at the top of the table. The University of Karlsruhe is now at the top of the table, having previously been in 9th place (1996 to 1998) and 7th place (1991 to 1995). A marked improvement is seen for the University of Tübingen (places 22, 10, 5), the University of Münster (places 30, 16, 6), the University of Erlangen-Nürnberg (places 31, 26, 14), the University of Bremen (places 25, 22, 16), the Humboldt University in Berlin (places 33, 24, 18), and the University of Dresden (places 40, 29, 24). A drop in the rankings is seen, for instance, for the universities of Mainz (places 3, 3, 12), Göttingen (places 6, 6, 15), Frankfurt am Main (places 14, 25, 28), and Bielefeld (places 15, 27, 31).

> **Engineering sciences:** The ranking positions are especially stable in this discipline. Notable improvements are evident for the Technical University of Dresden (places 14, 10, 9), the University of Dortmund (places 13, 11, 10) and the Technical University of Freiberg (places 18, 19, 12). A drop in ranking was seen for the universities of Braunschweig (places 7, 9, 11) and Hamburg-Harburg (places 11, 14, 17) as well as the Technical University of Clausthal (places 12, 12, 19).

3.6.3 Approvals per Scientific Post

The total volume of third party funding attracted by a university, or, as is being considered here, the volume of approvals granted by the DFG, is an important indicator of the "weight" accorded to a university as a research institution. But what about the relative significance of this income? Are the large amounts provided by the DFG possibly simply a consequence of the size of a university?

The relationship between the absolute volume of approvals granted by the DFG and the amount of third party funding income in relation to the number of scientists and academics working at an institution (cf. Table 3-4) presented above has already gone some way towards answering this question. These figures showed that, differentiating according to a ranking into four groups, universities which attracted a particularly high amount of approvals from the

DFG in absolute figures also demonstrated an above-average amount of third party funding income per-capita in total, both in relation to the number of professors and the number of scientists and academics, across the board. Consequently, scientists and academics at these universities are above average in terms of third party funding activity. As anticipated, Table 3-7 confirms this relationship for DFG approvals too.

As this comparison shows, at one of the top 20 universities, in terms of approvals, an average of 189,000 euros was granted per professor over the three year period between 1999 and 2001, whereas in the group of universities ranked on places 21 to 40 the average was just 143,000 euros. For universities on places 41 to 60 each professor still attracted 104,000 euros on average, whilst in the fourth group the average drops to just 33,000 euros per professor. Looking at it in these terms, a professor at one of the top 20 "DFG strongholds" attracts about 5 to 6 times as much funding in DFG approvals as a professor in the bottom group of the ranking. The differences are slightly less clear if the total amount per scientist or academic is taken into consideration, although the highest group in the ranking also has an average of almost three times as much per capita than in the fourth group.

An effect is seen not least as a result of the subject profile of each institution, since – as already mentioned above – the need for third party funding varies from subject to subject, and in particular the need for third party funding from the DFG. Small universities – which frequently have a strong emphasis on the humanities – are less intensively involved in the competition for third party funding than those universities which are focussed on the life sciences, natural sciences and/or engineering sciences. This relationship was brought out for third party funding as a whole above (cf. Table 3-2). The same applies if the amounts approved by the DFG are chosen as the calculation base.

Table 3-8 shows the relationship between funds granted as DFG approvals and the number of professors working at a university, or full time equivalent scientists and academics in total, differentiated according to 16 research areas. This table is based on data on the same 79 universities as above, which attracted more than 500,000 euros in DFG approvals during the period covered by the report and for which staff data is available.

In total about 3.1 billion euros in DFG approvals were granted to almost 21,000 professors during these three years (1999 to 2001). This corresponds to an average approval volume amounting to approximately 148,000 euros per professor, or 24,000 euros per scientist or academic in total. As was already shown in the last "DFG Ranking", the large differences in average approval volume between subjects are confirmed:

> The per-capita amounts are well above average in "mining and metallurgy" (521,000 euros/professor), "biology" (501,000 euros/professor) and "general engineering sciences and mechanical engineering" (467,000 euros/professor). The latter two research areas are thus not only amongst the research areas with the strongest approval performance, but are also above average in their DFG activity in relation to the number of scientists and academics belonging to them.

Table 3-7:
DFG approvals 1999 to 2001 by DFG approval ranking group in relation to the total number of professors/scientists and academics in total at universities (status: 2000)

DFG approvals ranking group	Mio. €	Professors		Scientists and academics in total	
		n	k € per prof.	n	k € per sci.
Place 1 to 20	1,746.9	9,240	189.1	65,509	26.7
Place 21 to 40	893.1	6,250	142.9	40,804	21.9
Place 41 to 60	369.8	3,570	103.6	19,123	19.3
Place 61 to 79	74.2	2,228	33.3	8,710	8.5
In total	**3,084.0**	**21,288**	**144.9**	**134,146**	**23.0**

Based on: 79 universities which received a total of more than half a million euros in approvals from the DFG between 1999 and 2001 (excluding the University of Witten-Herdecke [no staff data]). A further 11.4 million euros in DFG approvals were granted to 63 other universities. The allocation to a ranking group is calculated from the sum total of DFG approvals granted (cf. Table A3-10).

Source: Federal Statistical Office (2002), Regular expenditure, administrative income, third party funding income and regular core funds according to organisational classification, university, fields of teaching and research (1999 to 2000), special report.

Table 3-8:
DFG approvals 1999 to 2001 in relation to the number of professors/scientists and academics in total per research area

Research Area	Mio. €	Professors		Scientists and academics in total	
		n	k € per prof.	n	k € per sci.
Social sciences	123.9	3,312	37.4	13,095	9.5
History and fine arts studies	133.2	1,405	94.8	4,052	32.9
Linguistic and literary studies	119.3	2,023	58.9	8,371	14.2
Psychology, education, philosophy, theology	113.4	2,130	53.3	7,134	15.9
Humanities and Social Sciences	**489.8**	**8,870**	**55.2**	**32,652**	**15.0**
Medicine	566.2	3,309	171.1	40,782	13.9
Biology	465.3	928	501.4	5,680	81.9
Veterinary medicine	10.4	207	50.2	1,009	10.3
Agriculture and forestry science	62.4	530	117.7	3,231	19.3
Biology/Medicine	**1,104.3**	**4,974**	**222.0**	**50,702**	**21.8**
Geosciences	135.4	415	326.3	2,212	61.2
Chemistry	216.8	1,070	202.6	8,451	25.7
Physics	299.0	1,153	259.3	7,385	40.5
Mathematics	84.6	1,225	69.1	4,001	21.1
Natural Sciences	**735.8**	**3,863**	**190.5**	**22,049**	**33.4**
General engineering sciences and mechanical engineering	467.9	996	469.8	8,839	52.9
Architecture, urban development, civil engineering	49.7	914	54.4	5,258	9.4
Mining and metallurgy	34.9	67	520.5	501	69.6
Electrical engineering, computer science	201.7	1,205	167.4	7,781	25.9
Engineering Sciences	**754.1**	**3,182**	**237.0**	**22,379**	**33.7**
In total	**3,084.0**	**20,889**	**147.6**	**127,782**	**24.1**

Based on: 79 universities which received a total of more than half a million euros in approvals from the DFG between 1999 and 2001 (excluding the University of Witten-Herdecke [no staff data], and also not including staff not allocated to a particular subject [399 professors, 6,364 scientists and academics in total]).

Source: Federal Statistical Office (2002), Regular expenditure, administrative income, third party funding income and regular core funds according to organisational classification, university, fields of teaching and research (1999 to 2000), special report.

> "Medicine", which accounts for the largest proportion of the total approval volume granted to any single research area by the DFG in absolute terms, on the other hand, is only in the middle of the field when looking at the figures in relation to the number of university staff. This research area – closely behind "social sciences" – involves not only the highest number of professors, but most importantly of all, the highest number of scientists and academics: More than 3,300 professors, or almost 40,800 scientists and academics can be attributed to the 79 universities under consideration for the research area of medicine.

> In general the subjects belonging to the humanities and social sciences are amongst the subject areas that – in terms of relative volume of approvals – tend to be rather DFG distant. The "social sciences" are especially noticeable – as was already the case for the period 1996 to 1998 – for the low amounts of approvals granted (37,000 euros/professor). This is not least attributable to subjects that have traditionally been relatively minor recipients of DFG funding, such as business studies and jurisprudence, which make up a large proportion of the scientists and academics belonging to this research area.

> The figures are similarly below average in "linguistic and literary studies" and in "psychology, education, philosophy, theology". "History and fine arts studies" are in a special position, having an average amount of approvals per professor substantially above that of other research areas in the humanities (95,000 euros/professor), and in terms of "scientists and academics in total" the figure even almost matches the general average level (33,000 euros per scientist or academic in total).

> As well as the humanities and social sciences, scientists and academics in the two small research areas "veterinary medicine" and "architecture, urban development, civil engineering" only seek modest amounts of funding per capita from the DFG and are thus noticeable in their scientific discipline for their very below-average approval amounts of per capita.

As well as a very high variability between research areas, the finding from the

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previous report of a relative similarity in the order of the 16 research areas for the two comparison groups "professors" and "scientists and academics in total" is also confirmed. Which of the two groups is chosen as the term of reference thus primarily affects the average amount calculated per person. Significant differences are evident, however, for "history and fine arts studies" and for "medicine". In the former the result turns out to be better if "scientists and academics in total" is taken as the terms of reference, whereas in "medicine" the opposite applies. Both of these research areas are characterised – as is already shown in Table 2-2 – by a considerable variation from the general average for the proportion of professors out of the total number of scientific staff. In "history and fine arts studies" almost one in three full time scientists or academics holds the status of professor, whereas in "medicine" it is just one in twelve. It is therefore especially important for these two research areas to make a decision on the appropriate terms of reference before attempting to interpret the relative values at university level as documented in the appendix.

Looking at the per-capita approval amounts in total (cf. Table A3-15 in the appendix) another finding from the last "DFG Ranking" is confirmed: Just as was the case then, for the period 1996 to 1998, the ranking is led by the University of Stuttgart, the Hannover Medical School and the University of Karlsruhe in terms of the number of professors working at a university. These were followed by the Technical University of Aachen (previously on place 5), the University of Konstanz (previously on place 7) and the Technical University of Munich (previously on place 6). Distinguishing, on the basis of an average approval volume of 39 million euros over three years, between small universities (below this figure) and large universities, then 15 out of the 20 universities with the highest per-capita approval amount are classed as large universities. The relationship between absolute size and relative DFG activity shown in Table 3-7 is confirmed from this point of view too.

Because of the problem discussed in Chapter 2 of the classification of "scientists and academics in a research area" (based on the data provided by the Federal Statistical Office) to the "DFG approvals per research area" the overviews in the appendix, which differentiate according to university in fine detail, only distinguish between four scientific disciplines (cf. Table A3-16 to A3-19). This comparatively high degree of aggregation reduces the risk of misclassification, while still allowing conclusions to be drawn on the relative amount of third party funding received from the DFG in four main fields of research. Deviations from the average are primarily evident in the following cases:

> In the **humanities and social sciences** the position occupied by the University of Konstanz is particularly eye-catching. There an average approval total of 205,000 euros is granted per professor over three years – a figure far above the average amount for this discipline (55,000 euros). This confirms the university's leading position in the previous "DFG Ranking". The Technical University of Munich (with a comparatively small department of economics) as well as the universities of Tübingen, Stuttgart, Mannheim, Freiburg and Bielefeld (in this order) attract between 137,000 and 102,000 euros per professor.

  In the case of the humanities and social sciences 16 of the top 20 universities in the ranking also achieve an above-average amount in terms of the absolute value of approvals granted (over 7 million euros over three years) (cf. Table A3-16).

> In the field of **biology/medicine** – as was the case in the last ranking – the University of Bayreuth is at the top of the ranking, although it is small in terms of the number of professors working there. It is followed by other universities in Konstanz, Bielefeld and Stuttgart which also have relatively small biomedical departments (between approximately 510,000 and 680,000 euros in approvals per professor), which were already amongst the leading institutions in this discipline in the last ranking. The universities of Würzburg, Tübingen and Bochum come out on top amongst the large research institutions (between 390,000 and 470,000 euros in approvals per professor, cf. Table A3-17).

  In the scientific discipline of biology/medicine the relationship between small and large recipients of approvals is fairly even amongst the institutions which lead in terms of the total per-capita (11 of the top 20 universities demonstrate in overall terms above average approvals of over 21 million euros over three years).

> In the **natural sciences** the University of Karlsruhe (439,000 euros) and the Technical University of Munich (330,000 euros) take the top positions (cf. Table A3-

18). They are followed by the University of Konstanz, the Technical University of Berlin, and the universities of Bochum and Freiburg, with amounts varying between 300,000 and 315,000 euros per professor. In comparison to the last "DFG Ranking" seven out of the ten universities which also commanded the highest amount of approvals per capita between 1996 and 1998 were amongst the leading institutions in this respect here. New additions to the top ten are the universities of Konstanz, Bochum and Tübingen (previously on places 13 to 15).

In the natural sciences 18 of the top 20 universities in terms of approvals are also at the top of the table of the leading universities in overall terms (more than 12 million euros over three years).

> In the **engineering sciences** (cf. Table A3-19) the universities with very high approval amounts per professor show a high degree of correlation with the leading universities overall (cf. Table A3-9). The Technical University of Aachen (607,000 euros per professor) is in first place in both rankings, followed by the University of Stuttgart in second place in absolute terms and in third place in terms of approvals per capita (per professor). Six of the top ten universities in the relative ranking are also amongst the top recipients of approvals from the DFG in absolute terms. Only marginal changes are generally evident in comparison to the period 1996 to 1998 amongst the leading institutions. "Climbers" amongst the top ten recipients of approvals in relative terms are the University of Bremen (climbing from 12 to 5) and the Technical University of Freiberg (climbing from 18 to 8).

In the engineering sciences 14 of the 20 universities which are relatively above-average in terms of approvals also receive above average approval amounts in absolute terms (more than 15 million euros over three years).

The brief overview shows a different order for each scientific discipline, as anticipated. There is hardly a single university which is strong in all subjects. On the other hand, the "leaders" do stand out comparatively clearly: There are precisely 24 universities amongst the leading institutions in at least one scientific discipline, in terms of the number of professors, that are in the top ten institutions overall. The universities of Stuttgart and Tübingen even manage to be in the top ten for all four disciplines, and there are also two other universities – the University of Konstanz and the Technical University of Munich – which achieve this for three of the four disciplines. Six universities are amongst the top ten for two scientific disciplines.

The determination of a high correlation between the absolute amount of approvals received from the DFG and the total granted per capita for professors and scientists and academics according to ranking groups is confirmed in terms of the individual scientific disciplines for each of the leading universities. The discipline of biology/medicine is the exception to this, for which a relatively high number of institutions (nine universities) achieve relatively high approval volumes despite absolute values that are below average.

This result is most affected by whether there is a teaching hospital affiliated to the university or not: Universities with large hospitals and a high number of professors of medicine, who are often not active in research, are frequently at a disadvantage in comparison to universities without a hospital for the overall per-capita calculations of third party funding income or DFG approvals in biology/medicine. So an assessment according to research area would be especially appropriate for this scientific discipline. Because DFG approvals in these subjects cannot be allocated to the appropriate departments with sufficient accuracy (approvals in "medicine" are not uncommonly granted to scientists or academics at departments of biology) such allocation will not be possible until the DFG also includes information on the subject area of the institute where the applicant is based, in addition to the subject area of the project in its database (cf. Chapter 2).

3.7 Approvals to Non-University Research Institutions

The figures presented so far have focussed on approvals to universities. Below, this chapter will conclude by considering the approvals granted to researchers working at non-university research institutions in greater detail. Institutions which are legally independent are considered to be non-university institutions, this also includes institutions associated with neighbouring universities as a so-called "An-Institut" (independent research institute associated with a university).

As was already the case in the previous DFG Ranking, covering the period 1996 to 1998, about eleven percent of all funds approved by the DFG were granted to researchers working at non-university research institutions. This corresponds to a total of almost 400 million euros. Figure 3-6

shows how the amount approved is distributed between universities and non-university institutions belonging to the Helmholtz Association (Helmholtz-Gemeinschaft, HGF), the Fraunhofer Society (Fraunhofer-Gesellschaft, FhG), the Max Planck Society (Max-Planck-Gesellschaft, MPG), the Leibniz Association (Leibniz-Gemeinschaft, WGL)[14], federal and state research institutions, and other institutions.

A comparatively high amount is granted to researchers at Max Planck Institutes (2.7 percent), although institutions belonging to the Helmholtz Association and the Leibniz Association also attract over two percent of the volume of DFG approvals.

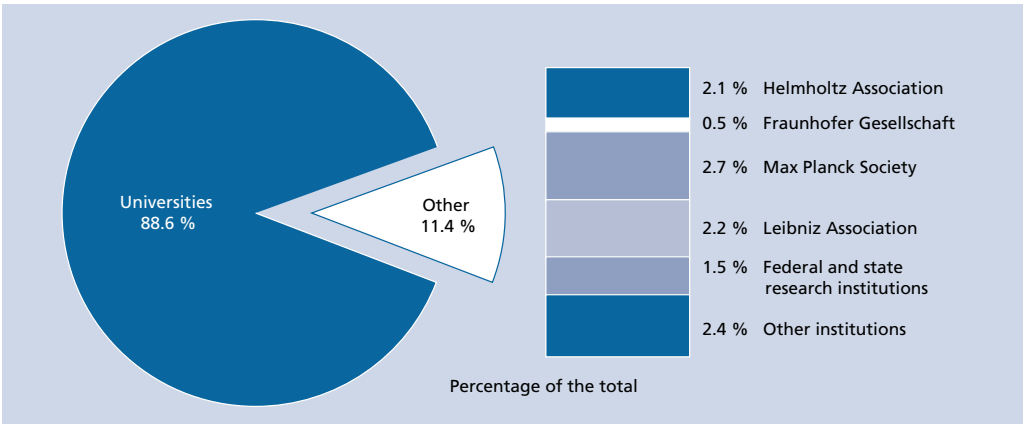
Researchers at non-university research institutions were subject to certain restrictions in terms of their eligibility to apply for DFG funding during the period covered by the report. Only universities are eligible to lead Collaborative Research Centres and Research Training Groups. Otherwise researchers at non-university research institutions are on an even footing with scientists and academics at universities for the DFG's coordinated funding programmes (refer to Chapter 4 for further more details). For the Individual Grants Programme this only applies to researchers at the Max Delbrück Center for Molecular Medicine (Max Delbrück-Centrum, MDC), in Berlin, and Leibniz Association institutes. For all other institutions the general rule applies that for the Individual Grants Programme only proposals from young researchers and those from outside the main scope of the work of the respective institute are accepted.

Taking a look at the assessment according to research areas then the proportions shown in Figure 3-7 result.

A high degree of variation between the research areas can be seen. The proportion of approvals to non-university institutions is above average in particular in "mining and metallurgy" (21 percent), in "geosciences" (17 percent), in "biology" (16 percent), and in "history and fine arts studies" (16 percent). Below-average amounts, conversely, are evident for "psychology, education, philosophy, theology" (6 percent), "mathematics" and "electrical engineering and computer science" (5 percent each).

The result for "history and fine arts studies" can primarily be attributed to the institutions funded by the DFG as "Humanities Research Centres"; large amounts were also granted to the German Archaeological Institute (Deutsches Archäologisches Institut, DAI) in Berlin, for example, with its various departments worldwide. In "geosciences" the Research Center for Marine Geosciences (Forschungszentrum für marine Geowissenschaften, GEOMAR) in Kiel, the GeoForschungszentrum Potsdam (geoscientific research centre), the Alfred Wegener Institute for Polar and Marine Research (Alfred-Wegener-Institut für Polar- und Meeresforschung) in Bremerhaven and Potsdam, as well as the Leibniz Institute of Freshwater Ecology and Inland Fisheries (Institut für Gewässerökologie und Binnenfischerei, IGB) in Berlin submitted a comparatively high number of proposals to the DFG. In "mining and metallurgy" the Leibniz Institute for Solid State and Materials

Figure 3-6:
DFG approvals 1999 to 2001 by type of institution [1] (in percent)



[1] Excluding approvals to institutionally non-affiliated applicants (private individuals etc.) and institutions abroad.

[14] Information on the objectives and membership of the research organisations mentioned is available on the Internet at http://www.helmholtz.de, http://www.fhg.de, http://www.mpg.de and http://www.wgl.de.

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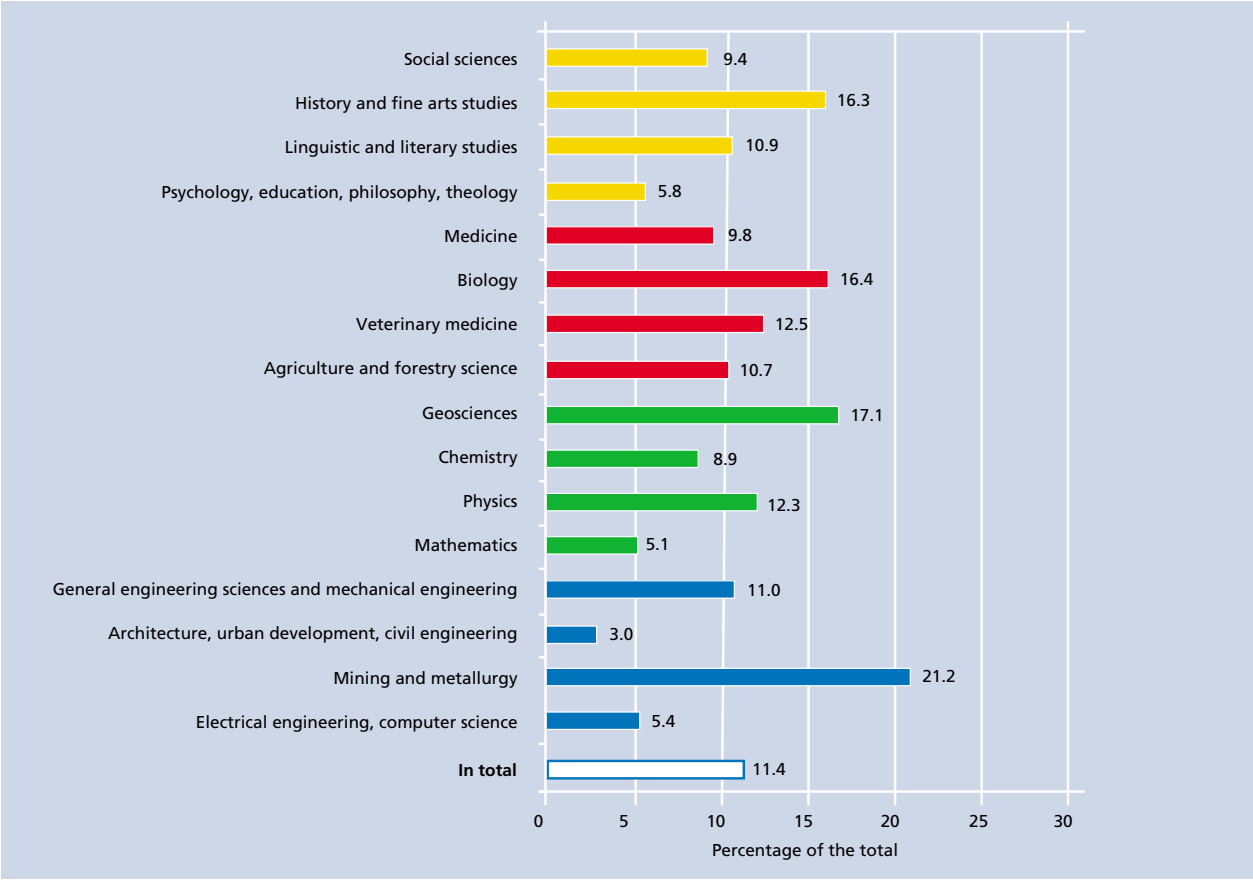
Figure 3-7:
DFG approvals 1999 to 2001 to non-university research institutions[1] by research area (in percent)



[1] Excluding approvals to institutionally non-affiliated applicants (private individuals etc.) and institutions abroad.

Research (Institut für Festkörper- und Werkstofforschung) in Dresden, the Max Planck Institute for Iron Research (Max-Planck-Institut für Eisenforschung) in Düsseldorf, and the German Aerospace Center (Deutsches Zentrum für Luft- und Raumfahrt, DLR), based in Cologne, were amongst the recipients of the highest amounts of approvals granted to non-university institutions.

The highest amount in absolute terms went to non-university research institutions in "biology". Over 16 percent for non-university research institutions here corresponds to a total of almost 92 million euros. A large proportion of this amount is granted to researchers at Max Planck institutes, for instance at the Max Planck Institute for Biophysical Chemistry (Karl Friedrich Bonhoeffer Institute) (MPI für biophysikalische Chemie) in Göttingen, or the Max Planck Institute for Biochemistry (MPI für Biochemie) in Martinsried. The Max Delbrück Center for Molecular Medicine, which is a member of the Helmholtz Association of National Research Centres, attracted a significant amount – approximately 56 percent of the total of a good 11 million euros granted in approvals to this institution went to projects apportioned to biology.

Table 3-9 concludes by showing the proportion received by non-university research institutions per federal state. It is evident that the amount of funds granted in approvals to non-university research institutions in the "new Federal States" (states of the former GDR) is above average. The state of Brandenburg is worth highlighting, where almost half of the funds provided went to researchers elsewhere than at universities. The states of Bremen and Schleswig-Holstein also report high percentages – in part due to the marine research centres based there, which are already mentioned above.

The tables contained in the appendix show the approval volumes for a total of 168 non-university research institutions, differentiated according to scientific discipline (Table A3-20) and programme group (Table A3-21) which received at least half a million euros form the DFG in the period covered by the report.

The table is led by the German Cancer Research Center (Deutsches Krebsforschungszentrum, DKFZ) in Heidelberg (11.9 million

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Table 3-9:
DFG approvals[1] 1999 to 2001 according to university and non-university recipients by federal state (in millions of euros)

Federal state	Total	University		Non-University	
		Mio. €	%	Mio. €	%
Baden-Württemberg	628.2	568.0	90.4	60.2	9.6
Bavaria	544.3	506.2	93.0	38.1	7.0
Berlin	306.9	235.9	76.9	71.0	23.1
Brandenburg	44.3	22.8	51.5	21.5	48.5
Bremen	58.4	44.1	75.5	14.3	24.5
Hamburg	105.1	94.1	89.5	11.0	10.5
Hesse	253.3	236.1	93.2	17.3	6.8
Mecklenburg-Western Pomerania	30.3	25.3	83.7	4.9	16.3
Lower Saxony	292.5	260.8	89.2	31.7	10.8
North Rhine-Westphalia	683.0	638.2	93.4	44.8	6.6
Rhineland-Palatinate	118.0	108.4	91.9	9.5	8.1
Saarland	40.7	38.5	94.6	2.2	5.4
Saxony	181.8	150.5	82.8	31.3	17.2
Saxony-Anhalt	74.9	61.7	82.4	13.2	17.6
Schleswig-Holstein	70.2	49.4	70.4	20.8	29.6
Thuringia	62.9	55.3	88.0	7.6	12.0
Total	**3,494.7**	**3,095.4**	**88.6**	**399.3**	**11.4**
Abroad	27.5				
In total	**3,522.2**				

[1] Excluding approvals to institutionally non-affiliated applicants (private individuals etc.).

euros), the Max Planck Institute for Biochemistry (MPI für Biochemie) in Planegg (11.5 million euros), and the Max Delbrück Center for Molecular Medicine (11.2 million euros) – all three of these institutions are focussed on biomedical research. The same applies to the next institution in terms of DFG volume, the Max Planck Institute for Biophysical Chemistry in Göttingen (9 million euros) and the National Research Center for Environment and Health (GSF) (GSF – Forschungszentrum für Umwelt und Gesundheit) in Oberschleissheim (7.9 million euros). The approvals granted by the DFG to the Research Centre Jülich (Forschungszentrum Jülich, FZJ), ranked between these two (with 8.7 million euros), however, are more-or-less evenly distributed between life sciences, natural sciences and engineering sciences.

3.8 Regional Distribution of DFG Approvals

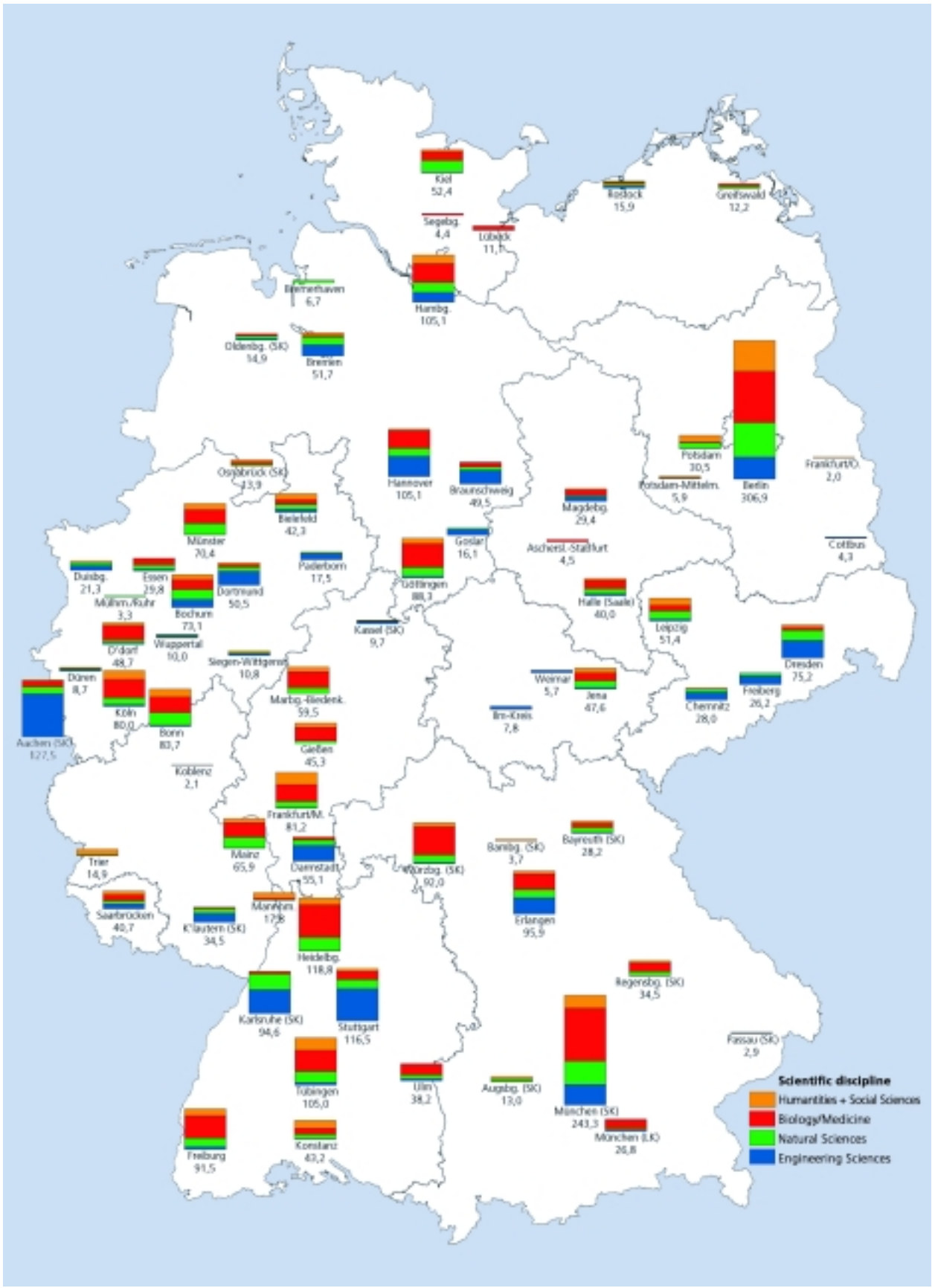
DFG approvals are received by universities and non-university research institutions. As is shown in Table 3-9, presented above, there is significant variation between the federal states in the proportion of DFG approvals received by non-university research institutions. In addition to these differences between the federal states there are, as was shown in Figure 3-7, also differences between the research areas.

Below we will – figuratively – "take a step back". Rather than looking at the provision of funds by the DFG to individual universities and non-university research institutions, we now turn to investigating the question of the extent to which these institutions jointly determine the allocation of approvals for each region. This allows regional focal points to be distinguished. The findings presented for this purpose refer exclusively to DFG approvals. Neither is funding from other third party university funding bodies[15] taken into account, nor the core funds or other third party funds of non-university research institutions. The figures therefore only provide an insight into the "research regions" from a DFG-specific point of view.

Extrapolating from the methodology used in the previous "DFG Ranking", the data was processed in such a way for this ranking that conclusions are drawn not just according to the relatively wide-ranging postcode areas, in other words "regions", which in this case were determined according to the first two digits in the postcode, but rather according to administrative rural and urban districts. To make this possible, a so-called "district code" was assigned to each institution to which DFG approvals were granted. For institutions located at multiple sites (for example the DLR), each site was allocated its own code. Approvals to individuals not affiliated to an institution are not taken into consideration.

[15] Refer also to Figure 3-2 in Chapter 3.3.

Figure 3-8:
DFG approvals to universities and non-university institutions 1999 to 2001 by district [1)] and scientific discipline (in millions of euros)



[1)] Only districts which received more than 2 million euros in DFG approvals in total within the period stated.

SK = urban district

LK = rural district

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The districts defined using this method form the basis for the analysis. The maps are distinguished according to three levels of aggregation in total:

> Figure 3-8 shows the distribution of DFG approvals in total according to four scientific disciplines (districts with an approval volume over two million euros).

> Figures A3-1 to A3-4 in the appendix show the distribution by scientific discipline, each differentiating between four research areas (districts with an approval volume over one million euros).

> Figures A3-5 to A3-20 in the appendix, finally, show the distribution of the amount approved by district and research area (districts with an approval volume over half a million euros), differentiating between universities and non-university research institutions.

This is explained here taking Figure 3-8 as an example. This figure shows approvals to institutions according to a total of 71 rural and urban districts to which at least two million euros in approvals were granted in the period covered by the report. DFG approvals are documented for a total of 150 of 439 districts between 1999 and 2001. The locations of DFG-funded research shown on the map represent over 99 percent of the total amount of DFG approvals granted to research institutions in Germany.

Berlin and Munich stand out immediately as the two strongest "DFG regions". Universities and non-university institutions in Berlin received, as was already shown in Table 3-9, a total of 307 million euros from the DFG over three years (1999 to 2001), 243 million euros went to the urban district of Munich. Including the districts of Potsdam and Potsdam-Mittelmark and the rural district of Munich into consideration in these two regions, these figures increase by 36 million euros for Berlin and by 27 million euros for Munich. A comparison of the subject profile at the high level of aggregation, according to four scientific disciplines, shows that a significantly higher proportion of approvals went to Berlin for DFG projects in the subject spectrum of the humanities and social sciences. The Munich region, especially if the rural districts are included (where a large amount of DFG approvals were granted to the University of the German Armed Forces (University der Bundeswehr), the National Research Center for Environment and Health (Forschungszentrum für Umwelt und Gesundheit) and the Max Planck Institutes for Extraterrestrial Physics, for Quantum Optics, of Neurobiology, and of Biochemistry (Max-Planck-Institute für extraterrestrische Physik, für Quantenoptik, für Neurobiologie und für Biochemie)), however shows a marked emphasis in the area of biology/medicine.

Alongside Berlin and Munich the region of "Aachen – Bonn – Cologne" also stands out as being well funded. Approvals amounting to 291 million euros were granted to universities and non-university institutions in these three districts. The south German regions of "Mannheim – Heidelberg – Karlsruhe" and "Stuttgart – Tübingen" attracted 231 and 221 million euros respectively. The region of Saxony, including the technical universities of Chemnitz, Freiberg and Dresden, were granted a total of 129 million euros in DFG approvals.

Figure 3-8 shows an overview of the regions where DFG approvals were granted, differentiating between the four scientific disciplines. The maps included in the appendix, which break the approval income of districts down according to four scientific disciplines and 16 research areas are far more informative. The subject emphasis of the various regions is particularly evident from these maps.

There is insufficient space here to comment on these maps in full detail. As was already the case in the previous edition of the ranking, we will just touch on examples for selected maps – restricting the analysis to the level of scientific discipline:

> **Humanities and social sciences:** Approvals amounting to at least one million euros over three years were granted in the humanities and social sciences to a total of 57 districts (cf. Figure A3-1). The highest amount went to Berlin (69 million euros), well ahead of Munich (urban district), Tübingen, and Frankfurt am Main, which each received roughly 28 million euros. Including Potsdam, the Berlin region attains a total amount of 83 million euros. Just how strong this concentration is becomes evident when compared to North Rhine-Westphalia, Baden-Wurttemberg and Bavaria, each of the former attracted approvals totalling nearly 100 million euros each in this discipline and Bavaria about 67 million euros. Berlin has not only its large universities to thank for this special place in the humanities and social sciences, but also the Humanities Research Centres (Geisteswissenschaftliche Zentren, GWZ) located in Berlin and funded

by the DFG, as well as, for instance, the German Institute for Economic Research (Deutsches Institut für Wirtschaftsforschung), the Social Science Research Center (Wissenschaftszentrum für Sozialforschung), the Max Planck Institute for Human Development (Max-Planck-Institut für Bildungsforschung), and the German Archaeological Institute (Deutsches Archäologisches Institut), which has its headquarters in Berlin[16].

> **Biology/medicine:** Figure A3-2 shows a total of 55 districts which received approvals for biological and medical research projects. The differentiation according to four research areas shows particularly clearly that, in the majority of regions which received a large amount of approvals of DFG funds, there was a fairly even balance between biological and medical research. This reveals the close relationship between these two research areas. Locations which are particularly strong in terms of approvals are Berlin and Munich, as well as Heidelberg, Würzburg, Göttingen and Hamburg. A concentration on medical research is especially evident in regions which are strongly influenced by medical faculties or medical schools, such as Ulm, Hannover, Aachen and Magdeburg.

> **Natural sciences:** The map shows 60 districts which received DFG approvals in this discipline (cf. Figure A3-3 in the appendix). In addition to the well-known focal points of Berlin and Munich, the natural sciences are particularly well represented in the regions of Karlsruhe, Heidelberg, Bonn and Kiel. The latter district owes its position in the most part to the non-university research institutions GEOMAR - Research Center for Marine Geosciences, as well as the Institute for Marine Research, which, with 8 and 5 million euros respectively, contributed significantly to the income from approvals in this scientific discipline.

> **Engineering sciences:** In this scientific discipline (cf. Figure A3-4 in the appendix), for which approvals in 58 districts are documented, the usual "ranking order" is broken away from, as neither Berlin, nor Munich, but instead Aachen, turns out to be the strongest region in terms of approvals. Here again, this can be explained to a large extent by the non-university institutions located there, which – as is shown in Chapter 4 – are mostly networked to the Technical University of Aachen in a variety of ways. Worth mentioning are the Institute of Plastics Processing (Institut für Kunststoffverarbeitung in Industrie und Handwerk) and the Fraunhofer Institute for Laser Technology (FhI für Lasertechnik), both of which received comparatively large amounts of approvals. Other regions which received substantial amounts of funding are Stuttgart, Karlsruhe, Berlin, Munich and Hannover.

A comparison of the distribution by research area (cf. Figures A3-5 to A3-20 in the appendix), which is particularly revealing for a discussion of the regional emphasis of DFG-funded projects, confirms the findings already mentioned, showing various focal points: Each district has its own particular emphasis, no single district is equally strong in all research areas. Breaking away from the "district" level and looking instead at the slightly wider regions there are also certain patterns that stand out: For instance, the social sciences are especially well represented in the west, while biology has particularly strong research bases in the south. A concentration is evident in central Germany for the comparatively small research area "agriculture and forestry science" as well as at isolated locations in the south, while "chemistry", on the other hand, is particularly influential in the research landscape in the west. The small research area "mining and metallurgy" is traditionally strong in North Rhine-Westphalia and in Saxony, where it is represented in several locations, whereas "electrical engineering and computer science" profits from DFG funds more-or-less evenly nationwide (with focal points in the regions of Saarbrücken – Kaiserslautern, Munich, Karlsruhe, Berlin and Aachen).

In a future edition of this ranking we will endeavour to cooperate with the large research organisations (FhG, HGF, MPG and WGL) to present the regional distribution of research and development resources in a way which reflects both the institutions and their subject emphasis. Initial discussion on this topic has taken place at two meetings so far, with participants from the organisations already listed as well as the AvH, DAAD, HRK, the German Science Council, and the Donors' Association for the Promotion of Sciences and Humanities in Germany.

[16] A general overview of the non-university recipients of approvals granted by the DFG is provided in Table A3-20 in the appendix.

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4. Networked Research in DFG Coordinated Programmes

4.1 Introduction

"Cooperation in networks" is a central metaphor of modern science and research. It stands equally for "developing regional focal points" and "internationality", as it does for "disciplinary accentuation" and "interdisciplinarity". The ideal is not generally embodied by an individual researcher working in isolation, but rather by a research team with a multitude of national and international connections, both in an interdisciplinary framework and within their own discipline. Consequently the concept of "networking" in science and research plays an important role in research funding. Whether it is the EU Framework Programmes, with their objective to make a "contribution to ensuring the ability to innovate through transnational networks", or the German Federal Ministry of Education and Research (Bundesministerium für Bildung und Forschung, BMBF), which is dedicated to the decisive establishment and funding of so-called "centres of competence" and "networks of competence" (for instance for nanotechnology or medical technology) – the support of inter-institutional and multidisciplinary cooperation is seen as an important instrument for the funding of innovative research.

The principle of promoting cooperation in research has been formative since the early days of the DFG. It has therefore been evident from very early on, in programmes offered specifically for this purpose. Starting with the Priority Programme, established in 1953, developed further through the Research Units (introduced in 1962), progressing right through to the Collaborative Research Centres (introduced in 1968) and the Research Training Groups (introduced in 1991), as well as the Centres of Excellence (1994 to 2001), designed especially to meet the needs in the "new Federal States", and the Humanities Research Centres (introduced in 1995), the range of funding opportunities falling under the heading "Coordinated Programmes" has been extended and developed.

The focus of the analyses presented below is the issue of to what extent these coordinated programmes are taken advantage of in the various research areas and in what way they contribute to networking between the researchers involved at different institutions. Initially the general significance attributed to these programmes is outlined. It is then shown, for universities and non-university research institutions, what the take-up rate of these opportunities is. This is followed by analyses of the structures resulting from the joint participation by research institutions in the DFG's coordinated programmes. Here again, this is preceded by a quantifying assessment, for instance by calculating the number of so-called "partner institutions" with which universities and non-university institutes are cooperating within the context of DFG-funded programmes. The numbers determined in this way allow conclusions to be drawn on the centrality of institutions in the "cooperation networks" resulting from these relationships. This is followed by looking at these structures using a network visualisation process. The resulting figures serve primarily to describe the establishment and development of so-called "research clusters", that is to say, groups of universities and non-university research institutions which interact particularly intensively.

Over and above the otherwise typical scope of reporting using comparable representations, where third party funding of publicly funded research is considered purely in financial terms and in terms of key performance indicators for individual institutions, this section also endeavours to draw conclusions on the structural influences resulting from such injections of (DFG) third party funding in

various dimensions of the "research arena" (disciplines, networks between different locations).

4.2 The DFG's Coordinated Programmes

4.2.1 Programme Objectives

Funding cooperation in research is one of the guiding principles of the DFG. Article 1 of the Statutes of the German Research Foundation – which describe the purpose of the association – thus states, in the first sentence:

The Deutsche Forschungsgemeinschaft (DFG, German Research Foundation) serves all branches of science and the humanities by funding research projects and facilitating cooperation amongst researchers (Cf. http://www.dfg.de/en/dfg_profile/structure/statutes/).

The core of this guiding principle was already enshrined in the Research Grant, the first instrument instituted by the "Notgemeinschaft" (legal predecessor of the current organisation) designed for project funding (which in later years went on to form the heart of the so-called "Individual Grants Programme"). Funding for staff was, just as was subsequently the case in all other project funding programmes instituted by the DFG[1)], not granted to the applicant personally. Rather, it serves to employ project staff. So even here, in the DFG's "core business", which to this day continues to define around 40 percent of the funding budget, cooperation – between applicants and project staff – thus constitutes a key organisational factor.

Starting off with these Research Grants and Fellowships which were formative for the programme portfolio in the post-war years (other early elements were grants to cover printing costs and travel expenses), the Priority Programme soon followed, being introduced in 1953. Its objective was defined in the report of activities of the DFG at that time as follows:

It is not the intention to form localised focal points, whilst neglecting other places where research is being carried out, but to establish topical focal points for the most suitable researcher, irrespective of where they are working (DFG 1954: 16).

At that time the idea *to bring together the researchers involved in the individual focal topics for working discussions, in order to invigorate the scientific exchange of ideas between them, prevent duplication and to productively evaluate the research findings (DFG 1954: 16)* was merely an aside.

Nowadays meetings of this kind are a key part of the programme and the transregional cooperation between the scientists and academics participating in a Priority Programme is a particular feature of this funding opportunity.

Whereas the Priority Programme was, from the outset, designed to support cooperation between experts in the respective field of research at different locations, and usually also between disciplines, the programmes for funding Research Units (introduced in 1962), as well as Collaborative Research Centres (introduced in 1968), in particular, were, according to their original design, dedicated primarily to the localised formation of focal points, principally at universities. Deviations from the so-called "location principle" have also become increasingly normal for these programmes over the years. For Research Units, which are designed to run for up to six years as a general rule, the option of establishing multi-centred networks has existed since 1993. Whereas such units were initially a rare exception, by 1998 they had increased to over 30 percent and by 2002 this had risen again to more than 58 percent.

For Collaborative Research Centres the level of cooperation, both with local universities and non-university partners as well as regionally or even – if appropriate to the research topic – with universities abroad, is steadily increasing. In the period covered by this report (1999 to 2001) slightly more than 60 percent of all Collaborative Research Centres reported at least one project section located elsewhere than at the respective host university. Cooperation between different locations is an inherent part of the so-called "Transregional Collaborative Research Centre" programme, a comparatively recent (introduced in mid-2000) variant of the Collaborative Research Centre programme, the structural goal being to "develop the nationwide networking of cross-disciplinary research interests and material resources". Transfer Units, another variant of the Collaborative Research Centre programme introduced in 1996, on the other hand, are primarily designed to support the rapid transfer of research findings for testing in industrial and other application situations without delay through close collabora-

[1)] The "Funding for One's Own Position" proposal option for promoting young researchers introduced in 2001 is an exception to this (cf. http://www.dfg. de/en/research_ funding/promoting_young_researchers/eigene_stelle.html).

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tion with partners from business and industry. Hence the aspect of networking with partners from business and industry is of central (funding) interest.

The Research Training Group programme (introduced in 1990) was originally designed to promote for formation of focal points at universities. With the main aim of promoting a structured doctoral training programme it is intended primarily to contribute towards supporting collaboration between university teachers at an institution; an interdisciplinary orientation was however expressly desired from the outset. Following reforms of this programme recently agreed upon, this aspect of cooperation will be even more in the limelight. The revised version of the proposal guidelines specifically emphasise the aim of the programme "to instigate new modes of cooperation": As well as interdisciplinary cooperation (topical cooperation), the cooperation with partners from beyond the host university, who would otherwise have no suitable framework or incentive for cooperation (for example industry, universities of applied sciences, universities abroad), and cooperation with outstanding local research institutions (for example Collaborative Research Centres, non-university institutes or national cooperation with other universities) are carried out. The programme also makes a special contribution with the "International Research Training Groups" (introduced in 1998), in which German and international universities offer jointly organised doctoral programmes.

Finally, the Humanities Research Centre programme was founded in 1996 on the recommendation of the German Science Council (Wissenschaftsrat). This programme takes into consideration the particular needs in the new federal states in eastern Germany and is intended to promote and develop interdisciplinary, cooperative, project-oriented and internationally oriented research in the cultural sciences. The centres were established for a fixed duration and are supported by either one or more universities. Between 1999 and 2001 six Humanities Research Centres were funded. The programme is restricted to run until 2007 [2].

4.2.2 Participation in Coordinated Programmes by Research Area

The DFG's coordinated programmes are, in principle, open to scientists and academics from all research areas. However, they influence the programme portfolio of the various research areas to a varying extent. As is shown in Figure 4-1, on average 54 percent of all DFG approvals were granted in coordinated programmes. The range is between slightly over a third in "veterinary medicine" (37 percent) and nearly 75 percent in "mathematics". There is no confirmation, however, of the frequently expressed assumption that the coordinated programmes operated by the DFG are primarily under-represented in the research areas belonging to the humanities and social sciences. On the contrary, three of the four research areas more or less match the general average. The only deviation seen is for the subject group "psychology, education, philosophy, theology", which has a proportion of only just over 40 percent.

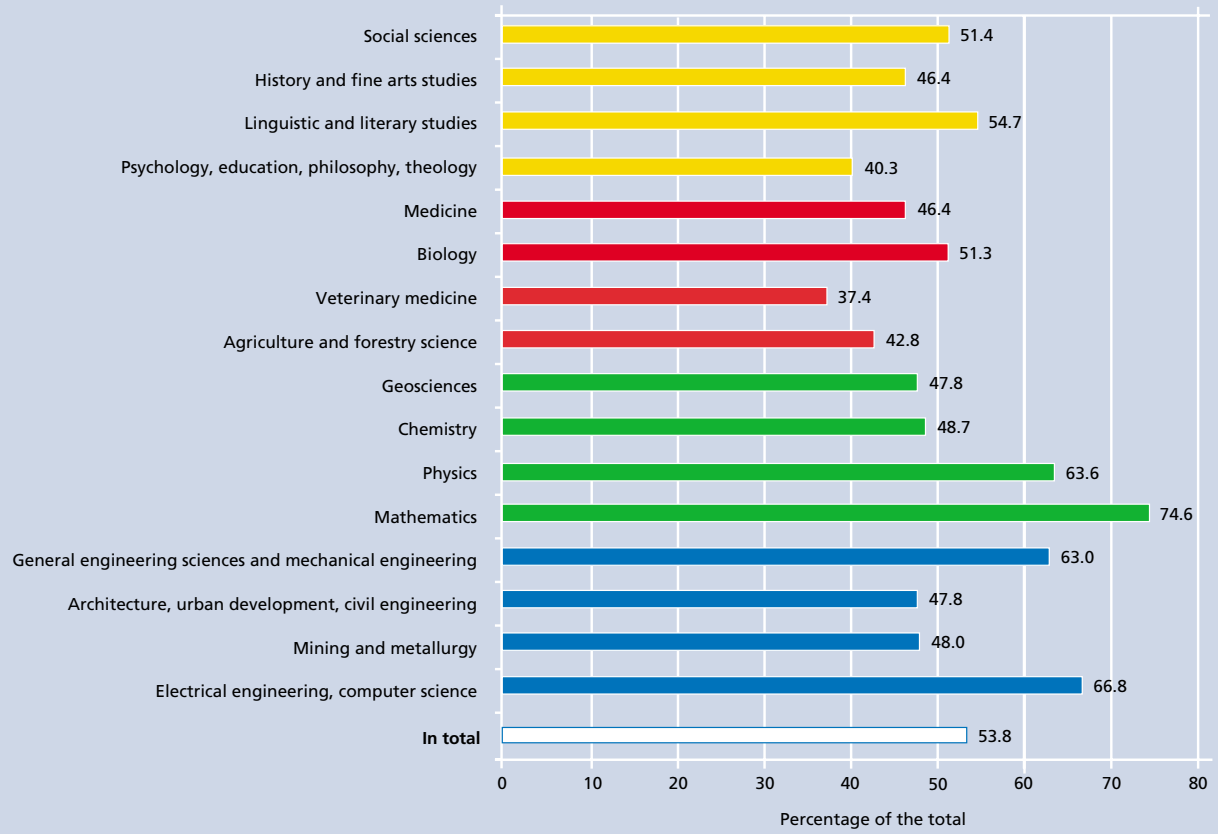
Figure 4-2 supplements this by showing how each of the coordinated programmes contributes to these proportions. On average slightly more than half (53 percent) of all approvals for coordinated programmes are granted to Collaborative Research Centres, Priority Programmes make up about 26 percent, Research Units (including Clinical Research Units) 8 percent and Research Training Groups 12 percent. Humanities Research Centres account for under 1 percent in total [3].

Looking at the individual research areas there are again some very significant discrepancies from this distribution. For instance, the Collaborative Research Centre programme is particularly significant in medical, biological and veterinary medical research, accounting for between 65 and 67 percent of all coordinated research activities, whilst in the subject group incorporating "psychology, education, philosophy, theology" (24 percent) and in the research area "electrical engineering and computer science" (36 percent) it is rarely taken advantage of. In the latter research area, as well as in "mining and metallurgy" and in "geosciences" the Priority Programme is more popular, in order to fund networking between researchers. Researchers in "psychology, education, philosophy, theology", on the other hand, more frequently chose Research Units as their funding opportunity – just as is the case amongst scientists and academics in the areas of "linguistic and literary studies", "agriculture and forestry science" and "architecture, urban development, civil engineering". Finally, significant differences are also particularly evi-

[2] An overview of this is available online at http://www.dfg.de/forschungsfoerderung/koordinierte_programme/geisteswissenschaftliche_zentren/listen/ (available only in German).

[3] Not shown here are the run-out funding approvals granted to Centres of Excellence between 1999 and 2001.

Figure 4-1:
The proportion of DFG approvals constituted by the different coordinated programmes 1999 to 2001 by research area (in percent)



dent for the Research Training Group programme, designed especially to fund cooperation of doctoral students. Whilst this programme – with the exception of "electrical engineering and computer science" – is less significant for the research areas belonging to the engineering sciences and also plays a slightly less important role in the biomedical subjects, in comparison to other coordinated programmes (with the exception of "veterinary medicine" (33 percent), it is particularly popular comparatively speaking in "mathematics" (25 percent) as well as in "social sciences" (24 percent) and in the subject group "psychology, education, philosophy, theology" (26 percent).

Overall this once again goes to show that the funding programmes operated by the DFG are used differently by scientists and academics from different subjects to fund their research projects. In spite of all the differences, however, it is worth noting that the DFG's coordinated programmes influence the programme portfolio to a significant extent in all research areas. The take-up of funding directed towards supporting cooperative structures is thus integral to practically all areas of research.

4.2.3 Participation in Coordinated Programmes by Institution

Whereas the above has shown the differences in take-up of the various funding programmes operated by the DFG for supporting cooperative research between the different subject areas, below an attempt is made to determine whether preferences are also evident according to institutions. In order to do so it is first investigated to what extent institutions were involved in each of the four major types of coordinated programmes: Research Units (including Clinical Research Units), Priority Programmes, Research Training Groups and Collaborative Research Centres (including Transfer Units and Transregional Collaborative Research Centres) during the period covered by the report. These programmes also form the basis for all of the subsequent analy-

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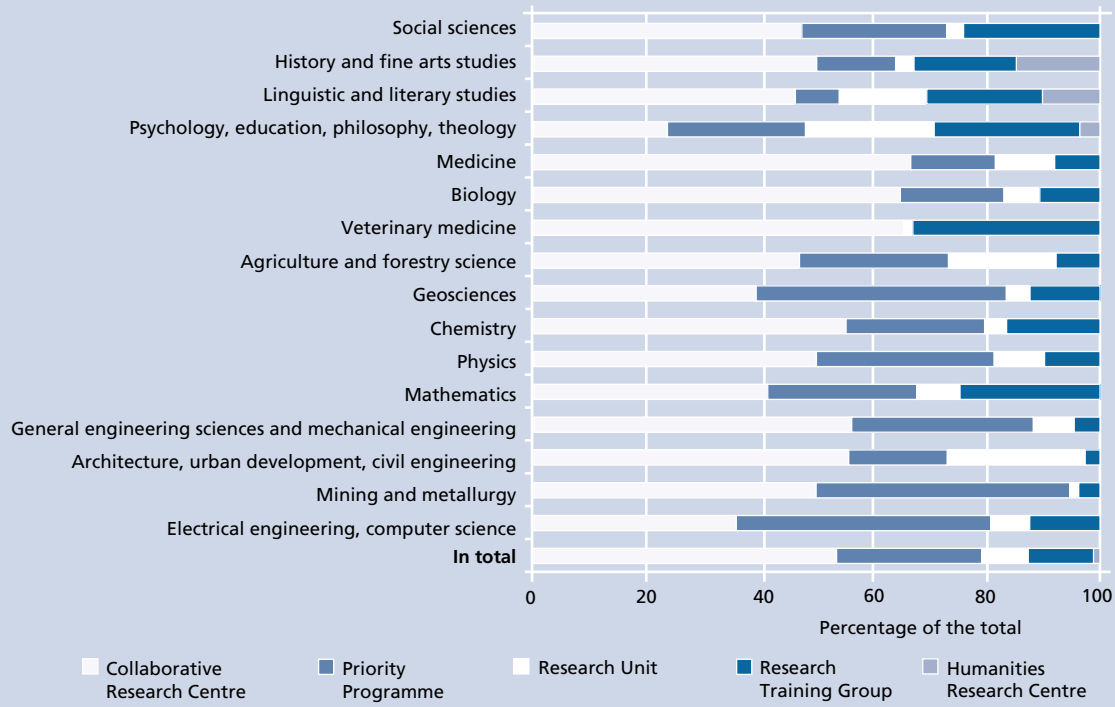
Figure 4-2:
Approvals for coordinated programmes 1999 to 2001 by research area and programme type (in percent)



ses. For this the framework projects (for example "SFB 580") funded as part of the programme types (for example Collaborative Research Centres) are taken as the calculation unit (for simplicity's sake the general terms "programme" or "coordinated programme" will be used below).

Participation by an institution in one of the DFG's coordinated programmes is defined by the fact that an approval for at least one project section based there was granted during the period covered by the report. A similar rule was applied to Research Training Groups, which do not have project sections: In this case institutions count as being jointly involved in a programme if the funds granted for it are shared between them.

Between 1999 and 2001 the DFG funded a total of exactly 1,129 Collaborative Research Centres, Priority Programmes, Research Training Groups and Research Units (cf. Table 4-2). Scientists and academics from 351 institutions (101 universities and 250 non-university research institutions) were involved in these programmes. A total of 4,131 such instances of participation are recorded, so on average each institution is involved in between eleven and twelve DFG coordinated programmes.

Table 4-1 lists the institutions with the highest rates of participation in each programme.

The individual lists display a relatively high level of agreement: Six of the institutions with the highest participation rates in Collaborative Research Centres are also amongst the "top ten" for participation in Priority Programmes, with the two universities in Munich leading both of these lists. There is also good agreement between the lists for participation in the Priority Programmes and Research Units (with six institutions again appearing in both lists), whilst the greatest agreement is between participation in Collaborative Research Centres and Research Units (where eight institutions appear in both lists). The ranking for Research Training Groups, on the other hand, is somewhat different. For this programme there are, after all, four universities (Göttingen, Hamburg, Dresden and Frankfurt am Main) amongst the ten leading institutions which do not appear until further down the ranking for the other programmes. This may be explained not least by the fact that Research Training Groups, due to the particular importance of the doctoral training and study programme, place an additional emphasis on university teaching, and so set a slightly different course than "pure" research funding programmes.

There are precisely three universities which take a leading position for each of the programmes: the University of Munich, the

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Table 4-1:
Institutions with the most instances of participation in DFG coordinated programmes 1999 to 2001 by programme

Collaborative Research Centres		Priority Programmes		Research Units		Research training Groups	
München TU	31	München TU	63	Berlin HU	17	Berlin HU	18
München U	28	München U	62	München U	14	Heidelberg U	18
Berlin HU	23	Aachen TH	60	Berlin FU	11	Tübingen U	18
Aachen TH	19	Karlsruhe U	56	Heidelberg U	10	Göttingen U	17
Berlin FU	19	Darmstadt TU	53	Stuttgart U	10	Hamburg U	16
Heidelberg U	19	Tübingen U	53	Darmstadt TU	9	Bonn U	15
Berlin TU	16	Hannover U	48	Dortmund U	9	München U	13
Stuttgart U	15	Stuttgart U	48	München TU	9	Dresden TU	12
Bonn U	14	Berlin HU	47	Tübingen U	9	Erlangen-Nbg. U	12
MPI f. Biochemie, Planegg	14	Erlangen-Nbg. U	46	Bonn U	8	Frankfurt/Main U	12
Tübingen U	14			Konstanz U	8		
Würzburg U	14			Regensburg U	8		
192 other institutions	565	277 other institutions	1,964	122 other institutions	237	60 other institutions	301

[1] An instance of participation is registered for each case where an institution was granted an approval for at least one project section (or [partial] approval in the case of Research Training Groups) for each programme (see also the comments on Table 4-2).

Humboldt University in Berlin and the University of Tübingen, whereby the universities in Berlin and Munich both even made it into the top three for three of the four programmes. So scientists and academics from these universities evidently enjoy particularly favourable circumstances for cooperation in the DFG's coordinated programmes[4].

4.3 Cooperation in Networks of DFG-funded Coordinated Programmes

The coordinated programmes operated by the DFG serve to establish research networks. As well-founded and simple as this general funding objective is, it is just as difficult, on the other hand, to measure the rate of success: Establishing networks of cooperation is, on the one hand, a pressing task, but equally, it is difficult to grasp hold of its results. Whereas a multitude of measurement techniques have been developed for the equally complex factor "research productivity" in the past (for instance in relation to the number of publications in international journals cf. Chapter 7) the development of indicators in this area is still on the starting blocks. Basic theoretical work on this topic was already done in the late 1960s and early '70s – for example in Diana Crane's "Invisible Colleges – Diffusion of Knowledge in Scientific Communities" (1972) or in Derek de Solla Price's "Little Science, Big Science" (1963). Early empirical studies – mostly based on theoretical models – also originate from this period. We are, nevertheless, still a long way from establishing generally accepted key performance indicators for "networking".

Where conclusions are drawn on the structural effects of the DFG's coordinated programmes below we are thus in new territory in more ways than one: On the one hand, no such overall evaluation of these programmes has ever been carried out before[5], and on the other, the methodology which has been chosen to do so has not been thoroughly tested in the past. The procedures and the findings reached cannot therefore be considered to be final, but rather simply an initial contribution to the discussion.

4.3.1 Comments on the Methodology

The analyses presented below are based on information on joint participation by institutions in coordinated programmes operated by the DFG. This takes into consideration – as already outlined above – Collaborative Research Centres (including Transfer Units and Transregional Collaborative Research Centres), Priority Programmes, Research Units (including Clinical Research Units), and Research Training Groups.

[4] See also Tables A4-1 to A4-5 in the appendix, which differentiate according to programme and scientific discipline (with details on the number of cases in which a university acted as the host institution for Collaborative Research Centres).

[5] But also refer to the model study carried out on the basis of selected individual examples "Interdisziplinäre Forschungskooperation – Erfolgbedingungen der Institution Sonderforschungsbereich" by Grit Laudel (1999).

A common feature of the funding mechanisms described here as coordinated programmes is also the scope of the individual projects, resulting from their structure, which is based upon cooperation between researchers. In contrast to the Individual Grants Programme these usually consist – with the exception of the Research Training Groups – of project sections which are also dealt with (partially) as independent units by the proposal process. Hence cooperation primarily consists of interaction between different locally based project sections in an overreaching programme, for instance a Collaborative Research Centre or a Priority Programme.

Joint participation by multiple institutions in one programme is recorded, according to the definition used for this report, in cases where these institutions have been granted a DFG approval for at least one project section of the respective programme. For Research Training Groups, for which funds are not granted as approvals per project section (or per fellow funded), but rather globally, joint participation is derived from the fact that the financial contribution made by the DFG is granted to several (empirically up to two) institutional approval recipients. This method of operationalisation only reflects the actual cooperation activity in Research Training Groups in an incomplete manner, since cooperation between institutions typically consists of scientists and academics from neighbouring universities and non-university institutions being involved in the supervision of fellows, independently of any financial involvement. According to estimates by the programme managers, approximately one in three Research Training Groups is affected by this type of cooperation between institutions. It was not possible, however, to process the data in a more appropriate way for this ranking. This remains a goal for the future. The figures reported in the table thus only provide information on the data basis of the analyses reported here, but are not representative of the actual participation structure of this programme.

Table 4-2 shows the figures used for each of the various programmes in the analysis. Between 1999 and 2001 the DFG announced approvals for a total of precisely 1,129 coordinated programmes. Information on participation by multiple institutions is available for 43 percent of the cases reported. As expected, this is particularly high in the Priority Programme, where almost 16 institutions are involved in any single programme on average (the highest number being 35 institutions). For Research Units and Collaborative Research Centres, on the other hand, participation by about two institutions is the normal situation.

In total 489 coordinated programmes with participation by at least two institutions form the basis for the analyses presented below. It should be noted that for methodological reasons the representations according to research area do not – as was the case in the previous overviews – refer to the subject area of each individual project funded, but rather the subject classification of each programme funded. So conclusions are drawn, for example, on networking in programmes concentrated on "biology", rather than on the networking between biologists who were involved in a programme classified to the respective research area of the project concerned (for example "chemistry").

Table 4-2:
Data basis for analyses of participation involving multiple institutions[1] in DFG coordinated programmes 1999 to 2001 by programme

Programme	Programmes total	Institutions per programme	of which involving mutiple institutions	
	Number	Average	Number	%
Research Units[2]	162	2.2	93	57.4
Research Training Groups[3]	436	1.04	16	3.7
Collaborative Research Centres[4]	372	2.2	228	61.3
Priority Programmes[5]	159	15.7	152	95.6
In total	**1,129**	**3.7**	**489**	**43.3**

[1] An instance of participation is registered for each case where an institution was granted an approval for at least one project section (or [partial] approval in the case of Research Training Groups) for each programme.

[2] Including Clinical Research Units.

[3] For Research Training Groups this operationalisation leads to significant under-reporting of the cooperative relationships typical for this programme in the form of programme design and group supervision between institutions.

[4] Including Transfer Units.

[5] For seven Priority Programmes run-out funding was granted to the central project during the period covered by this report.

4.3.2 Centrality in Networks

Above it has already been emphasised that the participation in coordinated programmes operated by the DFG varies greatly both from institution to institution and also – as shown in Figure 4-2 – from research area to research area. These differences are also reflected in the networks which arise from this varying participation.

Participation between multiple institutions in the DFG's coordinated programmes is documented for 351 universities and non-university institutes in total. On average the participants from any one institution came into contact with researchers from a total of 46 other institutions (in the programme overall). There is a high degree of variance, however: Alongside precisely 61 institutions (19 percent) with up to 10 institutional cooperation partners, there were, conversely, not an insignificant number of institutions with 100 or more partners (15 percent) (cf. Figure 4-3).

Table 4-3 shows the figures differentiated according to research area. Coordinated programmes involving multiple institutions is of notably above-average importance in research areas belonging to the engineering sciences as well as in "biology" and in "medicine". The number of institutions involved in the programmes in any given research area is of course heavily dependent on the size of the respective research area and consequently the number of potential partner institutions.

High numbers are reported for the research area "general engineering sciences and mechanical engineering". Between 1999 and 2001 a total of 126 universities and non-university research institutes were involved in coordinated programmes, of which each was "networked" with an average of 35 other institutions across the board. The four research areas which together comprise the "humanities and social sciences" are in the same order of magnitude, where 121 universities and non-university research institutes were involved in 72 programmes spanning multiple institutions with an average of 31 institutional partners being made contact with.

Looking finally at the list of institutions with the highest number of contacts to other institutions involved in DFG-funded coordinated programmes, listed in Table 4-4, we find a familiar picture: The list is led by the Technical University of Munich, already identified above (cf. Table 4-1) as the institution with the highest degree of participation. The DFG programmes provided scientists and academics working there with opportunities for cooperation with colleagues from no less than 212 other institutions between 1999 and 2001. The Technical University of Munich is followed by the Technical University of Aachen (202), the University of Munich (195), the University of Tübingen (188) and the University of Hamburg (187).

In the humanities and social sciences the Humboldt University in Berlin proves to be particularly well networked (with 97 partner institutions), followed by the University of Munich (88), as well as the universities of Heidelberg, Tübingen and Bielefeld (82, 79 and 71 institutions respectively). In "biology/medicine" the scientists and academics at the University of Freiburg had the best devel-

Figure 4-3:
Number of institutional cooperation partners contacted in DFG coordinated programmes per institution (in percent)

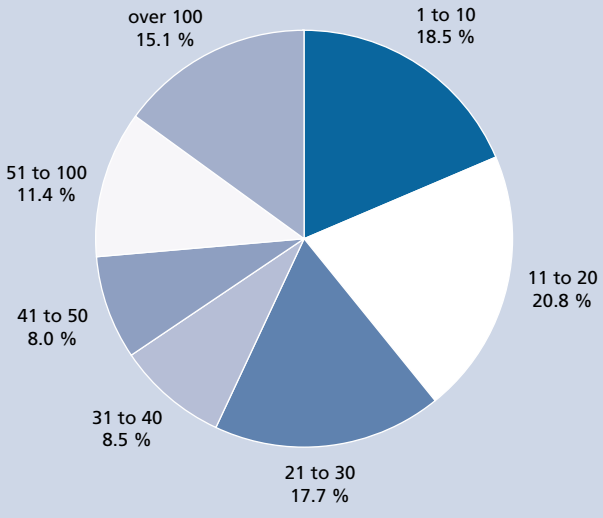

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Table 4-3:
DFG coordinated programmes spanning multiple institutions 1999 to 2001 and number of institutions involved per research area

Research area	Programmes	of which involving multiple institutions			
	total	Number of programmes	% of total	Number of institutions involved	Average number of partners per institution
Social sciences	60	21	35.0	84	24.5
History and fine arts studies	53	15	28.3	51	18.7
Linguistic and literary studies	66	19	28.8	38	7.4
Psychology, education, philosophy, theology	52	17	32.7	61	20.7
Humanities and Social Sciences	**231**	**72**	**31.2**	**121**	**30.6**
Medicine	165	81	49.1	104	22.4
Biology	158	79	50.0	113	26.7
Veterinary medicine	5	1	20.0	2	1.0
Agriculture and forestry science	26	7	26.9	39	19.7
Biology/Medicine	**354**	**168**	**47.5**	**143**	**33.4**
Geosciences	46	20	43.5	82	36.5
Chemistry	87	33	37.9	94	34.7
Physics	120	54	45.0	102	34.9
Mathematics	52	15	28.8	66	27.1
Natural Sciences	**305**	**122**	**40.0**	**166**	**46.0**
General engineering sciences and mechanical engineering	150	88	58.7	126	34.7
Architecture, urban development, civil engineering	14	7	50.0	22	8.1
Mining and metallurgy	5	2	40.0	22	19.9
Electrical engineering, computer science	70	30	42.9	98	27.3
Engineering Sciences	**239**	**127**	**53.1**	**169**	**37.6**
In total	**1,129**	**489**	**43.3**	**351**	**45.7**

Based on the following coordinated programmes: Research Units (including Clinical Research Units), Research Training Groups, Collaborative Research Centres (including Transfer Units) and Priority Programmes.

oped network structure (99 partner institutions), here again followed by the University of Munich (95), the University of Hamburg (92) as well as the universities of Heidelberg (89) and Göttingen (86). The University of Hamburg leads the table for the "natural sciences" (with 128 partner institutions), and here the University of Munich once again takes second position for the number of partners (121). It is followed here by Karlsruhe (117), Freiburg and the Technical University of Munich (each with 112). In the "engineering sciences", finally, the Technical University of Aachen and the Technical University of Munich are in joint first place (each with 126 partner institutions), followed closely by Stuttgart (121), Karlsruhe (120) and Darmstadt (118)[6].

4.3.3 Visualisation of the Core Structures of the Cooperation Networks in Coordinated Programmes

While the figures reported have already provided an impression of the differences in the "centrality" of individual institutions in the networks of DFG-funded coordinated research in quantitative terms, below we will endeavour to look more closely into this topic from a qualitative point of view using network visualisation techniques. Using visualisation techniques it is possible to display the structures which have arisen from the various cooperation contacts in a graphical form. This allows conclusions to be drawn which go beyond the hierarchical form typical of a "ranking". Rather, information is also generated which gives an insight into the formation and make-up of so-called "research clusters". In this case this term is taken to mean smaller or larger groups of institutions which – via the DFG's coordinated funding programmes – are involved in particularly intensive cooperative contact. Not only is the type and structure of the cooperation between universities of interest here. The question whether and to what extent they succeed in incorporating non-university research institutions in joint cooperation networks can also be dealt with in this way.

The visualisation of network data is a comparatively new field of research. Current examples of its application are to be found

[6] Tables A4-6 to A4-9 in the appendix provide an overview according to the 16 research areas.

Table 4-4:
Institutions with the highest number of partner institutions in DFG coordinated programmes 1999 to 2001 by scientific discipline

Total		Humanities and Social Sciences		Biology/Medicine		Natural Sciences		Engineering Sciences	
Institution	n	Institution	n	Institution	n	Institution	n	Institution	n
München TU	212	Berlin HU	97	Freiburg U	99	Hamburg U	128	Aachen TH	126
Aachen TH	202	München U	88	München U	95	München U	121	München TU	126
München U	195	Heidelberg U	82	Hamburg U	92	Karlsruhe U	117	Stuttgart U	121
Tübingen U	188	Tübingen U	79	Heidelberg U	89	Freiburg U	112	Karlsruhe U	120
Hamburg U	187	Bielefeld U	71	Göttingen U	86	München TU	112	Darmstadt TU	118
Freiburg U	185	Berlin FU	69	Köln U	84	Bonn U	110	Dortmund U	116
Karlsruhe U	185	Dortmund U	69	Würzburg U	84	Aachen TH	109	Berlin TU	113
Bochum U	184	Frankfurt/M. U	69	Berlin HU	83	Kiel U	108	Bremen U	111
Darmstadt TU	184	Potsdam U	67	München TU	82	Berlin FU	106	Braunschweig TU	102
Heidelberg U	184	Köln U	64	Tübingen U	82	Heidelberg U	106	Erlangen-Nbg. U	101
Berlin HU	175	Konstanz U	63	Marburg U	81	Hannover U	104	Kaiserslautern U	98
Berlin TU	172	Bremen U	62	Bochum U	79	Göttingen U	103	Dresden TU	94
Stuttgart U	172	Duisburg U	62	Berlin FU	77	Berlin TU	102	Magdeburg U	92
Bremen U	171	Bochum U	61	Bonn U	74	Bochum U	102	Saarbrücken U	90
Erlangen U	171	Münster U	61	Münster U	73	Chemnitz TU	102	Paderborn U	88
Berlin FU	169	Marburg U	60	Düsseldorf U	70	Frankfurt/M. U	101	Hannover U	86
Hannover U	169	Magdeburg U	58	Aachen TH	66	Jena U	101	Freiberg TU	83
Bonn U	167	Darmstadt TU	57	Bayreuth U	66	Münster U	100	Hamburg-Harb. TU	83
Dortmund U	165	Trier U	57	Frankfurt/M. U	66	Darmstadt U	98	Chemnitz TU	82
Würzburg U	165	Bonn U	55	MDC[1]	66	Mainz U	98	Bochum U	81
						Tübingen U	98		
Basis[2]:									
FOR:	93	FOR:	21	FOR:	31	FOR:	19	FOR:	22
GRK:	16	GRK:	12	GRK:	2	GRK:	2	GRK:	
SFB:	228	SFB:	19	SFB:	99	SFB:	55	SFB:	55
SPP:	152	SPP:	20	SPP:	36	SPP:	46	SPP:	50
In total	**489**	**In total**	**72**	**In total**	**168**	**In total**	**122**	**In total**	**127**

[1] Max Delbrück Center for Molecular Medicine, Berlin.

[2] This calculation is based on joint participation in the total number of coordinated programmes stated (FOR = Research Units [including Clinical Research Units], GRK = Research Training Groups, SFB = Collaborative Research Centres [including Transfer Units and Transregional Collaborative Research Centres], SPP = Priority Programmes) (cf. Table 4-2).

primarily in anthropology (e.g. Schweizer 1998), but also in economic sociology (Krempel/ Plümper 1999) and last but not least in science studies (cf. Raan 1994[7], Melin 2000, Güdler 2003). The following network analytical representations were developed by Lothar Krempel of the Max Planck Institute for the Study of Societies, Cologne, Germany. The software used for this purpose (NETVIS) was developed by this institute[8]. One of the basic functions of NETVIS is to display structures according to the balance of power between the various entities within a network. In the case of the data used here for instance, institutions which interact most frequently are placed physically close to each other. The algorithm on which the calculation is based is also designed in such a way, that entities which are particularly central to the overall structure of a network tend to be positioned near the centre of a graphic, whereas less central entities are placed on the periphery. This results in an intuitively easy to understand layout of the entities across the area of the diagram in spite of the multi-dimensionality which is unique to the networks.

> Central entities are positioned centrally, peripheral entities at the edge.

> Entities which interact frequently are positioned close to one another, entities with little or no contact to each other are correspondingly placed far apart from each other.

> A line between two nodes stands for a relationship, the thickness of the line corresponds to the intensity of that relationship.

> The diameter of a circle corresponds to the number of contacts by an entity, that means that large circles signify many contacts, while small circles stand for few contacts.

[7] Current studies in the field of so-called "bibliometric mapping" are available from the homepage of the Centre for Science and Technology (CWTS), Leiden, the Netherlands, run by Anthony van Raan (at http://www.cwts.nl/ed/ projects/home.html)

[8] Further information is available from http://www.mpi-fgkoeln. mpg.de/~lk/

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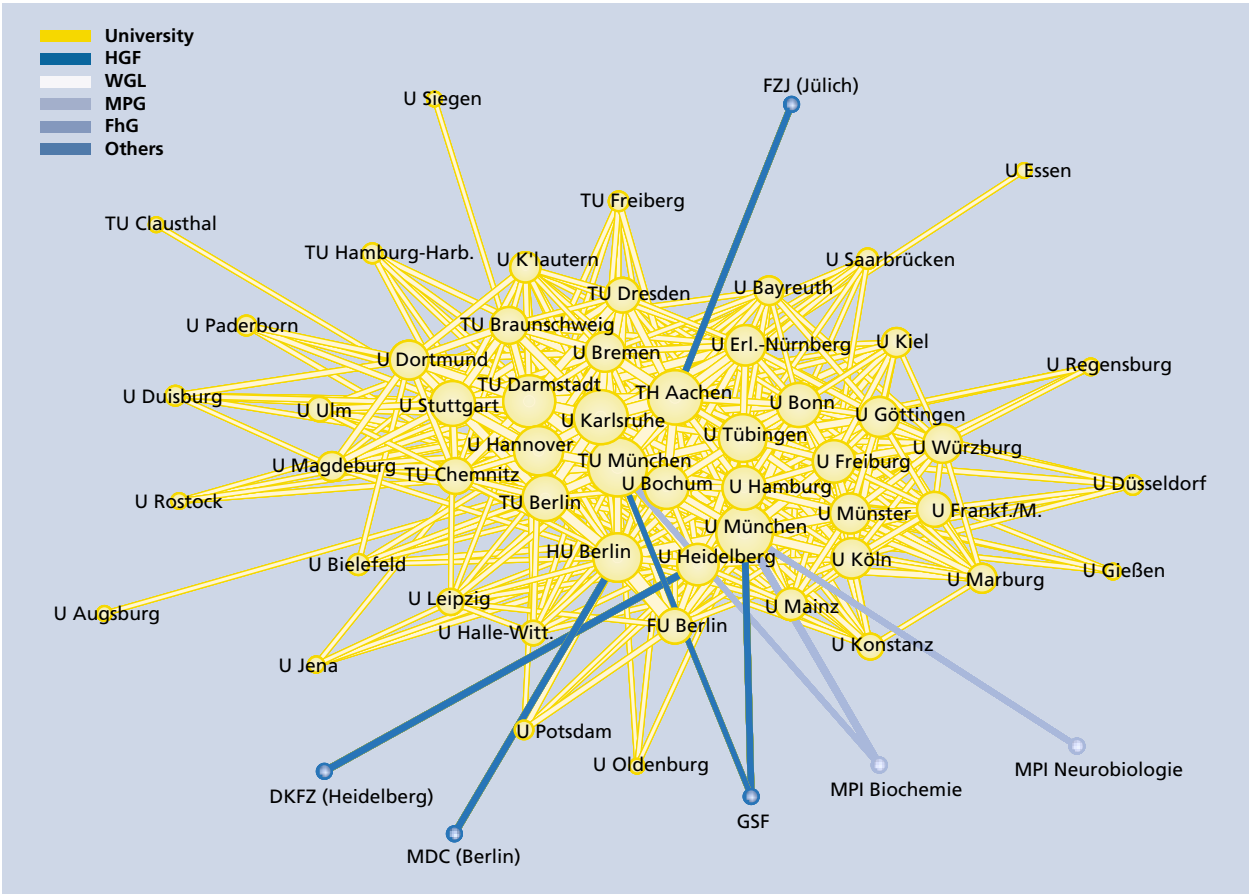
Let us look, first of all, at the centre of the complete network shown in Figure 4-4. This network is based on data on the participation by all institutions involved in all coordinated programmes operated by the DFG (n=351), irrespective of the subject orientation of these programmes. In order to maintain the legibility of the structure of this network, the representation is restricted to relationships between institutions which were involved in at least ten coordinated programmes during the period covered by the report. The core network identified in this manner covers 54 universities and 6 non-university research institutes.

The Technical University of Munich and the Technical University of Aachen both located in the centre, are also leaders in terms of their total third party funding income from the DFG. The universities closest to these, the University of Karlsruhe and the University of Bochum, demonstrate, however, that centrality in cooperation relationships between universities is not a purely quantitative effect. Although both of these were amongst the top 20 institutions in the ranking according to DFG approvals in total, neither this overview, nor the data reported on so far in connection with cooperation relationships would suggest such a central position for either of these two universities. The visualisation process results in significant advantages for interpretation purposes. Overall it can be concluded that the position of the Technical University of Aachen, the University of Karlsruhe and the Technical University of Munich are not least due to the strong influence exerted by the natural and engineering sciences. Cooperation within networks, as is also shown by the following figures, is particularly characteristic for these scientific disciplines. Slightly further out, surrounding this central hub, are the universities of Tübingen, Hamburg, Munich, Heidelberg, Berlin (Humboldt University and Technical University), Hannover, Darmstadt and Bremen. Taking a look at the periphery, the selective inclusion of non-university research sites is especially noticeable. This is primarily based on local proximity. The Max Planck Institutes of Biochemistry and of Neurobiology (both in Planegg near Munich), and the GSF Research Center maintain contacts primarily with the universities in Munich, and the

Figure 4-4:
Core network of institutions involved in the coordinated DFG programmes 1999 to 2001: In total



Research Centre Jülich (FZJ), the German Cancer Research Center (DKFZ) and the Max-Delbrück Center (MDC) are each closely linked to their neighbouring universities either in Aachen, Heidelberg or Berlin.

Thus this figure gives an initial impression of the overall effect of the DFG's coordinated programmes in promoting structure formation. This impression is strengthened when the core networks for the four scientific disciplines shown in figures 4-5 to 4-8 are considered in detail:

> **Humanities and social sciences:** Figure 4-5 shows the relationships between institutions which were jointly involved in at least three coordinated programmes apportioned to this scientific discipline. The core structure which emerges on the basis of this incorporates a total of 47 institutions. But for two exceptions (the Centre for European Economic Research (Zentrum für Europäische Wirtschaftsforschung, ZEW) in Mannheim and the Max Planck Institute of Cognitive Neuroscience (Max-Planck-Institut für neuropsychologische Forschung) in Leipzig) these are all universities.

Clearly at the centre of this core structure is the Humboldt University in Berlin. Within the ten years following German reunification this traditional university has evidently succeeded in assuming a clearly influential position in the network of humanities and social science research institutions. Scientists and academics at the Humboldt University take advantage of the coordinated programmes operated by the DFG in the humanities and social sciences for cooperation contacts to 97 other research institutions. As can be seen from the graph, these contacts are particularly intensive to scientists and academics belonging to neighbouring universities, such as the Free University in Berlin and the University of Potsdam. However, other universities which are well represented in the humanities and social sciences, such as the universities of Heidelberg, Tübingen, Frankfurt am Main and Münster as well as Bielefeld and Munich, are amongst the preferred cooperation partners.

The University of Munich, mentioned last, also assumes a central position; scientists and academics there are most actively involved in connections to Münster, Tübingen and Heidelberg, although links to local and regional universities (for example the Technical University of Munich and the University of Würzburg) have also been established.

Regional formation of clusters can be seen, as has already been suggested, for instance for the region around Berlin (Free University in Berlin – Humboldt University in Berlin – University of Potsdam) as well as for the Leipzig – Halle – Jena region. The last two universities mentioned, for instance, support Collaborative Research Centre 580 ("Social Developments after Structural Change – Discontinuity, Tradition, Structural Formation" ("Gesellschaftliche Entwicklungen nach dem Systemumbruch – Diskontinuität, Tradition und Strukturbildung")), which is apportioned to the research area of "social sciences", in which primarily sociologists, historians and political scientists, as well as legal philosophers and educational scientists are involved and which was established in 2001. The universities of Halle-Wittenberg and Leipzig jointly operate Collaborative Research Centre 586 ("Difference and Integration. Interaction between nomadic and settled forms of life in the civilisations of the Old World" ("Differenz und Integration – Wechselwirkungen zwischen nomadischen und sesshaften Lebensformen in Zivilisationen der Alten Welt")) classified under "history and fine arts studies" and involving geographers, historians, ethnologists, oriental scientists, egyptologists and archaeologists, also established in 2001. Similarly close relationships are also to be found, finally, between Frankfurt am Main and Göttingen, Bielefeld and Osnabrück, Bonn and Cologne as well as between Cologne and Düsseldorf.

> **Biology/medicine:** A different picture results for the discipline of biology/medicine. The relationship network here is (as is also the case for the natural and engineering sciences described below) incomparably more tight-knit than in the humanities and social sciences. Far more coordinated programmes and consequently a higher participation rate and frequency of interaction exhibit their effect (cf. Figure 4-6).

For the sake of increased clarity this and the following figures only show relationships between institutions which were cooperating in DFG coordinated programmes in at least five instances (for the humanities and social sciences a threshold value of three was specified).

A key characteristic of the core structure in the life sciences is the comparatively strong involvement by non-university research institutes. Biologists and medics evidently have a far better infrastructure at

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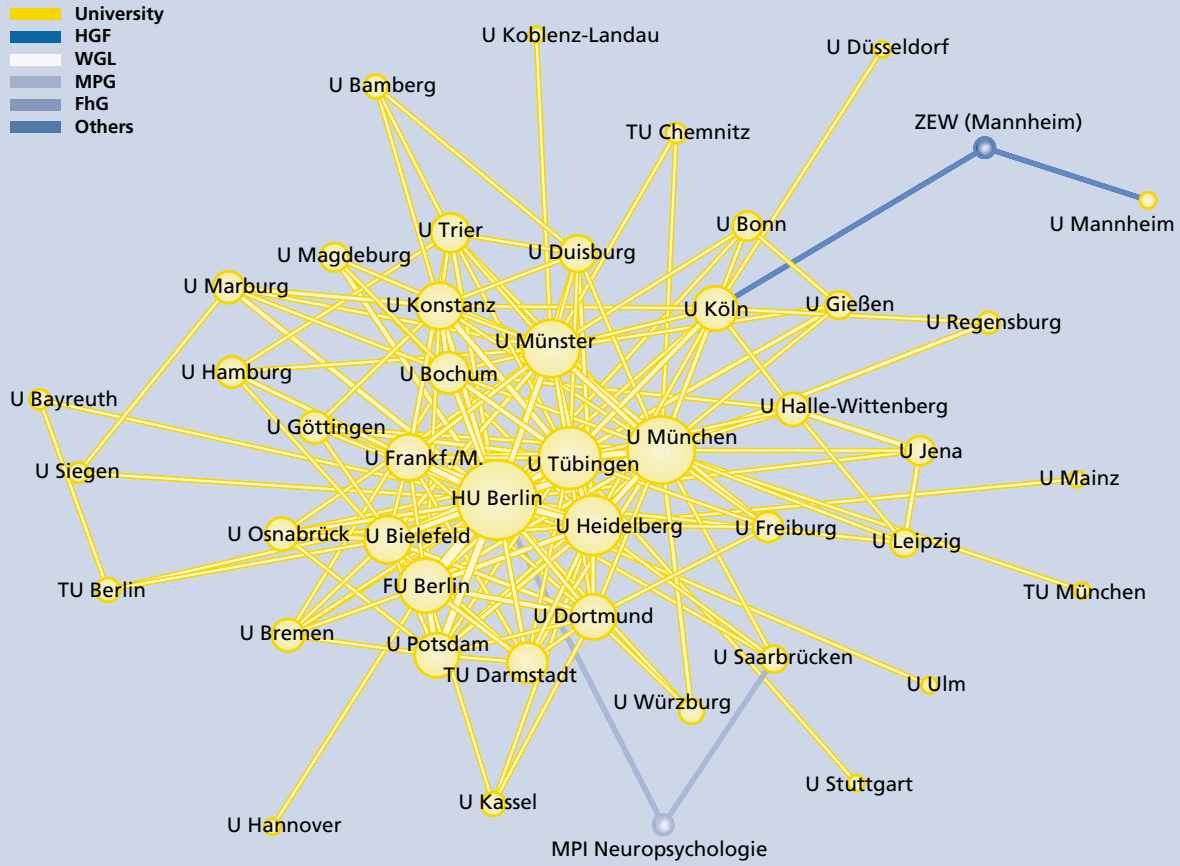
Figure 4-5:
Core network of institutions involved in the coordinated DFG programmes 1999 to 2001: Humanities and Social Sciences



their disposal than researchers in the humanities and social sciences, or they succeed in integrating appropriate partners in jointly operated programmes far more often. In particular, researchers from the MDC in Berlin are especially well integrated, having established links to local partners at the Free University and the Humboldt University in Berlin as well as the WGL institute "Forschungsinstitut für Molekulare Pharmakologie (FMP)" (research institute for molecular pharmacology) in Berlin, which is also networked with both of these universities. There is also intense contact with scientists and academics at the universities in Tübingen, Göttingen, Bonn, Würzburg, Cologne, Münster and Düsseldorf, however. Another national research centre, the National Research Center for Environment and Health (GSF), based in Oberschleissheim, cooperates primarily on a regional basis with scientists and academics at the universities in Munich, but also maintains links to the Max Planck Institute of Biochemistry, located nearby in Planegg. The DKFZ in Heidelberg, on the other hand, has close ties to the University of Heidelberg, although it also cooperates closely with the University of Würzburg and the European Molecular Biology Laboratory (Europäisches Laboratorium für Molekularbiologie, EMBL), also located in Heidelberg. The large number of Max Planck Institutes, which complete the spectrum of non-university participation in this discipline, also stand out.

The network of cooperation relationships in biomedical coordinated programmes operated by the DFG is clearly dominated by the University of Munich. Scientists and academics at this university have cooperation links with an especially large number of other universities and non-university institutions – whereby here again regional alliances are typical. More cooperation than average is also reported with the Technical University of Munich and various

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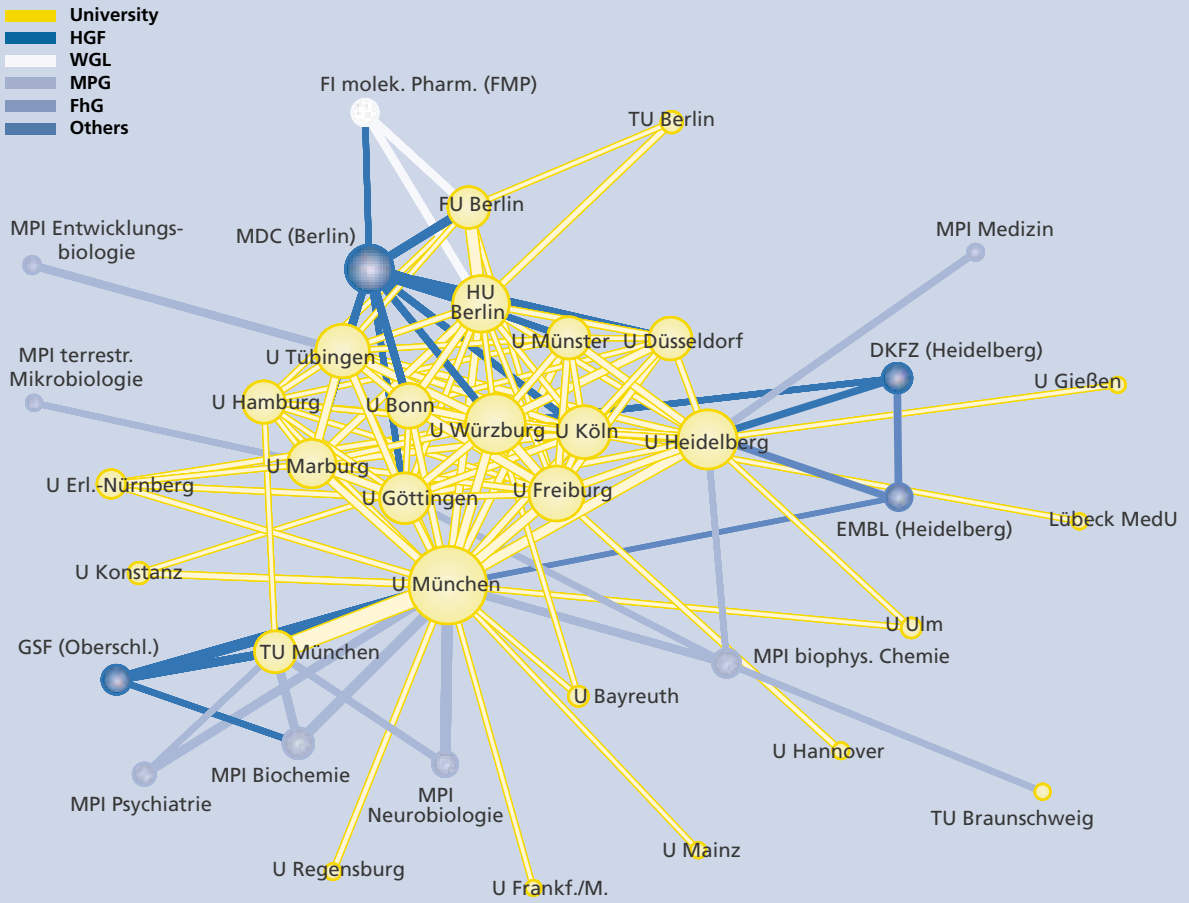
Figure 4-6:
Core network of institutions involved in the coordinated DFG programmes 1999 to 2001: Biology/Medicine



nearby Max Planck Institutes (the MPI for Psychiatry, Munich, the MPI of Biochemistry and MPI of Neurobiology, both in Planegg, as well as – slightly further away – the MPI for Biophysical Chemistry in Göttingen), as well as with scientists and academics at the universities of Konstanz, Regensburg, Bayreuth, Würzburg and Ulm and at the University of Erlangen-Nürnberg.

A central position in this core network is also assumed by the University of Würzburg. Scientists and academics working there also cooperate with a large number of partners from various other institutions, in particular with the universities of Heidelberg, Freiburg and Munich, Tübingen, Düsseldorf, Bonn, Göttingen, and finally Münster.

> **Natural sciences:** Whilst the biomedical network, in spite of all its complexity, can still claim a certain degree of clarity at its core, this is no longer the case for the core network structure for the natural sciences. Using the same threshold value as for the discipline of biology/medicine – again relationships are displayed between institutions with at least five joint instances of participation in programmes (in this case between 50 universities and 7 non-university institutes) – the core of this network is a tangled bundle of relationships that can barely be undone – a clear indication of the high degree to which cooperation between different institutions is simply a matter of course in this scientific discipline (cf. Figure 4-7)[9]. As was already seen for biology/medicine, relatively active participation by non-

[9] This can, not least, be put down to the heterogeneity of the contributory research areas (chemistry, physics, mathematics and geosciences). On this point see also the detailed views published on the Internet (at http://www.dfg.de/en/ranking/networks/index.html).

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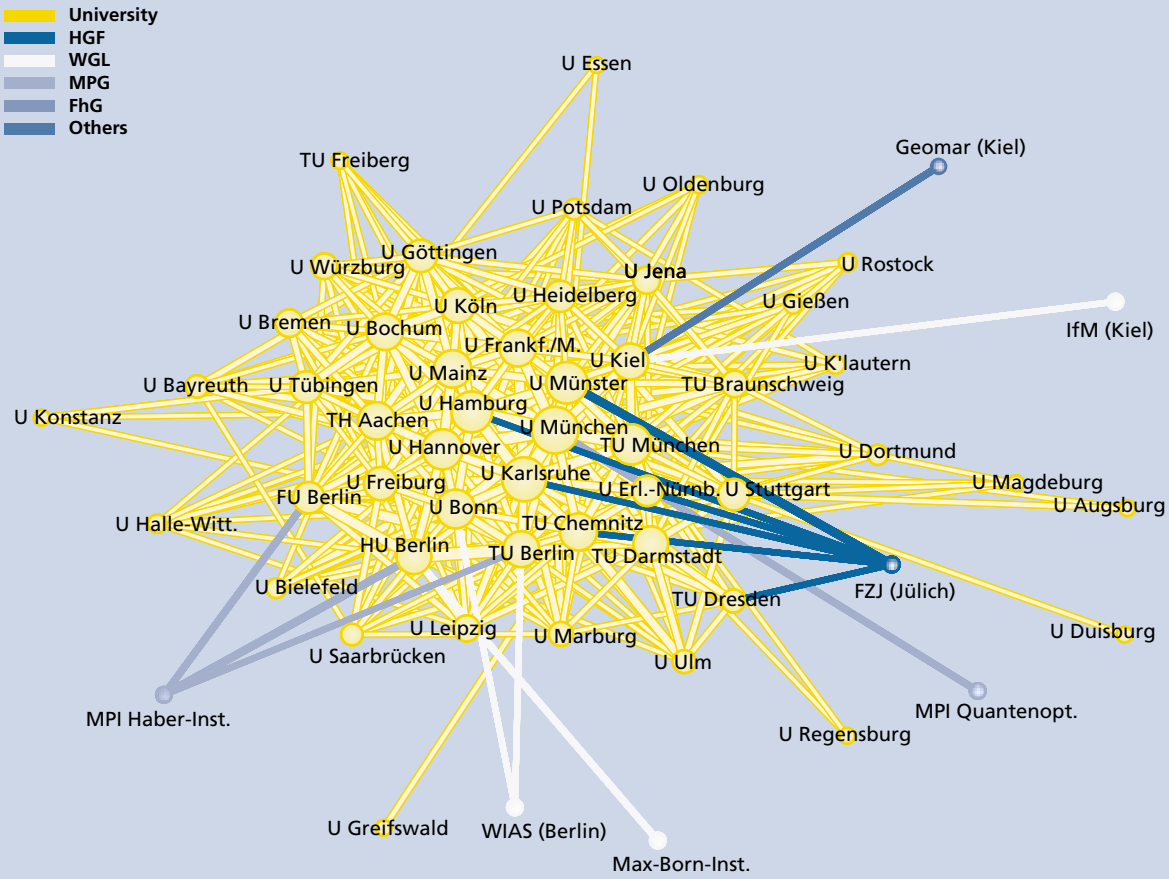
Figure 4-7:
Core network of institutions involved in the coordinated DFG programmes 1999 to 2001: Natural Sciences



university research institutions can be noted straight away – albeit somewhat less intensive than was found in the life sciences. Integrated in a large variety of ways is the Research Centre in Jülich, which, as a member of the Helmholtz Association of National Research Centres, has intensive links to scientists and academics at the University of Münster (8 joint programmes) as well as at the universities of Chemnitz, Dresden, Erlangen-Nürnberg, Hamburg and Karlsruhe (5 programmes each). The comparatively small University of Kiel – for 2000 the Federal Statistical Office reported just over 400 professors (of which 62 were natural scientists) – takes advantage of its contacts in research in the natural sciences to institutions located close to the university (in the form of "an-institutes"), the "Research Center for Marine Geosciences (GEOMAR)" as well as the long-standing link to the WGL "Institute of Marine Research (IfM)" in Kiel[10], to further sharpen its well developed profile in the natural sciences[11].

Turning the attention now to the universities in the network, then the core of this structure is dominated by the universities of Munich, Karlsruhe and Hamburg. There are intensive connections here between both of the universities in Munich (15 joint programmes), and scientists and academics at the Technical University of Munich also maintain a large number of links to their colleagues at the University of Karlsruhe (13 programmes) as well as the universities of Chemnitz, Bochum and Erlangen-Nürnberg (10 programmes each), which also take central positions. Scientists

[10] These two institutes have announced that they are to merge as of 1 January 2004.
[11] As is shown in Table A3-18 in the appendix, the University of Kiel is amongst the top 20 universities in Germany in terms of approvals per capita granted by the DFG in the natural sciences.

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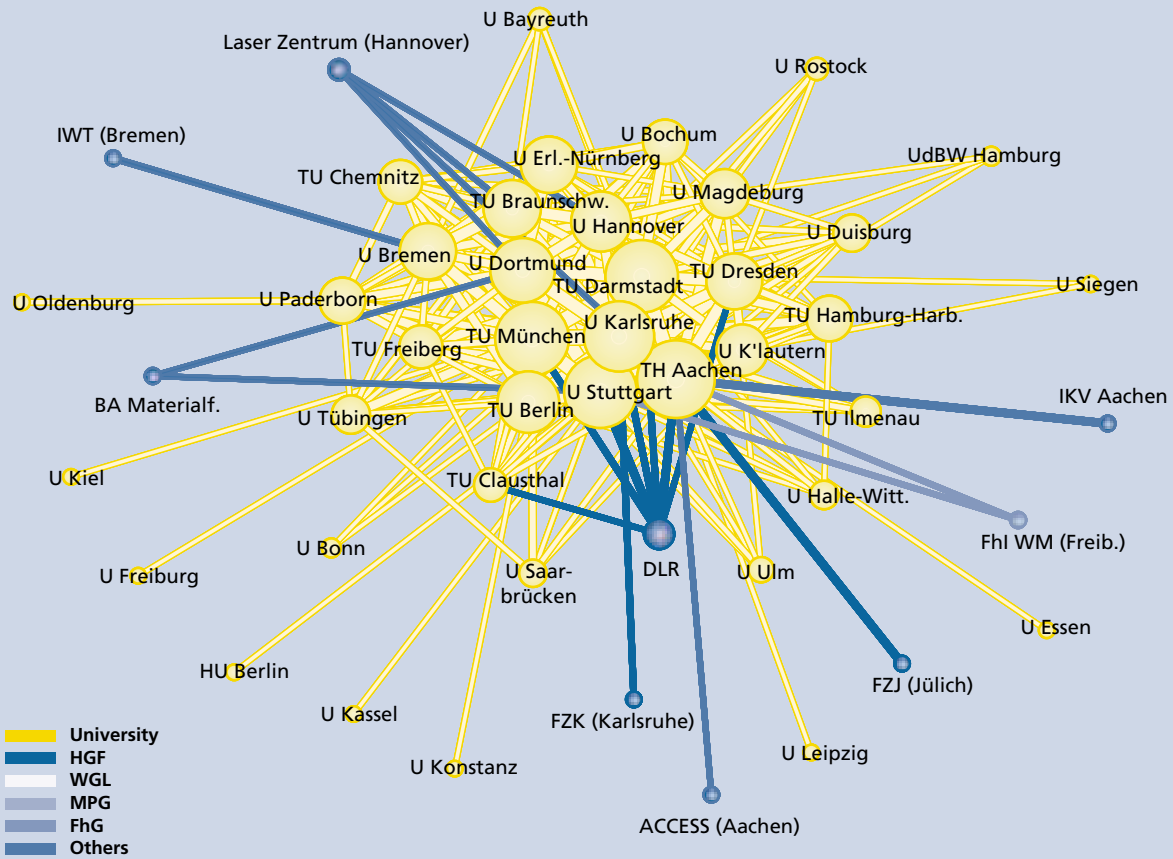
and academics at the University of Munich also place great importance on cooperation with the University of Karlsruhe (17 joint programmes), although the universities of Hamburg and Hannover (15 programmes each) and Münster and Göttingen (13 programmes each) also feature prominently. Hamburg, finally, not only cooperates closely with the University of Munich, but also with Karlsruhe (13 programmes) and Hannover (11 programmes). Intensive links between the Humboldt University and the Technical University in Berlin are also reported (15 joint programmes), whilst the Free University in Berlin is involved in 12 joint programmes with each of them. Last of all, there is a comparatively close relationship between scientists at the universities of Karlsruhe and Hamburg (13 joint programmes).

Overall it is observed that no single institution within this network has a dominant position. Scientists at the universities and non-university institutes mentioned here cooperate both with local and non-local partners.

> **Engineering sciences:** Just as was the case for the last two scientific disciplines, Figure 4-8 is also restricted to showing relationships between institutions which cooperated in at least five coordinated programmes operated by the DFG. Similar to the natural sciences, the core of this cooperation network is again found to have a very tight-knit relationship structure. In contrast to the natural sciences however, this core incorporates fewer institutions (39 universities and 9 non-university institutes). As is to be expected, these are primarily technical universities.

Most influential on the structure of this network are the universities of Aachen, Munich (Technical University), Stuttgart, Karlsruhe and Darmstadt as well as Dortmund. Scientists and academics involved in the coordinated programmes operated by the DFG at those universities

Figure 4-8:
Core network of institutions involved in the coordinated DFG programmes 1999 to 2001: Engineering Sciences



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have the most contacts to other institutions within the spectrum of the engineering sciences (cf. Table A4-4 and Table A4-9 in the appendix).

The Technical University of Aachen is a hub of DFG-funded engineering science. Scientists and academics working there are actively involved in DFG-supported cooperative contact with their colleagues at the Technical University of Munich (24 joint programmes) as well as the University of Karlsruhe (21 joint programmes). Other partners are at the universities of Stuttgart and Dortmund (20 joint programmes each), but also Darmstadt (18 programmes), the Technical University of Berlin, and the University of Bremen (16 programmes each) interact on a regular basis with engineering scientists at Aachen. Scientists and academics at the University of Stuttgart cooperate closely with the University of Darmstadt (19 programmes), the Technical University of Munich (18 programmes), the universities of Karlsruhe and Dortmund (17 programmes each) as well as the Technical University of Berlin and the universities of Hannover and Braunschweig (15 programmes each). The Technical University of Munich, finally, involves scientists and academics from the universities of Aachen (24 programmes), Darmstadt (20 programmes), Karlsruhe (19 programmes), Stuttgart (18 programmes) and Dortmund (16 programmes) in its network most of all.

Aachen is the most successful at integrating locally based non-university institutes in jointly run DFG programmes. Worth mentioning are the German Aerospace Center (DLR), based in Cologne, the neighbouring Research Centre Jülich and the Institute of Plastics Processing, which is affiliated with the Technical University of Aachen as an an-institute (8 joint programmes each), but also the Materials Research Institute ACCESS (Materialforschungsinstitut ACCESS), which is also operated as an an-institute (5 joint programmes). Close links are also maintained to the Fraunhofer Institute for Mechanics of Materials IWM (Fraunhofer-Institut für Werkstoffmechanik, IWM) in Freiburg and Halle (5 joint programmes).

Looking at the non-university institutes involved, the DLR is most worth highlighting. This member of the Helmholtz Association has eight sites in total, including the headquarters in Cologne, where around 5,000 employees work in various fields of research. The spectrum covered includes, alongside the emphasis suggested by the name, research into the areas of energy, traffic and the environment, amongst others. In the network of DFG-funded engineering science research institutions, researchers at the DLR are closely linked to scientists and academics at the Technical University of Aachen as well as the University of Stuttgart (8 joint programmes each), the universities of Darmstadt, Karlsruhe and the Technical University of Munich (6 joint programmes each) and the technical universities in Clausthal and Dresden (5 joint programmes each). Exemplary programmes involving participation by DLR researchers are the Priority Programme 1120 coordinated from the Institute of Space Simulation (Institut für Raumsimulation) in Cologne ("Phase change in multi-component melts" ("Phasenumwandlungen in mehrkomponentigen Schmelzen")) established in 2001, as well as Collaborative Research Centre 253 ("Fundamentals of Space Plane Design" ("Grundlagen des Entwurfs von Raumflugzeugen")), which has been running since 1989 in Aachen and with the participation of the Cologne-based DLR Institute of Propulsion Technology (Institut für Antriebstechnik), Collaborative Research Centre 453 ("High-Fidelity Telepresence and Teleaction" ("Wirklichkeitsnahe Telepräsenz und Teleaktion")), located at the Technical University of Munich and carried out in cooperation with the Institute of Robotics and Mechatronics (Institut für Robotik und Mechatronik) in Oberpfaffenhofen, and Collaborative Research Centre 557 ("Control of Complex Turbulent Shear Flows" ("Beeinflussung komplexer turbulenter Scherströmungen")) at the Technical University of Berlin, in which the DLR Department of Turbulence Research (Abteilung für Turbulenzforschung), located just around the corner, is collaborating.

Also worth mentioning is the Laser Centre Hannover (Laser Zentrum Hannover), which participated in cooperative programmes in the engineering sciences [12] with the Technical University of Aachen and the universities of Braunschweig,

[12] Participation in programmes in the natural sciences (Collaborative Research Centre 407 "Quantum-Limited Measuring Processes with Atoms, Molecules and Photons" ("Quantenlimitierte Messprozesse mit Atomen, Molekülen und Photonen") and Priority Programme 1075 "Cellular Metallic Materials" ("Zellulare metallische Werkstoffe")) is also documented.

Dortmund and Hannover in the period covered by this report (five each).

This look at a total of five core network structures based upon the various cooperative relationships between universities and non-university institutions arising through the coordinated programmes operated by the DFG has made clear that a particular goal of these programmes, the establishment of cooperative structures, is indeed achieved. Relationships between institutions arise according to different criteria for each scientific discipline. As well as various topical and subject-specific aspects which have not been looked at in depth here, factors of location play a not insignificant role. The potential of regional structures, for instance neighbouring universities and non-university research institutes, are utilized to a varying degree in each scientific discipline. Involvement by non-university institutes is particularly weakly developed in the humanities, whereas especially intensive integration is evident in the life sciences. The structures presented can only be dealt with in a cursory manner within the context of this report. Revealing questions, for instance on the decisive subjects for each network, can only be dealt with approximately. To this end the appendix of tables at the end of this report builds on the summary given above (Table 4-4) by providing overviews of the institutions with the highest number of institutional partners in coordinated programmes operated by the DFG according to 16 research areas (cf. Tables A4-6 to A4-9 in the appendix).

The information provided on the Internet, developed supplementary to this print version of the ranking (see http://www.dfg.de/en/ranking/networks/index.html), is intended to offer further possibilities for detailed analysis. Thus it will be possible, by accessing interactive elements, to identify the respective partner institutes for any of the institutions shown in a network graphic. It is also planned to extend the range of information step-by-step with further diagrams (for example for individually selected research areas).

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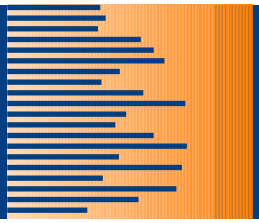
5. DFG Reviewers



5.1 Introduction

Just like almost all other funding bodies worldwide, the DFG bases its decisions on proposals it receives on the judgement of experts (the so-called "peer review"). In the case of the DFG, these experts are primarily drawn from two groups: On the one hand, there are the so-called "peer reviewers" who are elected on a four year basis by scientists and academics from universities and non-university institutions. On the other, there are the so-called "special reviewers" who are selected ad hoc by employees at the DFG head office – usually in close consultation with the Review Committees´ chairmen – in the preliminary stages of decision making, on the basis of their specialist knowledge. The task of the peer reviewers, and in particular of the Review Committees´ chairmen and vice chairmen, who are elected from amongst their ranks, is to give the DFG's decision-making bodies well-founded recommendations on the funding of proposed projects. Special reviewers are consulted additionally, as and when required by the specialised orientation of a project and/or if the peer reviewers are too occupied with the final review process.

In this report [1] the number of reviewers working for the DFG per institution and research area is, for the first time, considered as a performance indicator: As a general rule both the elected and unelected reviewers for the DFG enjoy the trust and particular respect of their colleagues. For peer reviewers this is manifested by the fact that they are elected. In the last elections (which took place in November 1999) 48 percent of the total of 88,000 who were eligible to vote [2] cast a vote. Of a total of 2,450 candidates 650 individuals were elected [3]. Special reviewers are also, as a general rule, scientists or academics who have made a name for themselves in their field of specialisation. They are often called to give advice because they have distinguished themselves with one or more approved DFG projects in the field of the proposal being reviewed, or because they have become known as especially qualified in some other way (through publications in renowned journals, prizes awarded, research visits to leading international institutions etc.).

It can therefore be assumed that the number of active reviewers at an institution – irrespective of their status as a peer reviewer or a special reviewer – is a good indicator of the research expertise present at that location. Institutions where a large number of respected and – thanks to their activity for the DFG – additionally acknowledged experts are pursuing their research also benefit from the "good reputation" of these reviewers: They too can, accordingly, be viewed as institutions with a good scientific reputation.

Between 1999 and 2001 a total of almost 10,000 reviewers participated in the written review process of DFG proposals. Almost 1,000 of these were elected peer reviewers from the periods 1996 to 1999 and 2000 to

[1] This report refers to the review process which was valid through 2003. Some of the individual internet representations cited in the following footnotes, however, already refer to the new process and regulations valid as of 2004.

[2] All researchers who have held a doctorate for at least three years and are working at one of the research institutions listed by the DFG as a voting centre are eligible to vote (cf. the DFG's election regulations (Form 70.01) on http://www.dfg.de/forschungsfoerderung/formulare/sonstige_vordrucke.html).

[3] A list of the DFG's peer reviewers is available under http://www.dfg.de/dfg_im_profil/struktur/gremien/fachausschuss/fachgutachter/.

2003, and almost 9,000 were special reviewers. Even if you take into account the fact that these experts, whose advice was sought additionally, were only responsible for almost half of all of the reviews submitted, and that about 40 percent of them were only consulted once during the years under consideration, it is evident from these numbers that the decision-making by the statutory bodies working for the DFG is based on a much broader foundation than is frequently assumed on the basis of the relatively small number of elected peer reviewers.

First of all the key features of the DFG's peer review system are outlined below. The far reaching changes decided by the DFG's statutory bodies over the course of the past year, which were in force for the November 2003 elections, are also elaborated upon. This is followed by some details concerning the data basis and methodology of the subsequent analyses. This section of analysis is introduced by brief details about the demographics of the DFG's reviewers. Finally, the main emphasis of this chapter concentrates on the analyses which deal with the question of the institute of origin of the DFG's reviewers.

5.2 Background

The appointment of reviewers ("peers") for the evaluation of funding proposals is common practice worldwide. The process by which these reviewers are selected and appointed by the DFG is, however, unique. The process was already used in a basic form by the "Notgemeinschaft der Deutschen Wissenschaft", the legal predecessor of the current organisation, which was founded in 1920. Decisions were made by the so-called "Grants Committee", the scientific review process was (and is) organised into so-called "Review Committees", which are subdivided according to subject. So called "peer reviewers" were elected for each subject area in a secret ballot, on the basis of nominations put forward by the pertinent research societies. Scholars in each of the respective subjects from universities and non-university research institutions were eligible to vote (young researchers only gained the right to vote when the DFG was re-established after the Second World War).

The main features of the process are

> the principle of election,

> the strict separation of evaluation and decision making, and

> the organisation of the evaluation process according to subject.

In the statutes, developed in 1951 and largely unchanged on these points until 2002, these regulations are to be found in Article 9:

> The Grants Committee shall decide which Review Committees are to be formed and into which subjects these are to be subdivided.

> The members of the Review Committees shall be elected for a four-year term.

> Each Review Committee shall elect a chairman and vice chairman.

> Both subject representatives and the chairman of the Review Committee shall comment on each proposal. Every member of the Review Committees is required to make suggestions to the Senate and the Grants Committee.

When this process was adopted practically unchanged from the predecessor of the current organisation in the early 1950s, the average annual number of proposals was below two thousand. Today this figure has risen approximately tenfold. In addition to the pure increase in numbers, there have also been other fundamental changes. For instance, the principle of the oral review process of proposals in review meetings (so-called "peer review panels") was established as early as 1953 with the introduction of the "Priority Programme". This principle has been integral to practically all of the other coordinated programmes added since (Research Units, Collaborative Research Centres, Research Training Groups, Humanities Research Centres and DFG Research Centres). The participation of elected peer reviewers has not been compulsory for these peer review panels up until now. According to the findings of an analysis of peer reviews in 1999, the proportion of elected peer reviewers in these groups was between 19 and 32 percent (for Collaborative Research Centres and Research Training Groups respectively). Approximately one-third of all coordinated programmes in the year under consideration were reviewed without the involvement of elected peer reviewers.

Parallel to this development, there has also been an increase in the appointment of unelected experts for the written review

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process of the coordinated programmes operated by the DFG. Originally intended to be more-or-less an exception to the rule (and therefore described as "special reviewers"), the expert opinion of unelected scientists and academics (e.g. from abroad and therefore not eligible for election) was increasingly sought here too, in particular accompanying the period of vigorous growth experienced by the German university and research systems in the second half of the 1970s onwards, in order to ensure that the decision-making bodies received the best possible advice, both well-informed and objective. During the period under consideration (1999 to 2001) almost 9,000 of these so-called "special reviewers" supported the almost 1,000 peer reviewers elected for the periods 1996 to 1999 and 2000 to 2003. In so doing they were responsible for about half of the reviews submitted in the written review process.

One of the cornerstones laid down in the statutes of the DFG remains, however: The final recommendation to the DFG's decision-making bodies remains in the hands of the elected peer reviewers; as a rule it is the responsibility of the chairmen or vice chairmen of the respective Review Committees. They ensure the quality of the entire review process by acknowledging the preceding reviews in their final statement and by being able to call for any corrections which may be required.

In the selection of these special reviewers the DFG's head office follows rules which are imperative for both funding bodies as well as for scientific journals worldwide. The main aim is to recruit the leading experts on a topic who, at the same time, are unbiased, to conduct the review process. In view of the continually increasing degree of specialisation in many scientific disciplines, this is not always an easy task, particularly if the strict rules required to prevent conflicts of interest are adhered to. For example, it is not acceptable for scientists or academics who themselves have submitted a proposal in a programme to serve on a peer review panel, nor is it acceptable for colleagues from the same faculty or even the same institute as the applicant. Less visible forms of bias (such as student-professor relationships) also need to be ruled out and, in extreme cases can, if they only become known in the course of a review, lead to the expulsion of the reviewer affected. It is a similar situation for the written review process. Reviews carried out by experts working at the same location are just as taboo as so-called "reciprocal reviews" (A reviews B and B reviews A). Where possible, family ties should also be taken into account, just as very close competitive relationships ought to be.

The consideration of these and other rules demands that the employees from the DFG's head office, who are entrusted with this task, have a high degree of knowledge concerning not only the expertise of the scientists and academics involved in the (national and increasingly also international) context of each project, but also of the relationships between them. This is supported not only by the specialised scientific training background, which the employees who carry out this task as Programme Officers usually have, but also by their regular participation in central meetings and conferences held by the specialist associations which they supervise, their practical day-to-day interaction with (increasingly new) applicants and funding proposals and – particularly amongst the number of younger colleagues, which has risen dramatically in recent years – by recommendations from related Programme Offices and most importantly of all peer reviewers and Review Committee chairmen. Additionally, technical aids are starting to become established, such as searches in subject and literature databases as well as in the DFG's own project information system GEPRIS (see http://www.dfg.de/en/dfg_profile/facts_and_figures/projects_and_programmes/), which provides information on current DFG-funded research projects and thus also on the subject focus of the applicants responsible for these projects (and hence potential reviewers).

The combination chosen by the DFG, of legitimation of the DFG's peer reviewers by election and the legitimation of the special reviewers through their specialist competence, which has been tacitly established in parallel to this over the past decades, is not only accepted by the elected peer reviewers, but also by the vast majority of the scientific and research community[4]. The collective conviction that the review

[4] This was evident in a survey of applicants carried out by the DFG in 1997, for instance. To the question "As far as you were able to form an impression of the work carried out by our reviewers, how would you assess the work of the reviewers in very general terms?" almost two thirds of the respondents gave a positive response on a scale from 1 ("Totally incompetent") to 5 ("Very competent"), while a further quarter took a neutral stance (3 on this scale). Only less than 11 percent of all those questioned had a negative opinion (giving a mark of 1 or 2).

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process needed to be made more transparent, that the participation of elected reviewers needed to be assured in all processes, and that the process needed to better meet the requirements of developments in subjects and interdisciplinary projects, has contributed towards the extensive reform of the peer review system, partly for the reasons already outlined above. This reform was passed in 2002 by the DFG's General Assembly and has led to corresponding amendments to the statutes. The key elements of the reform are:

> The replacement of the DFG's Review Committee system [5], which has frequently been criticised as being too splintered and not very up-to-date, by a system of so-called "Review Boards" [6]. These will have a much more modern structure, are designed to be much more flexible, and are intended to have a far greater degree of permeability, for instance by participation of reviewers from different Boards in the appraisal of proposals.

> An increased focus of elected peer reviewers on the total assessment, at the expense of individual specialist reviews of proposals. These are to be left consistently to the most suitable experts for each project being dealt with.

> The compulsory participation of elected peer reviewers in peer review panels for coordinated programmes.

> The decisive role played by the Senate in forming the Review Boards and in drawing up lists of candidates.

Overall, the DFG hopes that this reform will lead to a reduced load being placed on the peer reviewers entrusted with the appraisal of proposals (then to be called: "Review Board Members"), improved opportunities for reviewing interdisciplinary projects, increased flexibility with respect to the specialist orientation of these Boards, a clearer delegation of responsibility between reviewers (the review process) and the Review Board Members (evaluation), and improved transparency of the decision-making process chosen.

5.3 Data Basis and Methodology

The analyses below are based on data collected and entered in the DFG's databases by the members of the Programme Offices in the course of processing proposals. Information on review process events has been routinely documented in these databases since 1999 – primarily in order to support the automatic generation of standard letters (e.g. letters to the reviewers). Data collection has so far been limited to the written review process for General Research Support programmes. According to an analysis of the data for 1999, for which data on oral group review processes was collected separately using a complicated process, the proportion of the total number of reviews constituted by written review processes is approximately 86 percent. Hence the written review process is, quantitatively speaking, the standard procedure [7].

The conclusions reached relate to reviews of proposals on which a decision was reached, i.e. either approved or rejected, between 1999 and 2001. A total of 74,272 reviews relating to precisely 26,761 proposals are documented for this period in the DFG's databases. This corresponds to an average of 2.8 reviews per proposal.

Table 5-1 shows the data basis differentiated according to funding programme. The reviews on Priority Programmes and Research Units listed in the overview are predominantly statements obtained from members of the peer review panels, or from other experts, in preparation for the peer review panel meetings, because they were unable to participate in the peer review panel due to time constraints, or, in exceptional cases, to compensate for the absence of suitably competent peer review panel members due to a conflict of interest. Written reviews on coordinated programmes are underreported in the DFG's databases, but for the Individual Grants Programme and the programmes for the direct promotion of young researchers listed in the table, it can be assumed that the data is complete. The analyses below are thus mainly based on the written review of proposals in the Individual Grants Programme (80 percent) and reviews of applications for fellowships and for Emmy Noether Independent Junior Research Groups (almost 17 percent).

[5] The DFG's Review Committee system comprises 37 committees covering a total of 189 subjects (cf. Table A2-1 in the appendix).

[6] See http://www.dfg.de/wahlen2003/ (only available in German) for details on the composition of these Boards.

[7] Data on the participation in review meetings will only be available for future evaluations.

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These reviews were carried out by a total of 9,765 reviewers, distributed between the four scientific disciplines as shown in Figure 5-1. The affiliation of a reviewer to a particular subject was determined according to the Review Committee which reached a decision on the proposal assessed. For reviewers who were consulted in several Review Committees, the committee which is mentioned most often defines the allocation to a given scientific discipline.

5.4 Review Frequency and Personal Attributes of DFG Reviewers

5.4.1 Review Frequency

How frequently reviewers act for the DFG is, as is to be expected, heavily dependent on their status: Elected peer reviewers – particularly if they carry the responsibility for the summary recommendation to the DFG's decision-making bodies as chairmen of the Review Committees – are called

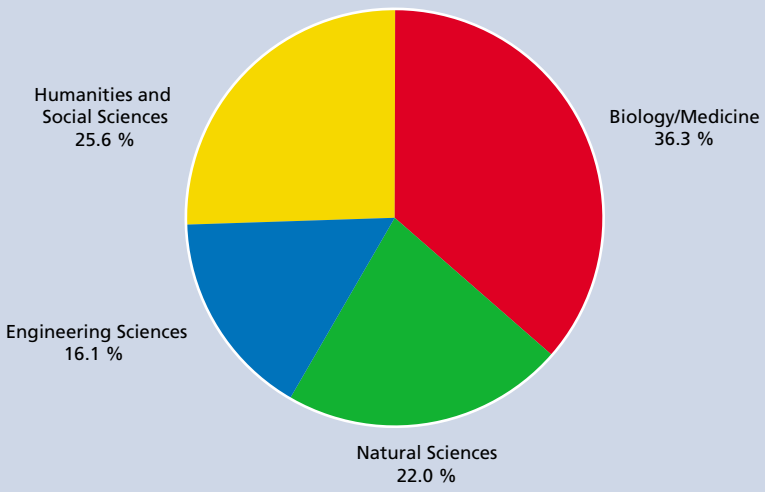
Table 5-1:
The number of written reviews by the DFG on which this evaluation is based 1999 to 2001 by funding programme

Funding programme	Reviews	
	Number	%
Individual Grants Programme[1]	59,543	80.2
Research units (Including Clinical Research Units)	177	0.2
Priority Programmes (Research Grants)	1,863	2.5
Research Fellowships	5,562	7.5
Heisenberg Programme	2,080	2.8
Habilitation Fellowships[2]	3,149	4.2
Postdoctoral Programme[2]	144	0.2
Emmy Noether Programme		
Fellowships Abroad	899	1.2
Independent Junior Research Groups	654	0.9
Central Research Facilities	17	0.0
Gerhard Hess Programme[2]	184	0.2
In total	**74,272**	**100.0**

[1] Including Printing Allowances and Sabbaticals.

[2] Programme was discontinued in 2001.

Figure 5-1:
DFG reviewers 1999 to 2001 by scientific discipline (in percent)



Based on: 9,765 reviewers.

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upon in quite a different way as apposed to the special reviewers who are generally only consulted on an individual basis.

For technical reasons related to data collection, it is, however, only possible to approach a numerical proof of this for the period covered by this report: The DFG's peer reviewers are elected on a four-year basis. The last elections were held in 1999, the period of office for these reviewers began in 2000, and so right in the middle of the period covered by this report, 1999 to 2001. The analysis is complicated by the fact that there is no single date specified for the commencement of the period of office for peer reviewers which is applicable to all of the Review Committees. Rather, it depends on the date of the founding meeting of the Review Committee. These meetings took place between March and September 2000, and so were spread across a period of more than six months. A further complication arises due to the fact that, of the 650 peer reviewers elected in 1999, precisely 197 were re-elected – so there are some individuals who held the status of peer reviewer for the entire period covered by this report, but others to whom this only applies for about (not exactly definable) half of the period covered by this report.

It is thus not possible to clearly distinguish between peer reviewers and special reviewers. The analyses below do not, therefore, draw a comparison between peer reviewers and special reviewers, but rather between individuals who were elected as peer reviewers in at least one of the two periods and those who were not.

In total 928 individuals who prepared written reviews for the DFG as elected peer reviewers during the period under consideration, 1999 to 2001, were counted. As is shown in Figure 5-2, this corresponds to 9.5 percent of the total number of reviewers consulted. If the number of reviews presented by these peer reviewers is compared to the number of reviews presented by other scientists and academics, then a completely different relationship emerges: Here the proportion of peer reviewers amounts to 53 percent, correspondingly 47 percent of all reviews were presented by non-peer reviewers. So, although peer reviewers only account for nearly one tenth of all reviewers consulted, they are responsible for more than half of the reviews.

There are similarly significant differences in the average number of reviews submitted per reviewer consulted. On average, reviewers compiled 7.6 written reviews for the DFG between 1999 and 2001 – with only minimal variation between each scientific discipline. For special reviewers the average is four reviews over three years, peer reviewers manage more than ten times as many (42 reviews). Reviewers consulted in relation to research projects in the natural sciences appear to be kept especially busy. They presented an average of 56 reviews (humanities and social sciences: 39, biology/medicine: 42, engineering sciences: 33).

Amongst special reviewers the proportion of individuals who were called upon to participate in preparing a review only once during the period under consideration

Figure 5-2:
A comparison of the number of reviews by peer reviewers and by other reviewers 1999 to 2001

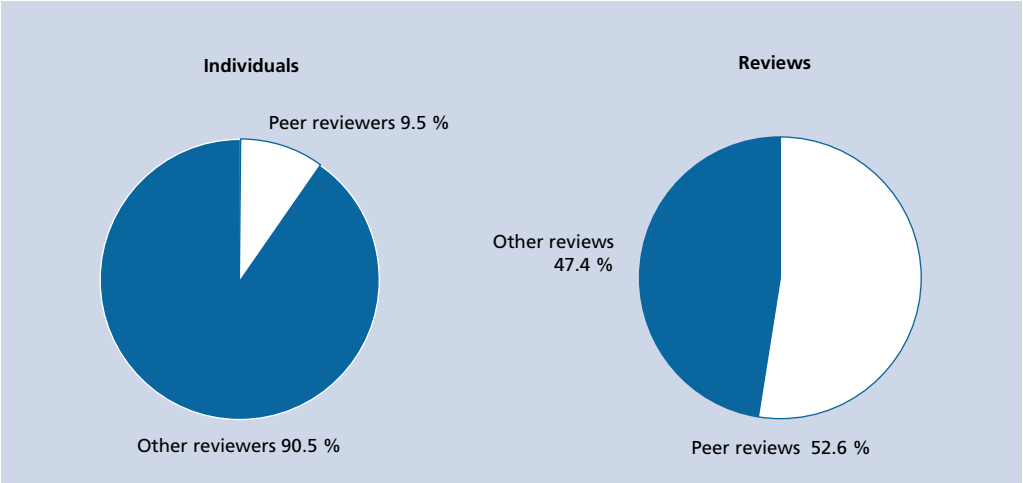

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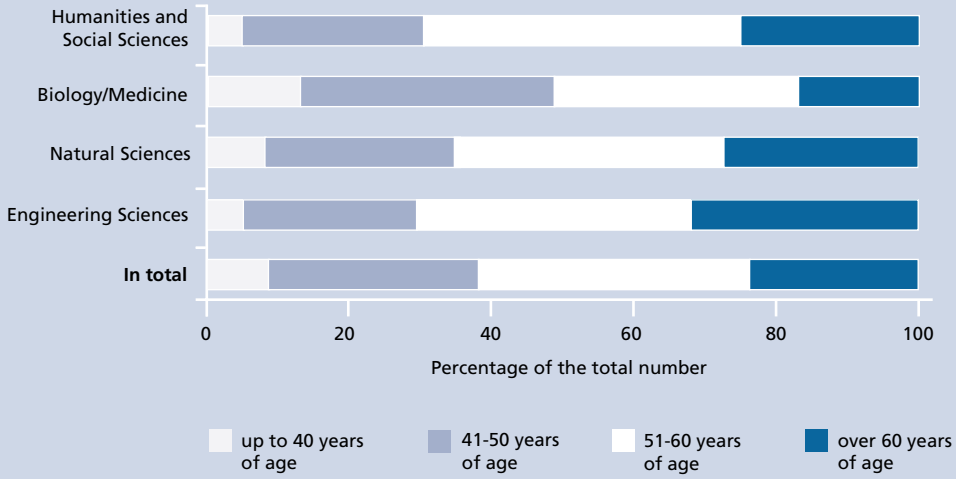
Figure 5-3:
DFG reviewers 1999 to 2001 by age group [1] and scientific discipline (in percent)



[1] Age in the date of record 2000.

(1999 to 2001) varied, according to the scientific discipline concerned, between 37 percent (for biology/medicine) and 45 percent (for humanities and social sciences) (natural sciences: 39 percent, engineering sciences: 40 percent). Amongst peer reviewers the corresponding number is very low overall, as is to be expected, at around one percent. Conversely, the proportion of reviewers who compiled 50 or more reviews varied between 15 percent (engineering sciences) and 27 percent (biology/medicine) (humanities and social sciences: 24 percent, natural sciences: 25 percent) – the record is a remarkable 500 reviews in three years. Special reviewers were not subjected to so much stress.

5.4.2 Age

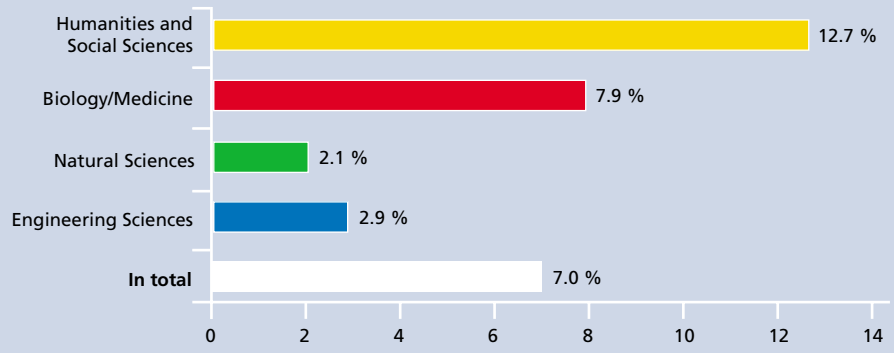
The age of the reviewers acting on behalf of the DFG is frequently discussed. The analyses presented here refer to 2000 as the date of record. No conclusions are reached on the age of a reviewer at the time of any particular review process, rather an average age for the period 1999 to 2001 covered by this report is calculated. This is based on data on a total of 8,279 individuals (85 percent of all reviewers), for whom the year of birth is available.

Figure 5-3 shows the distribution between the age groups. According to this analysis, almost every other reviewer in the scientific discipline of biology/medicine belonged to one of the younger age groups (up to 50 years of age) in 2000, whereas in the engineering sciences and the humanities and social sciences this is only the case for about 30 percent of all of the reviewers. Similar differences arise in relation to the average age. The overall average age is 53.4 years. In a comparison of the scientific disciplines, biology/medicine is noticeably different: Here the reviewers are just 51.2 years of age on average. The highest average age, at 55.7 years of age, on the contrary, is found amongst reviewers of proposals in the engineering sciences (humanities and social sciences: 54.8 years of age, natural sciences: 54.0 years of age).

5.4.3 Gender

Seven percent of the reviewers who acted on behalf of the DFG between 1999 and 2001 were female. This means that the proportion of the total number of reviewers constituted by women is significantly more than the proportion of the elected peer reviewers constituted by women for the period 1996 to 1999 (4.4 percent) and slightly less than the proportion of peer reviewers for the period 2000 to 2003 (7.7 percent). There are large differences between the scientific disciplines: Whereas in the humanities and social sciences almost 13 percent of the experts consulted by the DFG were female, the proportion in the natural and engineering sciences was just 2.1 and 2.9 percent respectively (cf. Figure 5-4).

Figure 5-4:
Female DFG reviewers 1999 to 2001 by scientific discipline (in percent)



For comparison, Table 5.2 presents the proportion of women employed full time in the scientific and artistic university staff. In total this was 25.6 percent in 2000. Looking at the total number of professors, from which the majority of the reviewers recruited by the DFG are drawn[8], it is 10.5 percent. This comparison shows that women are underrepresented amongst the DFG's reviewers. This finding also remains valid if the figures are compared at the subject level: For instance, even in the fields of teaching and research belonging to humanities and social sciences (linguistic and literary studies or law, economics and social sciences) both the proportion of women overall (37.5 and 23.5 percent) and the proportion of women amongst professors (17.5 and 13.4 percent) are higher than the proportion of women amongst DFG reviewers (12.7 percent).

5.4.4 Reviewers from Abroad

The final question dealt with here is that of the extent to which scientists and academics working abroad participate in the DFG's written review process. In total they account

Table 5-2:
Proportion of scientific staff at universities constituted by women in 2000 by field of teaching and research

Field of teaching and research	Scientists and academics in total			Professors		
	Total	of which female	%	Total	of which female	%
Linguistic and cultural studies	19,626	7,353	37.5	5,756	1,007	17.5
Sport studies	1,216	337	27.7	222	18	8.1
Law, economics and social sciences	18,831	4,417	23.5	7,644	1,021	13.4
Mathematics, natural sciences	34,611	6,276	18.1	7,223	444	6.1
Human medicine	39,634	13,535	34.1	3,225	200	6.2
Veterinary medicine	1,017	408	40.1	209	22	10.5
Agriculture, forestry and nutritional science	3,985	1,166	29.3	1,063	123	11.6
Engineering sciences	26,284	2,966	11.3	8,997	434	4.8
Art, fine arts studies	5,269	1,501	28.5	3,060	684	22.4
Central facilities	6,743	2,301	34.1	395	33	8.4
In total	**157,216**	**40,260**	**25.6**	**37,794**	**3,986**	**10.5**

Source: Federal Statistical Office (2001), Subject-Matter Series 11, Education and Culture, Series 4.4, Personnel at institutions of higher education 2000 (scientific and artistic staff employed full time).

[8] Ninety percent of the reviewers included in the analysis are professors according to the DFG's databases (humanities and social sciences: 96 percent, biology/medicine: 84 percent, natural sciences: 92 percent, engineering sciences: 90 percent).

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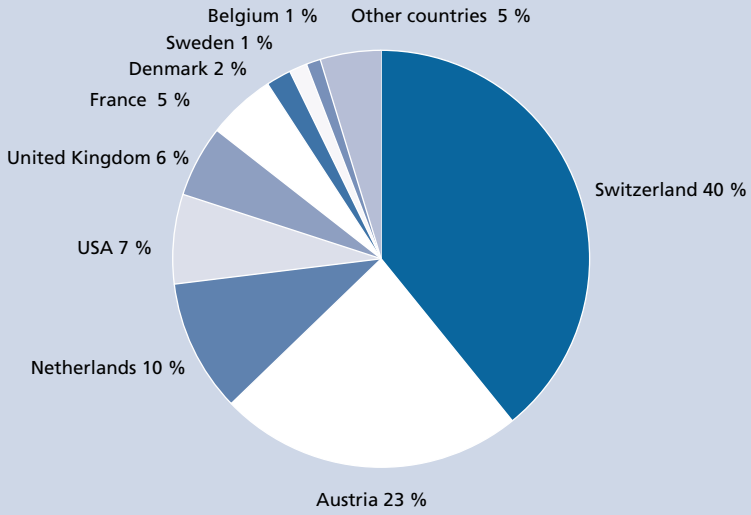
Figure 5-5:
Country of origin of DFG reviewers working abroad 1999 to 2001 (in percent)



Based on: 813 reviewers working abroad.

for 8.3 percent. Slightly above-average participation of such reviewers is reported for the natural sciences (9.8 percent), but the figure is below average, on the other hand, for engineering sciences (4.7 percent); (humanities and social sciences: 6.9 percent, biology/medicine: 8.2 percent). The total of 813 reviewers working abroad, who took part in the assessment of DFG proposals between 1999 and 2001, are primarily from Switzerland, Austria and the Netherlands (cf. Figure 5-5). Altogether, 73 percent of all of the DFG reviewers working abroad come from these three countries. In fourth place are scientists and academics from the USA (7 percent) – ahead of the United Kingdom (6 percent), France (5 percent) and Denmark (2 percent).

5.5 Institute of Origin of DFG Reviewers

5.5.1 Notes on the Methodology

For technical reasons the stated institute of origin of the DFG's reviewers relates to the most up-to-date address recorded for each reviewer in the DFG's databases (as of 30 July 2002). In order to be able to use the addresses for statistical analysis a so-called "institute code" had to be assigned to each one manually. No codes were assigned to reviewers from abroad. The analyses below thus concentrate on reviewers working in Germany.

5.5.2 Reviewers by Type of Institution

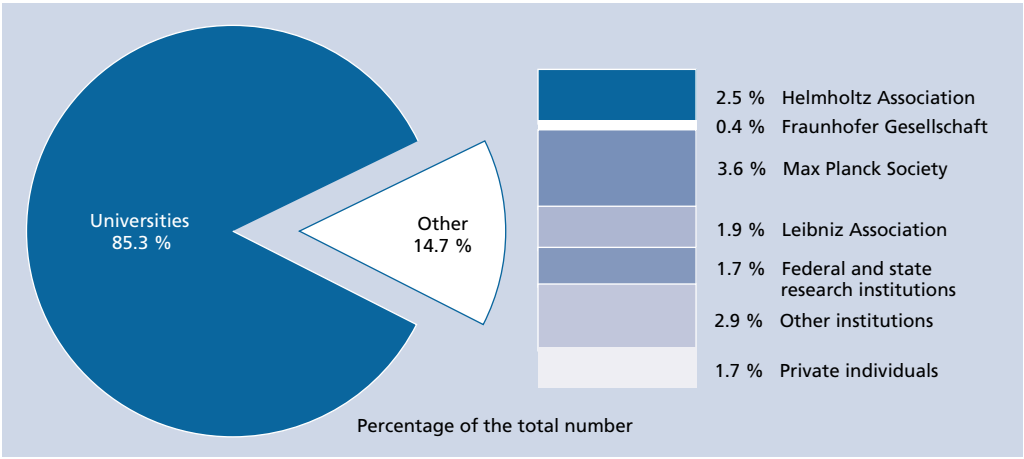
The vast majority of DFG reviewers working in Germany are employed at universities (85 percent). Reviewers from non-university institutions are predominantly from institutes belonging to the Max Planck Society (MPG – 3.6 percent), the Helmholtz Association (HGF – 2.5 percent) and the Leibniz Association (WGL – 1.9 percent) (cf. Figure 5-6).

In order to be able to reach an approximate conclusion on the relative proportions which DFG reviewers make up of the total number of researchers working at each type of institution Table 5-3 compares the number of reviewers to the number of scientific and artistic staff employed full time.

As is evident from the comparison, about one in twenty scientists and academics working at universities (including universities of applied sciences) acted as a reviewer for the DFG between 1999 and 2001. The percentage is significantly higher for the Max Planck Society; 7.8 percent of the researchers working at its institutes compiled written reviews for the DFG. At institutes belonging to the Leibniz Association the proportion is just over 3 percent.

For the interpretation shown in Table 5-3 it should be noted that some of the various types of institution have very different subject profiles. Whereas the universities and the Max Planck Institutes encompass the entire subject spectrum, the Fraunhofer

Figure 5-6:
Institute of origin of DFG reviewers 1999 to 2001 (in percent)



Based on: Reviewers with an address at a German institute as well as private individuals.

Table 5-3:
DFG reviewers 1999 to 2001 in relation to the total number of researchers at any given type of institution in 2000

Typ of institution	Sci. staff[1)]	DFG reviewers	Proportion of reviewers in %
Universities	157,216	7,632	4.9
Max Planck Society (MPG)	4,079	320	7.8
Leibniz Association (WGL)	5,531	169	3.1
Helmholtz Association (HGF)	10,892	222	2.0
Federal and state research institutions	11,130	155	1.4
Fraunhofer-Gesellschaft (FhG)	4,704	37	0.8
Other institutions	-	263	-
Private individuals	-	154	-
Total	**-**	**8,952**	**-**
Reviewers working abroad	-	813	-
In total	**-**	**9,765**	**-**

[1)] Source: Federal Statistical Office (2001), Subject-Matter Series 14, Finance and Taxes, Series 3.6, Table 5.1, Staff at public and state-subsidised institutions in science, research and development by type of institution and staff group (scientific staff and artistic staff employed full time).

Gesellschaft, for example, places a definite emphasis on the area of engineering sciences. Correspondingly, researchers from Fraunhofer institutes can usually only be consulted for projects in the engineering sciences. In fact seven out of ten DFG reviewers from Fraunhofer institutes were consulted for project proposals in the engineering sciences – the proportion they make up of the total number of DFG reviewers, just as conversely the proportion of DFG reviewers amongst the scientific staff of the Fraunhofer Gesellschaft is correspondingly small.

Figure 5-7 shows this relationship according to scientific discipline. The first thing that stands out is the above-average proportion of reviewers from universities in the humanities and social sciences. Here they account for almost 90 percent. Researchers from both the Fraunhofer Society and the Helmholtz Association are barely represented in the humanities and social sciences as a result of their subject specialisation, but members of the other major research organisations are also represented less than on average. Only the proportion of institutions counted collectively as "Others" is high (5.1 percent) – in the case of the humanities and social sciences these consist primarily of libraries and museums. Reviewers from the HGF are represented more-or-less equally in the other three scientific disciplines, reviewers from the FhG are concentrated, as mentioned above, on the engineering sciences.

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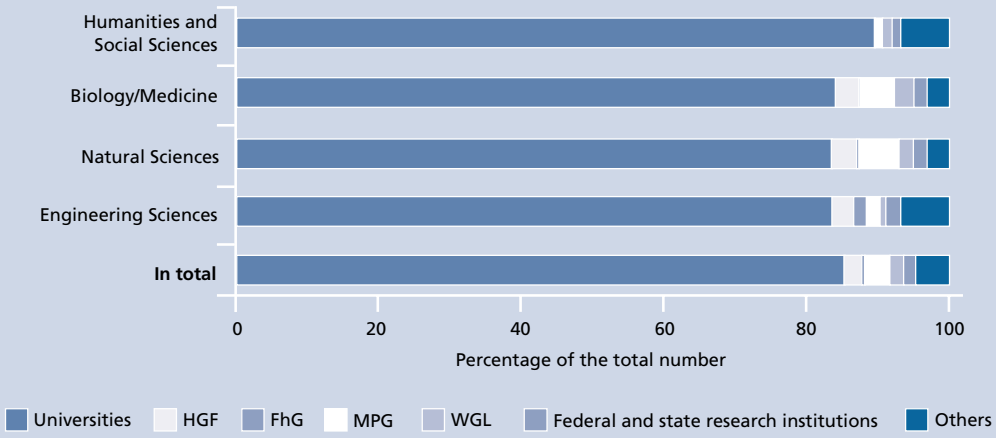
Figure 5-7:
DFG reviewers 1999 to 2001 by scientific discipline and type of institution (in percent)



Based on: Reviewers with an address at a German institute as well as private individuals.

Reviewers from institutes belonging to the Max Planck Society, on the other hand, are consulted most of all in the life sciences and natural sciences, the situation is similar, although to a lesser extent, for reviewers from Leibniz Association institutes.

5.5.3 Reviewers per Institution

The analyses presented above dealt with the question of the organisational affiliation of DFG reviewers. Below we will first of all examine how many DFG reviewers are from individual universities. The results are shown in Figure 5-8, differentiated in the form of a ranking according to scientific disciplines for the largest "reviewer strongholds" [9].

The leader, by far, is the University of Munich. Between 1999 and 2001 a total of 309 reviewers came from this university – predominantly for the area of biology/medicine (148), but also for the humanities and social sciences (110), natural sciences (47) and finally engineering sciences (4). In second place is the University of Freiburg, from which 243 reviewers acted for the DFG, closely followed by the Technical University of Munich and the University of Tübingen (each with 242 reviewers). The fifth-highest number of reviewers is reported for the University of Bonn (233 reviewers). For the next ten universities after Bonn there are – as was already the case between Freiburg, the Technical University of Munich and Tübingen – such minute differences in the number of reviewers that these can barely be interpreted as different placements in the ranking. Thirty percent of all of the DFG reviewers working at German universities are already accounted for just by the top ten universities in this ranking. The 50 percent margin (55 percent) is already exceeded by the top 20 universities.

An interesting interim result is obtained – again with reference to Figure 5-8 – for the universities in the "new federal states". A great deal of effort needed to be put into the restructuring of these institutions following German reunification. This also includes the investment which needed to be made in the construction and extension of both infrastructure and primarily staff resources. The fact that the efforts to recruit and keep highly qualified scientists and academics used as reviewers by the DFG in no small number of cases is demonstrated well by examples such as the Humboldt University in Berlin (HU) (218 reviewers), the Technical University of Dresden (139) and the universities of Jena (104) and Halle-Wittenberg (100). The scientists and academics consulted by the DFG as re-

[9] For the figures reported on here and below see Table A5-1 in the appendix. This table lists the relevant figures for all institutions (including non-university research institutes) with ten or more reviewers according to scientific discipline.

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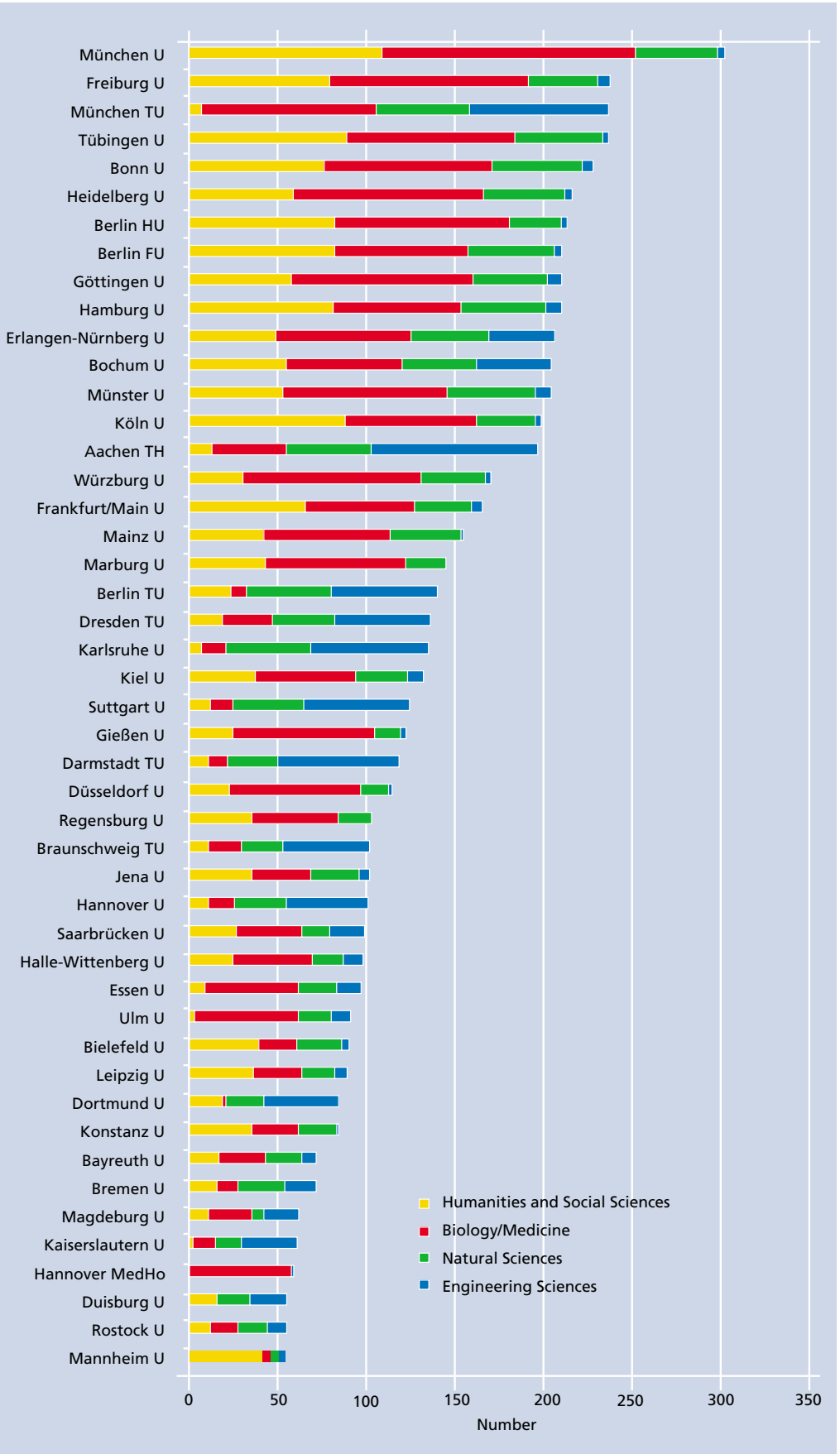
Figure 5-8:
DFG reviewers 1999 to 2001 by university and scientific discipline



Only universities with 50 or more reviewers (based on: scientists and academics who submitted written reviews on proposals decided on in the period covered by the report).

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viewers from the Humboldt University in Berlin were predominantly active on behalf of the DFG in the cultural and life sciences (84 and 101 reviewers respectively), scientists and academics from the Technical University of Dresden in engineering (55) as well as in natural sciences (36). Reviewers from the Friedrich Schiller University in Jena were distributed fairly evenly between the humanities, life sciences and natural sciences (36, 34 and 28 reviewers as well as 6 reviewers in the engineering sciences), reviewers from the University of Halle-Wittenberg were, on the other hand, primarily from the life sciences (46 reviewers).

Looking additionally at the non-university institutions with the highest number of reviewers, we see the distribution shown towards the bottom of the overall list (cf. Table A5-1 in the appendix). At the top of the list of non-university institutions are five National Research Centres, the German Cancer Research Center (DKFZ) in Heidelberg (41 reviewers), the Research Centre Jülich (36 reviewers), the Max-Delbrück Center for Molecular Medicine (MDC) in Berlin (27 reviewers), the German Aerospace Center (DLR) (24 reviewers), and finally the National Research Center for Environment and Health (GSF) in Oberschleissheim (near Munich) (22 reviewers). These are followed by the Max Planck Institute of Biochemistry in Planegg (22 reviewers) and the Max Planck Institute for Biophysical Chemistry in Göttingen (21 reviewers) and – once again a member of the Helmholtz Association – the Research Centre in Karlsruhe (Forschungszentrum Karlsruhe, FZK) (14 reviewers) as well as the PTB (Physikalisch-Technische Bundesanstalt) based in Braunschweig (also 14 reviewers). There are 13 reviewers each reported for the WGL Institute of Plant Genetics and Crop Plant Research (Institut für Pflanzengenetik und Kulturpflanzenforschung, IPK) in Gatersleben and the Federal Institute for Materials Research and Testing (Bundesanstalt für Materialforschung und -prüfung), whilst three more WGL institutes (Research Centre in Borstel (Forschungszentrum Borstel), Institute for Marine Research in Kiel, and the Social Science Research Center Berlin (Wissenschaftszentrum Berlin für Sozialforschung, WZB)) are all represented by 12 reviewers. Finally, there were ten reviewers each from two more members of the HGF (the Alfred Wegener Institute in Bremerhaven and the German Research Centre for Biotechnology (Gesellschaft für Biotechnologische Forschung, GBF), Braunschweig) as well as three Max Planck Institutes (the Max Planck Institute for Iron Research (MPI für Eisenforschung) in Düsseldorf, and the Max Planck Institutes for Solid State Research (MPI für Festkörperforschung) and for Metals Research (MPI für Metallforschung), both in Stuttgart).

The fact that the number of reviewers at universities is not purely related to size is shown by Table 5-4. This table ranks universities into four groups according to the amount of third party funding received from the DFG. The number of professors and of scientists and academics working at the universities in each of the groups is compared to the number of reviewers from those universities per hundred professors/scientists and academics who took part in the DFG's written review process between 1999 and 2001.

According to this analysis there are approximately 35 reviewers in total per 100 professors at these universities over this

Table 5-4
DFG reviewers 1999 to 2001 by DFG approval ranking group in relation to the number of professors/scientists and academics in total at universities (status: 2000)

DFG approvals ranking group	DFG reviewers	Professors		Scientists and academics in total	
		n	Reviewer per 100 prof.	n	Reviewer per 100 sci.
Place 1 to 20	4,127	9,240	44.7	65,509	6.3
Place 21 to 40	2,142	6,250	34.3	40,804	5.2
Place 41 to 60	959	3,570	26.9	19,123	5.0
Place 61 to 79	329	2,228	14.8	8,710	3.8
In total	**7,557**	**21,288**	**35.5**	**134,146**	**5.6**

Based on: Universities which received a total of more than half a million euros in approvals from the DFG between 1999 and 2001 (excluding the University of Witten-Herdecke [no staff data]). There were also 75 reviewers from 36 other universities. The allocation to a ranking group is calculated from the sum total of DFG approvals granted (cf. Table A3-10).

Source: Federal Statistical Office (2002), Full time employment scientific and artistic staff according to organisational classification, university, fields of teaching and research and staff unit (status: 2000), special report.

Table 5-5:
Institutions with the highest number of DFG reviewers 1999 to 2001 by scientific discipline

Total			Humanities and Social Sciences			Biology/Medicine			Natural Sciences			Engineering Sciences		
Institution	**n**	**cum. %**	**Institution**	**n**	**cum. %**	**Institution**	**n**	**cum. %**	**Institution**	**n**	**cum. %**	**Institution**	**n**	**cum. %**
München U	309	3.2	München U	110	4.4	München U	148	4.2	München TU	54	2.5	Aachen TH	96	6.1
Freiburg U	243	5.7	Tübingen U	91	8.0	Freiburg U	115	7.4	Bonn U	52	4.9	München TU	80	11.2
München TU	242	8.1	Köln U	90	11.6	Heidelberg U	110	10.5	Münster U	51	7.3	Darmstadt U	70	15.6
Tübingen U	242	10.6	Berlin FU	84	15.0	Göttingen U	105	13.5	Tübingen U	51	9.7	Karlsruhe U	68	19.9
Bonn U	233	13.0	Berlin HU	84	18.3	Würzburg U	103	16.4	Berlin FU	50	12.0	Berlin TU	61	23.8
Heidelberg U	221	15.3	Hamburg U	83	21.7	Berlin HU	101	19.3	Aachen TH	49	14.3	Stuttgart U	61	27.7
Berlin HU	218	17.5	Freiburg U	81	24.9	München TU	101	22.1	Berlin TU	49	16.6	Dresden TU	55	31.2
Berlin FU	215	19.7	Bonn U	78	28.0	Bonn U	97	24.9	Hamburg U	49	18.9	Braunschweig TU	50	34.3
Göttingen U	215	21.9	Frankfurt/M. U	67	30.7	Tübingen U	97	27.6	Karlsruhe U	49	21.1	Hannover U	47	37.3
Hamburg U	215	24.1	Heidelberg U	60	33.1	Münster U	95	30.3	Heidelberg U	47	23.3	Bochum U	43	40.0
Erlangen-Nbg. U	211	26.3	Göttingen U	59	35.5	Gießen U	82	32.6	München U	47	25.5	Dortmund U	43	42.8
Bochum U	209	28.4	Bochum U	56	37.7	Marburg U	81	34.9	Erlangen-Nbg. U	45	27.6	Erlangen-Nbg. U	38	45.2
Münster U	209	30.5	Münster U	54	39.8	Erlangen-Nbg. U	78	37.1	Bochum U	43	29.6	Hamburg-Harburg TU	32	47.2
Köln U	203	32.6	Erlangen-Nbg. U	50	41.8	Berlin FU	77	39.3	Göttingen U	43	31.6	Kaiserslautern U	32	49.2
Aachen TH	201	34.7	Marburg U	44	43.6	Düsseldorf U	76	41.4	Mainz U	41	33.5	Clausthal TU	31	51.2
Würzburg U	174	36.5	Mainz U	43	45.3	Köln U	76	43.6	Stuttgart U	41	35.4	Kassel U	23	52.7
Frankfurt/M. U	169	38.2	Mannheim U	42	47.0	Hamburg U	74	45.6	Freiburg U	40	37.3	DLR[1)]	21	54.0
Mainz U	158	39.8	Bielefeld U	40	48.6	Mainz U	73	47.7	Würzburg U	37	39.0	Duisburg U	21	55.3
Marburg U	148	41.3	Kiel U	38	50.1	Bochum U	67	49.6	Dresden TU	36	40.7	Paderborn U	21	56.7
Berlin TU	143	42.8	Trier U	38	51.6	Frankfurt/M. U	63	51.4	Köln U	34	42.3	Freiberg TU	20	57.9
												Magdeburg U	20	59.2
												Saarbrücken U	20	60.5
384 other institutions	5,587	57.2	157 other institutions	210	48.4	163 other institutions	1,721	48.6	147 other institutions	1,239	57.7	138 other institutions	623	39.5
In total	**9,765**	**100.0**	**In total**	**2,502**	**100.0**	**In total**	**3,540**	**100.0**	**In total**	**2,147**	**100.0**	**In total**	**1,576**	**100.0**

[1)] German Aerospace Center, Cologne and other locations.

three year period. Relative to the total number of scientists and academics working there it works out to 6 reviewers per 100 individuals. For the 20 universities with the highest sum total of DFG approvals, on the other hand, there are 45 reviewers per 100 professors (and per 100 scientists and academics in total: 6 reviewers). For the universities ranked on places 21 to 40 there are still 34 reviewers (scientists and academics in total: 5 reviewers), for those ranked between 41 and 60 the figure drops to 27 reviewers per 100 professors (scientists and academics in total: 5 reviewers), and for those ranked between 61 and 79 finally just 15 reviewers (scientists and academics in total: 4 reviewers).

Hence it is not simply the large universities in terms of the number of scientific and academic staff from which a large number of reviewers come, but in fact it is at institutions which are particularly research intensive that DFG reviewers are also active to a great extent.

Table 5-5 shows the institutions, by scientific discipline, where particularly large numbers of DFG reviewers work (see also the Tables A5-2 to A5-5 in the appendix, differentiated according to 16 research areas).

As is shown in Table 5-5, no single university takes a leading position in all four scientific disciplines for the number of DFG reviewers working there. The University of Munich comes closest to this, with the highest number of reviewers in both humanities and social sciences and biological sciences. There are only four universities (the Technical University of Munich and the universities of Bonn, Heidelberg and Tübingen) which are amongst the top ten in more than two scientific disciplines. This can be attributed to the profile for the engineering sciences, which differs significantly from the other scientific disciplines. The Technical University of Munich, second in terms of reviewers in the engineering sciences after the Technical University of Aachen, is the only leading university in terms of the number of reviewers in the engineering sciences which is also amongst the top ten universities in terms of the number of reviewers overall.

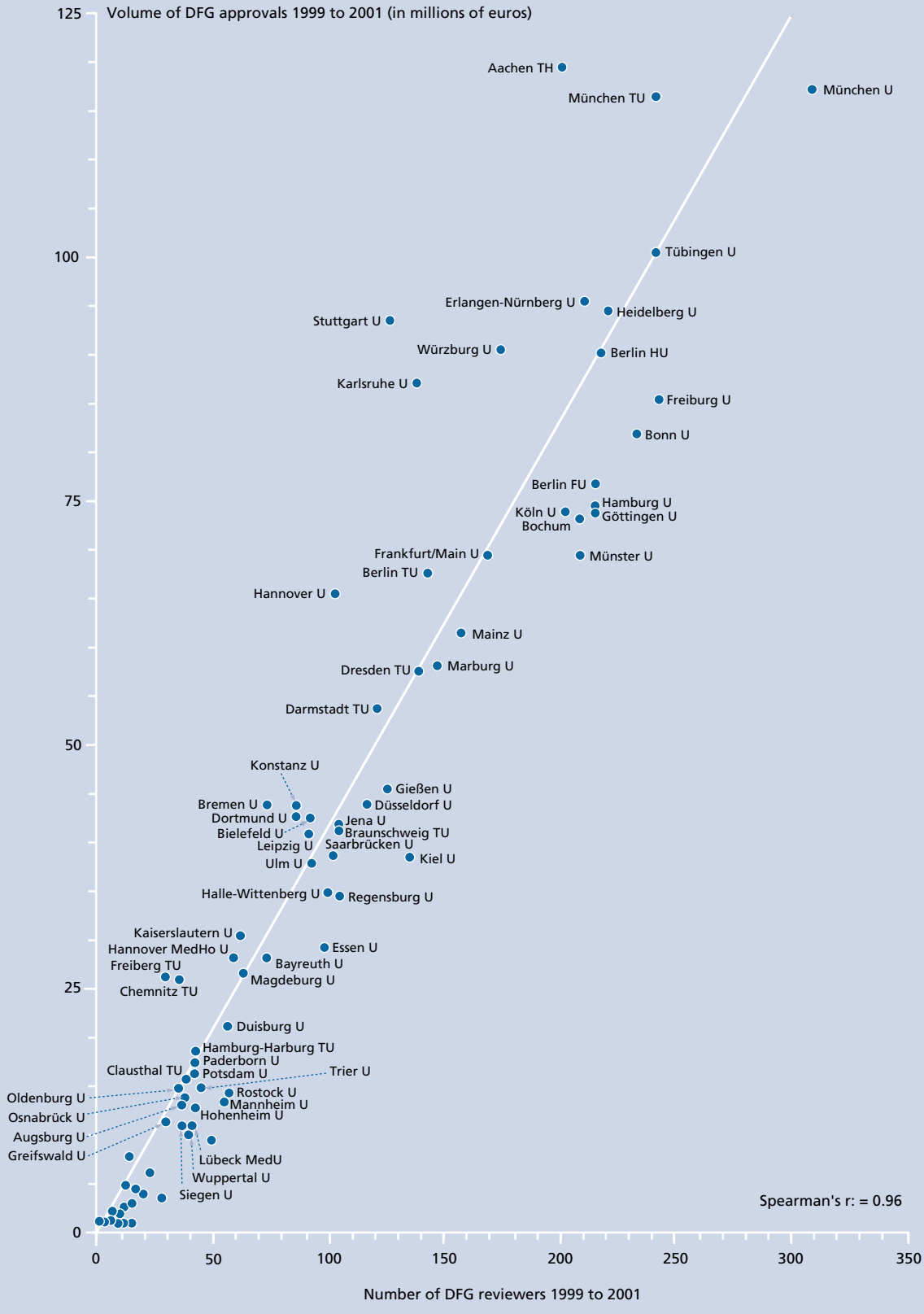
The frequency distribution of reviewers in the engineering sciences also paints a different picture compared to the other scientific disciplines: Almost a quarter of all of the engineering sciences reviewers come from the five universities with the highest number of reviewers in engineering sciences (the technical universities of Aachen, Munich, Darmstadt, Karlsruhe and Berlin). This indicates that the specialist knowledge of the engineering sciences, in as far as it is reflected by the number of reviewers per university, is far more concentrated on a small number of universities than in the other scientific disciplines: Only about one in eight reviewers (13 percent) came from the five universities with the highest number of reviewers in total (cultural sciences 18 percent, life sciences 16 percent, natural sciences 12 percent).

In the humanities and social sciences, the University of Cologne is in third place after the universities of Munich (110 reviewers) and Tübingen (91). Reviewers in the cultural sciences are over-represented at the University of Cologne when you take into consideration that in the overall ranking this university does not appear until 14th place. The same applies to the Free University and the Humboldt University in Berlin, from both of which there were 84 reviewers in the humanities, as well as the University of Hamburg, with 83. At the universities of Freiburg (81) and Bonn (78) about one in three reviewers originates from the humanities.

The University of Freiburg owes its second place in the overall ranking primarily to reviewers in the biomedical sciences, who, with 115 of the total of 243, constitute almost half of the total number of reviewers from Freiburg. From the universities of Heidelberg (110) and Göttingen (105), almost every other reviewer is also a biological scientist; at the University of Würzburg (103), which is 16th in terms of reviewers overall, but is in fifth place for the biological sciences, biological scientists represent nearly 60 percent of the total number of reviewers.

In the natural sciences the ranking is topped by the Technical University of Munich, with 54 reviewers. The University of Bonn (52 reviewers in the natural sciences) is followed by the University of Münster (51), a university which is not in the “top ten” overall. The University of Tübingen, where one in five reviewers overall is a natural scientist, which is more or less average, draws level with the University of Münster. There were 49 reviewers in the natural sciences each from the Technical University of Aachen, the Technical University of Berlin, the University of Hamburg and the Technical University of Karlsruhe; at all of these universities the natural scientists are all over-represented in comparison to the total number.

Figure 5-9:
Volume of DFG approvals in relation to the number of DFG reviewers 1999 to 2001 by university



For DFG approvals refer to Table A3-10, for details on the source and basis of DFG reviewers refer to Table A5-1. For practical display purposes, only universities which received more than 10 million euros in DFG approvals are named.

5.5.4 A Comparison of DFG Approvals and the Number of DFG Reviewers per University

In conclusion, it is particularly interesting to investigate more closely the relationship between the volume of approvals granted by the DFG and the number of DFG reviewers working at a university. If the volume of third party funding granted by the DFG allows conclusions to be drawn on the intensity of research conducted at a university (as well as indirectly about the quality of this research, as attested by the peers who are consulted on funding matters and who, according to the DFG's strict regulations, must be from other institutions) and if, on the other hand, the number of reviewers working at a given university gives an indication for the level of research know how present, then a strong correlation between these two values is to be expected: Where a large amount of acknowledged high quality research is being conducted the degree of evaluation expertise of the scientists and academics working there must also be well developed.

To portray this relationship Figure 5-9 positions the universities according to the volume of approvals granted by the DFG along the y-axis and according to the number of reviewers consulted by the DFG along the x-axis. Universities which are above average in terms of the volume of approvals are thus in the top half, and those which are above average in terms of the number of reviewers are on the right-hand side of the graph. In relation to the diagonal line which depicts a perfect correlation this means that: Universities below this line are above average in terms of the number of reviewers in relation to the amount of funding received in approvals from the DFG; the universities above the line are below average in terms of the number of reviewers relative to their respective volume of approvals.

The graph shows a strong correlation between these two values: The universities, represented by the points on the graph, are all very close to the line – a situation which is confirmed by the correlation value shown for the graph: the Spearman's r value of 0.96 is very high indeed.

This strong correlation is also confirmed by a close examination of each of the most highly placed universities: Here it is evident that of the 20 universities with the highest volume of approvals granted in the form of third party funding by the DFG, exactly 18 are also amongst the institutions with the highest number of reviewers. The universities of Stuttgart (place 24) and Karlsruhe (place 22) with a technical orientation are very close behind.

In search of an explanation for this deviation amongst the rankings, then it is predominantly the technical universities which tend to have a below average number of reviewers in relation to the amount of third party funding received from the DFG. The explanation for this – similarly to the case outlined above for the Fraunhofer Gesellschaft – is fairly obvious: Scientists and academics at technical universities mainly accumulate expertise in technical subjects – they are therefore also predominantly consulted in connection with proposals which focus on the engineering sciences.

6. Internationality of Research

6.1 Introduction

Internationality is an integral element of research, because research does not stop at national boundaries. In accordance with the tasks laid down in its statutes, the DFG has opened up all of its funding programmes to accommodate international cooperation between researchers – a prerequisite for Germany to be a forward-looking and at the same time cosmopolitan location for research and science. Today the span of international projects extends all the way from simple researcher exchanges, Research Grants and Fellowships, funds for Conference, Lecture and Information Trips right through to long-term joint initiatives such as International Research Training Groups and Collaborative Research Centres. At the same time, cooperation with international partner organisations and within the context of international scientific organisations is being extended and intensified. The DFG fulfils coordinative and representative functions at an international level and in doing so represents the interests of German research. Through many years of collaboration with partner organisations within European countries and overseas, it has established a tight-knit network of bilateral agreements. The Sino-German Center for Science Promotion in Beijing opened in 2000, and the DFG liaison offices in Washington (2002) and Moscow (2003) contribute significantly to the intensification and development of scientific cooperation between Germany and these countries. They are intended to give impetus to science and research policy in their respective settings and in so doing contribute to the intensification of scientific relations and wider-reaching networking of national and international research.

In light of the great importance attributed to international cooperation in research, taking the DFG as an example, it is astonishing how patchy information on this topic is. So far there is not a single institution in Germany which collects and processes data on the exchange of researchers according to uniform criteria. Such data is neither collected by the statistical offices (in contrast to student statistics, for instance, for which a detailed record of the proportion of international students and their countries of origin is kept), nor have the universities developed processes in order to make use of the information, which is largely known to their personnel departments, concerning the international researchers working there for statistics and comparison between universities.

With the objective of improving the situation regarding information, in 1999 the DAAD assigned the HIS Higher Education Information System (Hochschulinformationssystem, HIS), in Hannover, the task of compiling a regular data report on the internationality of study and research in Germany. The third edition of the report entitled “wissenschaft weltoffen”, published in 2003, containing figures on the internationality of research is based primarily on material provided by the various research funding bodies and research organisations. For instance, in the chapter “Ausländische Wissenschaftler in Deutschland” (International researchers in Germany), the DFG lists the number and country of origin of foreign fellows and visiting lecturers in the Research Training Group programme as well as funding recipients in the Mercator Programme. Under the heading “Deutsche Wissenschaftler im Ausland” (German researchers abroad) it reports on the destination of DFG-funded fel-

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lows in its postgraduate programmes (Research Fellowship, Emmy Noether Programme). Both of these chapters also gave consideration to the funding of scientists and academics who were involved in preparatory journeys for projects and in cooperative visits to Germany or abroad as part of a wide variety of agreements between the DFG and international partner organisations [1].

The good cooperation between various research funding bodies and organisations developed through this project also bears fruit in this ranking. With the intention of obtaining quantitatively reliable information on selected aspects of the internationality of research at university and research area level, the two largest funding bodies for international researcher and student exchanges were invited to join in this work. Both of them, the DAAD and the Alexander von Humboldt Foundation (AvH) readily accepted. The analyses presented below therefore concentrate on data provided by these two funding bodies on the destinations of international visiting researchers. In the case of the DAAD data on international students and graduates was also included.

From a ranking point of view the figures on funding recipients provided by the AvH and the DAAD provide a good impression of the international prominence and appeal of German universities sorted by research area and (in the case of the AvH also) German non-university research institutions for top level international scientists and academics.

A further contribution is made by data providing information on the participation of German universities in the Fifth EU Framework Programme (1998 to 2002). Here again, exchange between researchers from other countries is central. This exchange is not individual funding of the kind characteristic of the AvH and the DAAD, however, but rather is part of large scale research projects, which – as required by the EU funding regulations – are usually conducted with the participation of research groups from at least three countries. The aspect of international networking is especially vital here. On the basis of the data provided for this ranking it has, for the first time, been possible to quantify this aspect of networking both according to partner country as well as by university.

6.2 Visiting Researchers of the Alexander von Humboldt Foundation (AvH)

6.2.1 General

The Alexander von Humboldt Foundation, re-established in 1953, funds international cooperation between scientists and academics from other countries and their colleagues in Germany. Within this context it has established an international network that now encompasses over 23,000 funding recipients from over 130 countries and is continually growing [2].

The central funding element is the Humboldt Research Fellowship Programme for researchers from abroad who have (at least) completed their doctorate and as a rule are under the age of 40. The fellowships are awarded on the basis of completely open international competition, there are no quotas for academic discipline or country of origin. The research fellows are free to choose their research topic and the host with whom they will generally spend between 12 and 24 months working with at a German institute. So the AvH does not "place" its research fellows, instead, even before they apply for AvH research fellowships the candidates need to have made their own working agreements with a self chosen German institute themselves.

The selection of applicants, only about a third of whom are granted a fellowship, is carried out by a selection committee composed of high-calibre scientists on the basis of their individual academic qualifications. Thus, what emerges is a group of scientists and academics whose express desire to work together with a specific German colleague, at a specific institute is itself indicative of quality; furthermore, this desire is often the result candidates have reached after having weighed up various offers from several countries.

Apart from research fellowships, the AvH also grants research awards to internationally renowned researchers. Unlike research fellowships, for which candidates must apply formally, the Foundation accords research awards to foreign scholars nominated by specialist colleagues in Germany. The acceptance of the award, and the free choice of a specific German institute for their stay are an indication of the high esteem afforded to the research potential at that institute by an internationally leading researcher in that particular discipline.

[1] See http://www.wissenschaft-weltoffen.de

[2] See also "The Humboldt Network" at http://www.avh.de/en/netzwerk/index.htm, developed to promote direct contact between "Humboldtians" across subject and national boundaries.

Between 1997 and 2001 a total of about 208 million euros was spent on funding AvH visiting researchers (plus administrative costs). Most of this was funding to cover the cost of living in Germany. Expenses for consumables for the research projects carried out in Germany are usually met by the host institutes.

6.2.2 Data Basis and Methodology

For many years now the AvH has determined the distribution of the Humboldt research fellows and award winners between the German host universities and other institutes[3]. The following analysis is based on data used by the AvH for its own ranking and provided for use in this ranking. In the overviews on which this analysis is based Humboldt research fellows and award winners (visiting researchers) are considered in combination according to the following criteria:

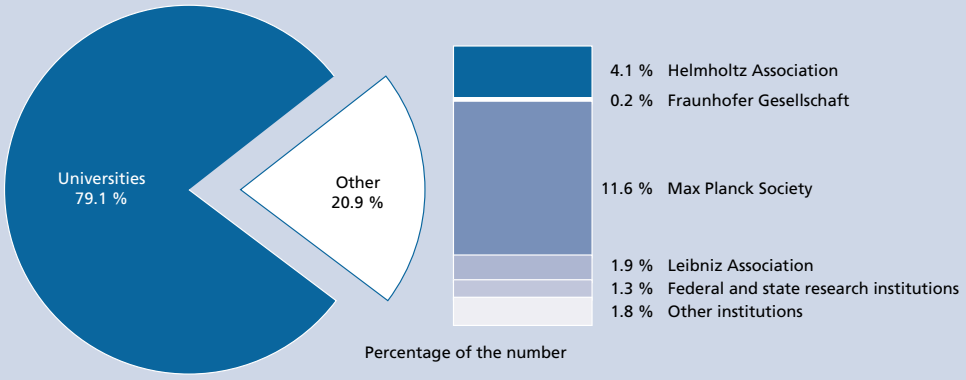
- The report covers the period 1997 to 2001 in order to avoid annual fluctuations influencing the significance of the report.
- Each researcher is only counted once for the main stay at a host institute; any additional shorter stays at other institutes are not taken into account.
- The subject classification refers to the visiting researcher in person, not to the departments at the host institution.
- For the purposes of this ranking and to the extend as possible, the highly graded subject classification system used by the AvH, consisting of more than 1,800 AvH subjects, was transferred to the 16 categories incorporated in the research area classification system used by the DFG (cf. Chapter 2.2). As a result of the different systems used the allocation is not completely congruent, however, in particular in the humanities and the engineering sciences. There are therefore also differences between this ranking and the so-called "Humboldt-Rankings" published by the provider of the data.

The DFG also supplemented the data provided with additional information. The universities and non-university institutions were allocated an institution type and for non-university institutions details on the location of the headquarters were added.

6.2.3 General Findings

In the period covered the AvH enabled research visits for 2,462 research fellows and 433 award winners. Before taking a closer look at the destinations of these funding recipients we shall first turn our attention to investigating their countries of origin. In the AvH's competitive selection process, decided purely on the basis of scientific quality, without any country or subject quotas, researchers from China, the USA, Russia, India and Japan are most suc-

Figure 6-1:
AvH visiting researchers from 1997 to 2001 by type of institution (in percent)



Source: AvH (2002), visiting researchers by institution and DFG research area (1997 to 2001), special report.

[3] See http://www.humboldt-foundation.de/en/aktuelles/schwerpunkte/ranking.htm.

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cessful in numerical terms (cf. Table A6-1 in the appendix). For the research awards for internationally renowned researchers, on the other hand, nominees from the USA dominate by a long way, taking 46 percent of the nominations. They are followed by award winners from Russia, Canada, Israel, Australia, France, Italy, and the United Kingdom, as well as 91 other countries.

Of the 2,895 visiting researchers about 80 percent conducted research at universities, the remaining 20 percent visited non-university research institutions (cf. Figure 6-1).

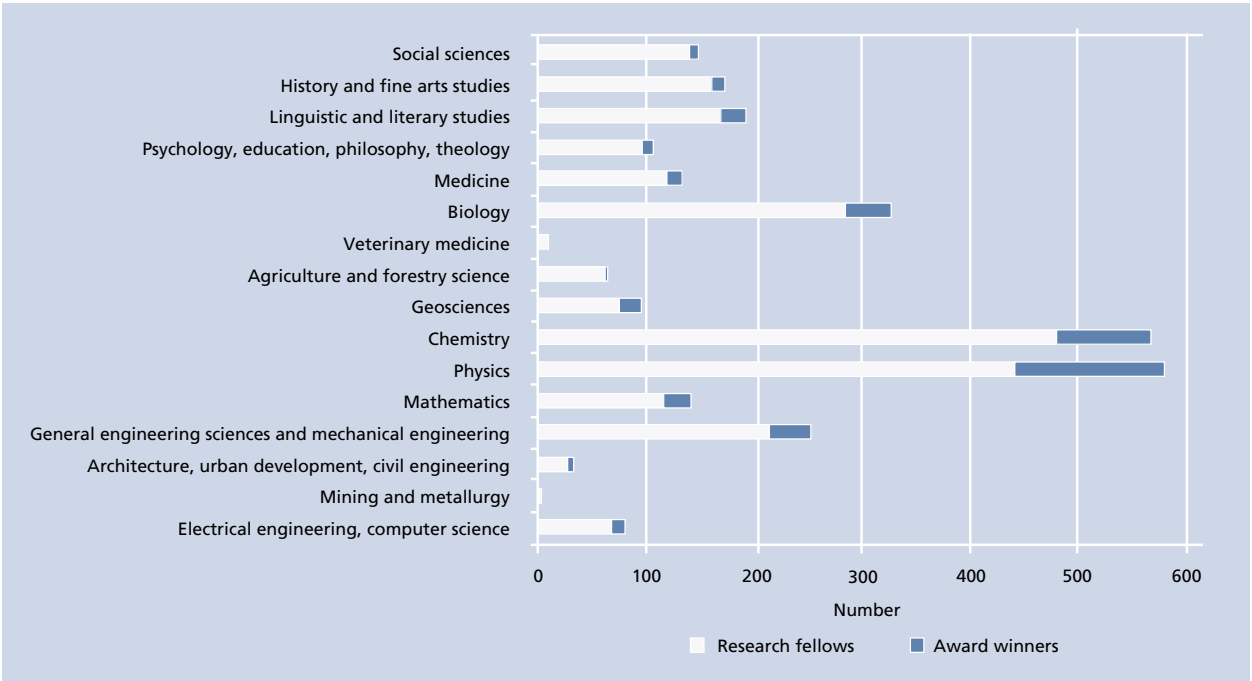
Particularly worth highlighting are the institutes belonging to the Max Planck Society, which were visited by nearly twelve percent of the visiting researchers funded by the AvH as part of their research stay. A further four percent worked at one of the Helmholtz Association's National Research Centres.

Table A6-2 in the appendix displays the number of visiting researchers per non-university institution and DFG scientific discipline. At the top of the list are the Research Centre Jülich (FZJ), the Max Planck Society's Fritz Haber Institute in Berlin, and the MPI for Metals Research in Stuttgart (26 visiting researchers each). The Max Planck Institute for Polymer Research in Mainz and the Max Planck Institute of Colloids and Interfaces in Golm were chosen by 21 and 20 AvH visiting researchers respectively as their destination for a longer term research stay.

Figure 6-2 shows the distribution of the visiting researchers in the DFG's research areas. According to this figure, German universities and non-university research institutions were of particular international appeal to AvH funding recipients working in "physics" and "chemistry". However, German research evidently also enjoys a particularly good reputation amongst visiting researchers in "general engineering sciences and mechanical engineering" and "biology".

This finding remains valid if – in this case limited to AvH visiting researchers at universities – the number of funding recipients per research area is compared to the number of professors and scientists and academics in total working at each institution. It should be noted that for this comparison a certain degree of imprecision has to be accommodated. Since the subject classification of the AvH funding recipients is done on a personal basis, whereas university staff are classified according to the institute where each one works, a 1:1 relationship between the subjects of the AvH funding recipients and that of the university staff is not given. The discrepancy should be minimal, however.

Figure 6-2:
AvH research fellows and award winners 1997 to 2001 by DFG research area



Source: AvH (2002), visiting researchers by institution and DFG research area (1997 to 2001), special report.

To maintain compatibility with the findings reported in the other chapters Table 6-1 also relates to staff data for the 79 universities which received at least half a million euros in approvals from the DFG over three years (1999 to 2001).

In the general view for four scientific disciplines it is primarily AvH-funded visiting researchers from disciplines in the natural sciences who decided upon a research stay in Germany in large numbers. Here there are about 28 AvH visiting researchers per 100 professors, whereas in the remaining scientific disciplines the proportion varies between 6 and 9 visiting researchers per 100 professors. The finding on the basis of the absolute figures is confirmed by looking at the individual research areas: Per 100 professors in "chemistry" there are, on average, 42 AvH visiting researchers over 5 years, in "physics" there are 36. These are also followed by "biology" (23 visiting researchers) and "general engineering sciences and mechanical engineering" (20 visiting researchers) in the representation according to staff numbers.

6.2.4 Visiting Researchers at Universities

In the period covered research fellows and award winners were hosted by a total of 80 higher education institutions (76 universities, 3 universities of applied sciences and 1 academy of art). Figure 6-3 shows the universities with the highest number of AvH visiting researchers according to four scientific disciplines (see also Table A6-3 in the appendix).

This ranking is led by the two universities in Munich, closely followed by the Free University in Berlin. Some way behind, the University of Heidelberg, the Humboldt University in Berlin and the University of Bonn are also very appealing to AvH visiting researchers.

Looking at the leading universities in each scientific discipline we see the following distribution patterns:

> **Humanities and social sciences:** The leading universities in the ranking here are the Free University in Berlin, the Humboldt University in Berlin, the University of Munich and the universities of Heidelberg and Cologne.

Table 6-1:
AvH visiting researchers 1997 to 2001 in relation to the number of professors/scientists and academics in total per DFG research area

Research area	Visiting researchers	Professors		Scientists and academics in total	
		n	Visiting res. per 100 prof.	n	Visiting res. per 100 sci.
Social sciences	122	3,312	3.7	13,095	0.9
History and fine arts studies	141	1,405	10.0	4,052	3.5
Linguistic and literary studies	179	2,023	8.8	8,371	2.1
Psychology, education, philosophy, theology	95	2,130	4.5	7,134	1.3
Humanities and Social Sciences	**537**	**8,870**	**6.1**	**32,652**	**1.6**
Medicine	109	3,309	3.3	40,782	0.3
Biology	214	928	23.1	5,680	3.8
Veterinary medicine	5	207	2.4	1,009	0.5
Agriculture and forestry science	52	530	9.8	3,231	1.6
Biology/Medicine	**380**	**4,974**	**7.6**	**50,702**	**0.7**
Geosciences	81	415	19.5	2,212	3.7
Chemistry	450	1,070	42.1	8,451	5.3
Physics	407	1,153	35.3	7,385	5.5
Mathematics	137	1,225	11.2	4,001	3.4
Natural Sciences	**1,075**	**3,863**	**27.8**	**22,049**	**4.9**
General engineering sciences and mechanical engineering	187	996	18.8	8,839	2.1
Architecture, urban development, civil engineering	28	914	3.1	5,258	0.5
Mining and metallurgy	1	67	1.5	501	0.2
Electrical engineering, computer science	73	1,205	6.1	7,781	0.9
Engineering Sciences	**289**	**3,182**	**9.1**	**22,379**	**1.3**
In total	**2,281**	**20,889**	**10.9**	**127,782**	**1.8**

Based on: 79 universities which received more than half a million euros in approvals from the DFG between 1999 and 2001 (excluding the University of Witten-Herdecke [no staff data], and excluding staff not allocated to a particular subject [399 professors, 6,364 scientists and academics in total]).

Sources:
AvH (2002), visiting researchers by institution and DFG research area (1997 to 2001), special report.

Federal Statistical Office (2002), Full time employment scientific and artistic staff according to organisational classification, university, fields of teaching and research and staff unit (status: 2000), special report.

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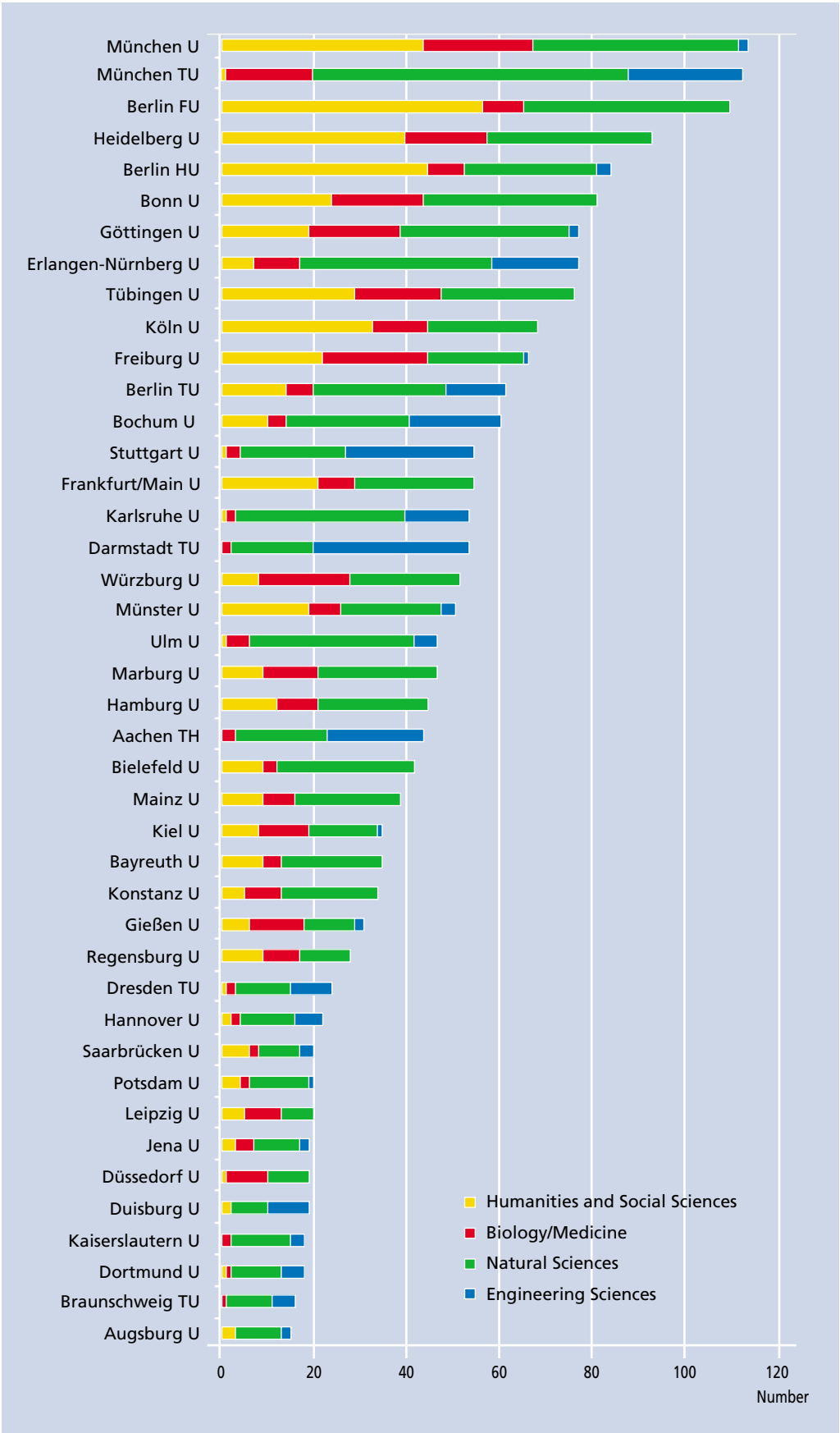
Figure 6-3:
AvH visiting researchers from 1997 to 2001 by university [1)] and DFG scientific discipline



[1)] Only universities with 15 or more visits from visiting researchers (1997 to 2001) (other universities cf. Table A6-3).
Source: AvH (2002), visiting researchers by institution and DFG research area (1997 to 2001), special report.

- **Biology/medicine:** The highest ranked University of Munich is followed by the University of Freiburg, as well as (equal) the universities of Bonn, Göttingen and Würzburg.

- **Natural sciences:** In this discipline the Technical University of Munich has the greatest appeal for AvH visiting researchers; other popular destinations are the University of Munich, the Free University in Berlin, and the universities of Erlangen-Nürnberg and Bonn.

- **Engineering sciences:** With a relatively high concentration on a few universities, the Technical University of Darmstadt, the University of Stuttgart, the Technical University of Munich and the Technical University of Aachen, as well as the University of Erlangen-Nürnberg are particularly chosen by AvH visiting researchers with an engineering focus.

Looking at the preferences of AvH visiting researchers who came to Germany as award winners in comparative terms, the following order results: Most popular are the Technical University of Munich, the Humboldt University in Berlin as well as the universities of Munich, Karlsruhe and Göttingen. These universities were predominantly chosen for research stays by AvH award winners in the natural sciences (cf. Table A6-3 in the appendix).

Additional overviews contained in the appendix show the leading universities and non-university research institutions by research area (cf. Tables A6-4 to A6-7). Overall the figures in these tables reveal a relatively high concentration of AvH funding recipients at a few institutions. For the subject-independent view, for instance, just 15 universities manage to account for almost half of all AvH visiting researchers (in comparison: when considering the volume of DFG approvals or the total third party funding income, 17 or 18 universities account for nearly half of the funds respectively).

An account summarising the various findings presented in this ranking differentiated by research area is to be found in Chapter 8 (Summary).

A look at the figures in relation to the number of scientists and academics at universities results in the distribution shown in Table A6-8 in the appendix. Relative to the number of professors working at a university the ranking is led by the Technical University of Munich (29 visiting researchers per 100 professors), followed by the universities of Ulm (26), Konstanz, Heidelberg and Stuttgart (23 each). Eight of the ten leading institutions in relative terms are in southern Germany; the University of Darmstadt and the Free University in Berlin are also in the "Top Ten" for AvH visiting researchers.

As is finally shown by Table 6-2, AvH researchers predominantly chose universities which have also developed a reputation as being especially active in research through the total volume of DFG approvals they attract. This compares the number of visiting researchers per 100 professors and scientists and academics in total according to the four DFG approval groups (cf. Chapter 2). Whereas there were almost 16 visiting researchers per 100 professors over

Table 6-2: AvH visiting researchers 1997 to 2001 by DFG approval ranking group in relation to the number of professors/scientists and academics in total at universities (status: 2000)

DFG approvals ranking group	Visiting researchers	Professors		Scientists and academics in total	
		n	Visit. researchers per 100 prof.	n	Visit. researchers per 100 sci.
Place 1 to 20	1,449	9,240	15.7	65,509	2.2
Place 21 to 40	554	6,250	8.9	40,804	1.4
Place 41 to 60	242	3,570	6.8	19,123	1.3
Place 61 to 79	36	2,228	1.6	8,710	0.4
In total	**2,281**	**21,288**	**10.7**	**134,146**	**1.7**

Based on: 79 universities which received a total of more than half a million euros in approvals from the DFG between 1999 and 2001 (excluding the University of Witten-Herdecke [no staff data]). There were also nine visiting researchers at seven other universities. The allocation to a ranking group is calculated from the sum total of DFG approvals granted (cf. Table A3-10).

Sources:
AvH (2002), visiting researchers by institution and DFG research area (1997 to 2001), special report.

Federal Statistical Office (2002), Full time employment scientific and artistic staff according to organisational classification, university, fields of teaching and research and staff unit (status: 2000), special report.

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five years at the universities on places 1 to 20, this figure drops to 9 in the second group. In the third group the number of visiting researchers is just 7, while universities in the fourth group in the ranking are barely visited (2 visiting researchers per 100 professors). In terms of the number of professors working at a university, the "Top 20" universities in the DFG approval statistics are thus about ten times as successful in their "recruitment" of AvH visiting researchers than the universities listed in places 61 to 79, and relative to the third group in the ranking the ratio is still significantly higher than 2:1.

6.3 International Funding Recipients from the German Academic Exchange Service (DAAD)

6.3.1 General

The members of the DAAD, re-established in 1950, are – subject to application – all higher education institutions represented in the Association of Universities and Other Higher Education Institutions in Germany (HRK) and their student bodies. At the end of 2001, DAAD membership comprised a total of 231 universities and 128 student bodies from the various types of higher education institutions. A part of the self-administrative nature of the DAAD is that the individual decisions on the granting of fellowships are made by independent academic selection committees. The primary selection criteria are the applicant's academic qualifications, as well as the quality of the project in question. The members of the selection committees, more than 500 academics from universities and colleges working in an honorary capacity, are appointed by the executive committee of the DAAD without influence from government authorities.

The DAAD's funding programmes are split into "support of individuals" and "programmes and projects". "Support of individuals" includes funding for individual scholarships (for example one-year scholarships) which are spent at universities and non-university institutions both in Germany and abroad. The category "Programmes and projects" includes funding received by institutions, usually in the form of funding contracts, to support structural improvements in the quality of research, teaching and supervision and to fund mobility.

6.3.2 Data Basis and Methodology

On the one hand, the data provided by the DAAD contains information on the total spending per university in 2000 and 2001. Table A6-9 in the appendix reports the corresponding totals for the categories "support of individuals" and "programmes and projects". Those figures also include information on the number of foreigners and Germans funded in the two years covered by that report, each split between scientists and academics, and students/graduates funded.

For universities which received more than half a million euros in approvals from the DFG between 1999 and 2001 the DAAD also used a complex process to edit the data in order to provide information according to the country of origin and the destination institution of the scientists and academics, and students/graduates funded.

International students and graduates at German universities are funded by the DAAD with individual scholarships (for example in the form of a one-year scholarship). Following a successful evaluation of their individual application international scientists and academics (minimum qualification: graduate status) stay at a German university or non-university research institution for study or research with DAAD support [4].

The subject classification by the DAAD, similar to the AvH, is based on the study or core research area of the funding recipient and not on the subject profile of the host university. The subject allocation to the DFG's scientific disciplines and research areas is carried out using a concordance table to assign the total of 218 DAAD subjects to the 16 research areas used by the DFG.

Information on scientists and academics and on students/graduates are investigated separately below. In line with the topical orientation of this report the emphasis is placed on evaluating on the data available regarding the scientists and academics.

[4] Since the DAAD's own database has so far only been used to collect data on funding recipients who have chosen one of its member universities for a study or research visit it is impossible to draw any conclusions by subject for DAAD funding recipients at universities which are not members of the DAAD or, more importantly, on funding recipients at non-university research institutions.

6.3.3 General Findings

In 2000 and 2001 the approvals granted by the DAAD, amounting to 264 million euros, were distributed between 216 higher education institutions (92 universities, 102 universities of applied sciences and 22 academies of art) in total. Of this sum, 231 million euros went to universities. If funding of research visits to non-university research institutions and a few smaller universities without DAAD membership status is also taken into account then this figure rises to nearly 279 million euros. Table A6-9 in the appendix shows the figures for universities which received more than half a million euros over the two years covered by the report. These 90 universities account for over 86 percent of the total amount of funding. They thus represent a good part of the DAAD's funding activities.

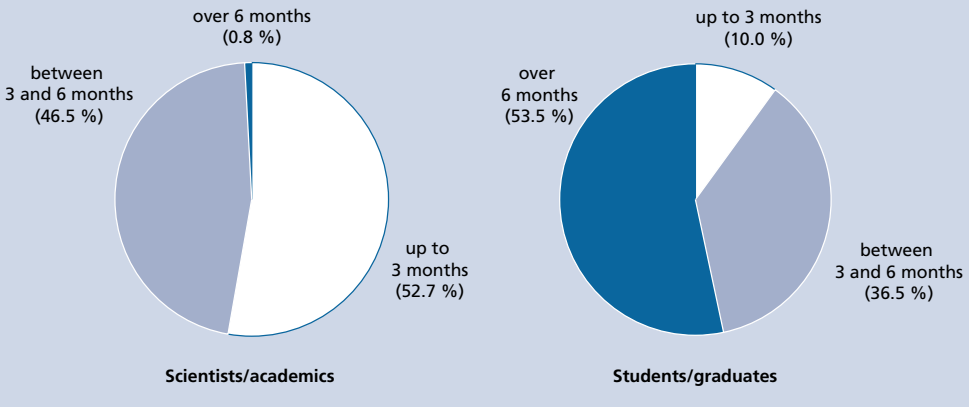
In the category "programmes and projects", which received almost 112 million euros in funding, the ERASMUS programme, for which about 30 percent of these funds were provided, is of great significance. In 2000 and 2001 the DAAD provided a total of 152 million euros for the support of individuals. Most of this was granted to students and graduates, who in numerical terms made up 87 percent of the German funding recipients and 83 percent of the international funding recipients (cf. Table A6-9 in the appendix).

The analyses below concentrate on the group of international funding recipients. For the two years under consideration this group encompasses 216 member universities, 14,691 students and graduates, and 2,930 scientists and academics in total. As is evident from Table A6-10 in the appendix, the majority of the students and graduates came from Russia. Next are Brazil, Poland, Indonesia and China. The order is slightly different for DAAD-funded scientists and academics. Here China leads the list of most represented countries of origin, followed by Russia, and then Poland, Brazil and Egypt. There is a high degree of correlation with the findings reported above for AvH visiting researchers, in particular with regard to the leading position assumed by Russia and China (cf. Table A6-1 in the appendix). The USA, which takes first place in terms of award winners (AvH research fellows: second place), sends the seventh highest number of foreign students and graduates; in terms of scientists and academics it is – level with Hungary – in tenth place.

Figure 6-4 provides information on the average duration of stay for each of the groups "foreign scientists and academics" and "foreign students and graduates". While more than half of the students and graduates decide to come to Germany for longer than six months (usually with a "one-year scholarship"), stays by scientists and academics are generally significantly shorter. About half of the funding recipients decided to come for a research stay of either between one and three or between three and six months.

Conclusions drawn by subject relate to 78 universities (cf. Table 6-3). On this basis the DAAD programmes prove to be partic-

Figure 6-4:
Duration of stay by DAAD funding recipients 2000 and 2001



Source: DAAD (2003), DAAD-funded international scientists and academics and students/graduates by university and subject (2000 and 2001), special report.

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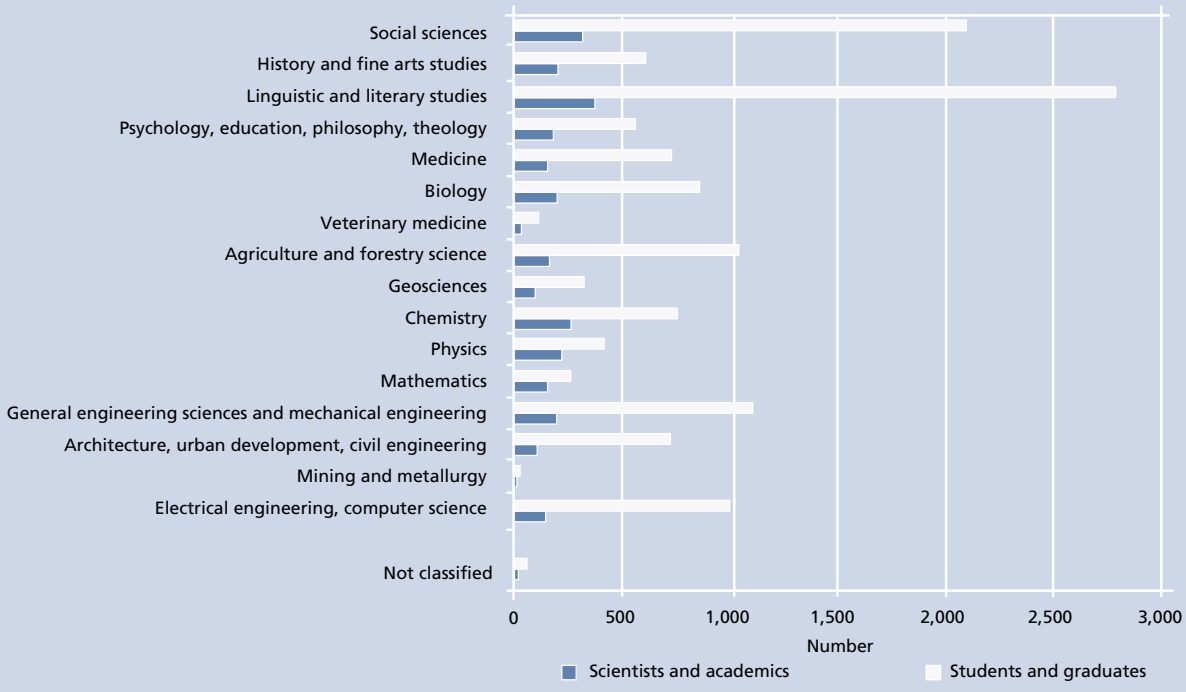
ularly appealing to foreign students, graduates, scientists and academics in "linguistic and literary studies" and in "social sciences" (cf. Figure 6-5). Whereas the research areas of "chemistry" and "physics" followed by "history and fine arts studies" are the leading areas for AvH-funded scientists and academics, DAAD-funded students and graduates are predominantly from "agriculture and forestry science" as well as from "electrical engineering and computer science" and "general engineering sciences and mechanical engineering".

If these results are, once again, compared to data on university staff (cf. Table 6-3) then the following conclusions can be drawn in relation to the size of the research areas under consideration: "Agriculture and forestry science", "chemistry", "geosciences", "biology", and "general engineering sciences and mechanical engineering" are the research areas with the highest numbers of DAAD scientists and academics per 100 professors. The figures are well below average, on the other hand, for "medicine" and the subject group "psychology, education, philosophy, theology". Amongst students and graduates the intrinsically small research area "agriculture and forestry science", which attracted almost 200 DAAD students and graduates per 100 professors over two years, stands out in particular. It is followed by "linguistic and literary studies", the leading research area in terms of the absolute number of funding recipients, where there were nearly 140 DAAD students and graduates per 100 professors.

In comparison to the AvH, a significantly stronger emphasis on research areas in the humanities and social sciences (primarily "linguistic and literary studies") is noted with respect to the subject composition of the group of foreign scientists and academics, who are of most interest here. If this finding, which is also influenced by special programmes, is ignored then a similar pattern of emphasis as was observed for the AvH emerges for DAAD funding recipients: Here again it is particularly "chemistry", "physics", "engineering sciences" and "biology" which are especially popular amongst DAAD scientists and academics.

Figure 6-5:
DAAD funding recipients 2000 and 2001 by DFG research area



Source: DAAD (2003): DAAD-funded international scientists and academics and students/graduates by university and subject (2000 and 2001), special report.

Table 6-3:
DAAD funding recipients 2000 and 2001 in relation to the number of professors/scientists and academics in total per DFG research area

Research area	Funding recipients		Professors			Scientists and academics in total		
	DAAD sci./ acad.	Students/ graduates	n	DAAD sci. per 100 prof.	Stud./grad. per 100 prof.	n	DAAD sci. per 100 sci.	Stud./grad. per 100 sci.
Social sciences	323	2,315	3,295	9.8	70.3	13,048	2.5	17.7
History and fine arts studies	200	625	1,403	14.3	44.5	4,050	4.9	15.4
Linguistic and literary studies	376	2,786	2,017	18.6	138.1	8,347	4.5	33.4
Psychology, education, philosophy, theology	181	556	2,124	8.5	26.2	7,120	2.5	7.8
Humanities and Social Sciences	**1,080**	**6,282**	**8,839**	**12.2**	**71.1**	**32,565**	**3.3**	**19.3**
Medicine	154	748	3,309	4.7	22.6	40,782	0.4	1.8
Biology	194	842	928	20.9	90.7	5,680	3.4	14.8
Veterinary medicine	31	110	207	15.0	53.1	1,009	3.1	10.9
Agriculture and forestry science	159	1,020	530	30.0	192.5	3,231	4.9	31.6
Biology/Medicine	**538**	**2,720**	**4,974**	**10.8**	**54.7**	**50,702**	**1.1**	**5.4**
Geosciences	94	316	415	22.7	76.1	2,212	4.2	14.3
Chemistry	256	739	1,070	23.9	69.1	8,451	3.0	8.7
Physics	215	407	1,153	18.6	35.3	7,385	2.9	5.5
Mathematics	153	257	1,225	12.5	21.0	4,001	3.8	6.4
Natural Sciences	**718**	**1,719**	**3,863**	**18.6**	**44.5**	**22,049**	**3.3**	**7.8**
General engineering sciences and mechanical engineering	194	1,026	996	19.5	103.0	8,839	2.2	11.6
Architecture, urban development, civil engineering	108	728	914	11.8	79.6	5,258	2.1	13.8
Mining and metallurgy	11	18	67	16.4	26.9	501	2.2	3.6
Electrical engineering, computer science	141	987	1,205	11.7	81.9	7,781	1.8	12.7
Engineering Sciences	**454**	**2,759**	**3,182**	**14.3**	**86.7**	**22,379**	**2.0**	**12.3**
In total	**2,790**	**13,480**	**20,858**	**13.4**	**64.6**	**127,695**	**2.2**	**10.6**

Based on: 78 universities which received a total of more than half a million euros in approvals from the DFG between 1999 and 2001 (excluding the University of Witten-Herdecke [no staff data] and the University of Erfurt [no DAAD data], and also excluding funding recipients not allocated to a particular subject (16 DAAD scientists and academics, 90 students and graduates) and university staff not allocated to a particular subject [399 professors, 6,364 scientists and academics in total]).

Sources:
DAAD (2003): DAAD-funded international scientists and academics and students/graduates by university and subject (2000 and 2001), special report.

Federal Statistical Office (2002), Full time employment scientific and artistic staff according to organisational classification, university, fields of teaching and research and staff unit (status: 2000), special report.

6.3.4 International Funding Recipients at Universities

Table A6-11 in the appendix shows the universities which hosted ten or more DAAD scientists and academics in 2000 and 2001. This comprises a total of 65 universities (of which one is a university of applied sciences). The total number of DAAD-funded scientists and academics, students and graduates at these universities accounts for 89 or 94 percent of all international funding recipients. Figure 6-6 shows the leading universities in terms of the number of DAAD scientists and academics. Most of the foreign scientists and academics are hosted by the Free University and the Humboldt University in Berlin, as well as – some way behind – the universities of Munich and Tübingen, the Technical University of Berlin, and the University of Bonn. This ranking shows, in line with the subject emphases noted above, a high degree of correlation with the largest number of DAAD scientists and academics in the humanities and social sciences: Here too the Free University and the Humboldt University in Berlin, along with the University of Munich, lead the ranking, followed by Tübingen, Heidelberg, Münster and Hamburg. In the scientific discipline of biology/medicine the universities of Göttingen, Giessen and Hohenheim as well as the Humboldt University in Berlin and the University of Bonn are very popular amongst DAAD-funded scientists and academics (the small research area of "agriculture and forestry science" turns out to be comparatively well frequented by DAAD funding recipients). In the natural sciences the leading universities are the University of Tübingen, the Technical University of Berlin, the University of Karlsruhe, and the technical universities of Aachen and Munich. Finally, in the engineering sciences the technical universities of Aachen, Dresden, Stuttgart, Berlin and Darmstadt are the leaders.

The top 30 universities account for almost half of the total number of scientists and academics. Hence the distribution of

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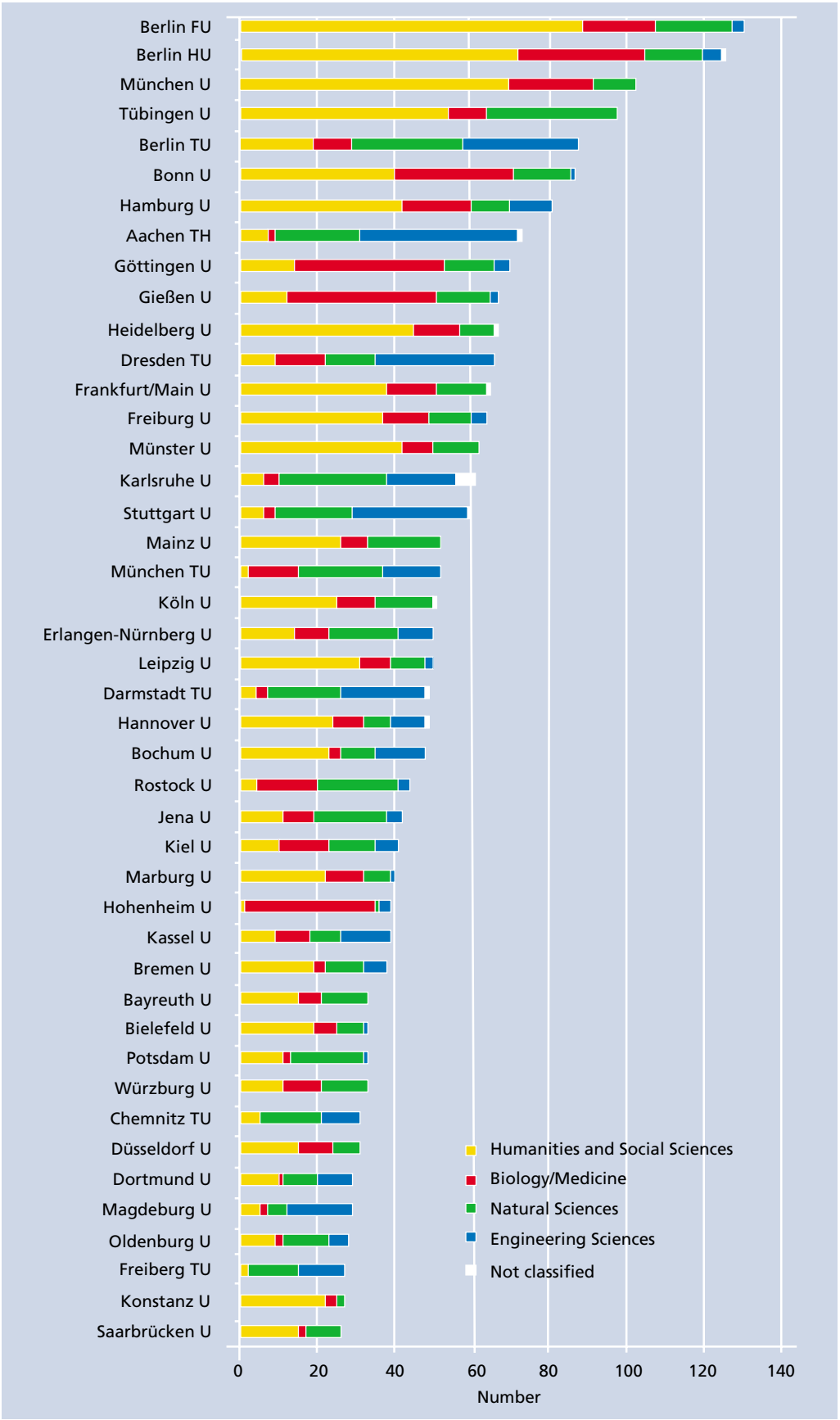
Figure 6-6:
DAAD-funded international scientists and academics in 2000 and 2001 by university [1] and DFG scientific discipline



[1] Only universities with 25 or more DAAD scientists and academics in the period stated (cf. Table A6-11).

Source: DAAD (2003), DAAD-funded international scientists and academics and students/graduates by university and subject (2000 and 2001), special report.

DAAD scientists and academics turns out to be somewhat less concentrated on a few universities than was found to be the case for AvH visiting researchers.

Table A6-16 in the appendix reports the corresponding figures for DAAD-funded students and graduates. These display slightly different emphases. Here the greatest attraction is exerted by the Technical University of Dresden, the Humboldt University in Berlin, the University of Göttingen, the Free University in Berlin, and the universities of Hannover and Munich. Taking the scientific disciplines into consideration the following preferences emerge:

> **Humanities and social sciences:**
1. Humboldt University in Berlin
2. Free University in Berlin
3. University of Heidelberg
4. University of Munich
5. University of Hamburg

> **Biology/medicine:**
1. University of Göttingen (a long way ahead)
2. University of Bonn
3. University of Hohenheim
4. University of Heidelberg
5. Humboldt University in Berlin

> **Natural sciences:**
1. University of Karlsruhe
2. University of Tübingen
3. University of Kaiserslautern
4. Technical University of Dresden
5. Free University in Berlin

> **Engineering sciences:**
1. Technical University of Aachen
2. Technical University of Dresden
3. University of Stuttgart
4. Technical University of Berlin
5. University of Karlsruhe

In contrast to the DAAD-funded scientists and academics and in agreement with the data provided by the AvH there is, again, a high degree of concentration on a small number of universities: Half of the DAAD-funded students and graduates were hosted by one of the universities on the top 14 places in the ranking.

Tables A6-12 to A6-15 in the appendix show the universities to which the most DAAD scientists and academics went for research purposes, sorted by research area. The figures presented there are subjected to a separate analysis in Chapter 8 (Summary).

Table A6-17 in the appendix shows both the international students and graduates as well as DAAD scientists and academics in relation to professors and the total number of scientists and academics. The number of DAAD scientists and academics per 100 professors is highest at the University of Hohenheim, the Technical University of Clausthal and the University of Stuttgart. In terms of the number of students and graduates per 100 professors the leaders prove to be the Technical University of Hamburg-Harburg, the University of Hohenheim and the University of Karlsruhe.

Table 6-4: DAAD funding recipients 2000 and 2001 by DFG approval ranking group in relation to the number of professors/scientists and academics in total at universities (status: 2000)

DFG approvals ranking group	Funding recipients			Professors		Scientists and academics in total		
	DAAD sci./acad.	Stud./grad.	n	DAAD sci. per 100 prof.	Stud./grad. per 100 prof.	n	DAAD sci. per 100 sci.	Stud./grad. per 100 sci.
Place 1 to 20	1,470	6,962	9,240	15.9	75.3	65,509	2.2	10.6
Place 21 to 40	735	3,916	6,250	11.8	62.7	40,804	1.8	9.6
Place 41 to 60	440	1,821	3,570	12.3	51.0	19,123	2.3	9.5
Place 61 to 78	161	871	2,197	7.3	39.6	8,623	1.9	10.1
In total	**2,806**	**13,570**	**21,257**	**13.2**	**63.8**	**134,059**	**2.1**	**10.1**

Based on: 78 universities which received a total of more than half a million euros in approvals from the DFG between 1999 and 2001 (excluding the University of Witten-Herdecke [no staff data] and the University of Erfurt [no DAAD data]. A total of 124 DAAD-funded scientists and academics and 1,121 students/graduates were active at an additional 138 universities. Affiliation to an approval ranking group is defined from the sum total of DFG approvals granted (cf. Table A3-10).

Sources:
DAAD (2003): DAAD-funded international scientists and academics and students/graduates by university and subject (2000 and 2001), special report.

Federal Statistical Office (2002), Full time employment scientific and artistic staff according to organisational classification, university, fields of teaching and research and staff unit (status: 2000), special report.

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In conclusion the figures are reported in customary fashion in comparison to the rankings which result from comparing the universities as grouped according to the volume of approvals granted by the DFG between 1999 and 2001 (cf. Table 6-4).

At the universities with the highest amount of approvals in total, there were 16 DAAD scientists and academics and 75 student and graduate funding recipients per 100 professors. In the second group in the ranking there were still 12 DAAD scientists and academics and 63 students, the third group also reports 12 DAAD scientists and academics and 51 students per 100 professors, while finally in the fourth group there were 7 DAAD scientists and academics and 40 students and graduates. This correlation between absolute research activity (measured in terms of DFG approvals) and relative appeal is thus also confirmed for DAAD funding recipients – albeit somewhat less clearly than for AvH visiting researchers.

6.4 Participation of German Universities in the Fifth EU Framework Programme

The framework programmes operated by the European Union (EU) acknowledge the aspect of internationalisation of research more than any other funding opportunity in the European Research Area. Support of cooperation across borders and the establishment of international cooperation networks are amongst the most important funding objectives in this area.

According to the figures provided by the Federal Statistical Office around six percent of third party funding received by scientists and academics at German universities is obtained from international organisations. Most of this can be assumed to come from the EU Framework Programmes (cf. Figure 3-3 in Chapter 3). EU funds thus contribute substantially to research funding at German universities. The analyses below are based on data obtained at the European Commission Directorate-General Research by the European Liaison Office of the German Research Organisations (KOWI) in Brussels and Bonn and provided to the DFG for the purpose documented here. This data provides information on the participation of universities[5] in the Fifth EU Framework Programme. This framework programme ran from 1998 until 2002. The data is used to investigate the following questions:

> To what extent did German universities participate in the Fifth EU Framework Programme and how did this compare to participation by other countries?

> Do German researchers preferentially cooperate with researchers from specific other countries, in other words, have country-specific structures of cooperation emerged within EU-funded research?

> Which German universities participated in the Fifth EU Framework Programme and to what extent?

> Is there a relationship between this frequency and the volume of funds granted by the DFG in approvals to scientists and academics at any given university?

To introduce this, the general funding objectives of the Fifth Framework Programme are outlined. This is followed by brief details on the data basis and methodology as well as the findings reached on this basis.

6.4.1 The Fifth EU Framework Programme

The Fifth Framework Programme forms the framework for the European Union's research funding activities for the period 1998 to 2002. Its budget amounted to a total of nearly 15 billion euros[6]. These funds were distributed between four Thematic Programmes and three so-called Horizontal Programmes (cf. Eckern 2003):

Thematic Programmes:

> QUALITY OF LIFE: Quality of life and management of living resources (2.4 billion euros)

> IST: User-friendly information society (3.6 billion euros)

[5] Data on the participation of non-university institutions could not be obtained in time for inclusion in this ranking. It is planned to subsequently integrate them in the database created for this ranking and to incorporate them in a follow-up study.

[6] Including the "Euratom" programme (1,260 million euros), which provides separate funding for research and training in the nuclear sector on the basis of the Euratom Treaty.

> GROWTH: Competitive and sustainable growth (2.7 billion euros)

> EESD: Energy, environment and sustainable development (2.1 billion euros)

Horizontal Programmes:

> IHP (Improving Human Potential): Improving the human research potential and the socio-economic knowledge base (1.3 billion euros)

> INCO 2: Confirming the international role of community research (0.5 billion euros)

> Innovation/SMEs: Promotion of innovation and encouragement of SME participation (0.4 billion euros)

As is suggested by the topics of these funding programmes, the EU Framework Programmes are primarily directed at applied research in a broad sense of the word. This meets the requirements of the general EU funding guidelines as formulated by the Commission on the basis of the EU treaties, which played a key role in developing this list of objectives. EU funding thus serves to:

maintain and enhance, in the context of a genuine „European research area", the research potential of European laboratories, universities and companies and their ability to produce knowledge of the highest level and high-quality technologies;

help ensure that European research serves the Union's economic and social objectives, in other words European research at the service of the citizen and European competitiveness in a global framework. (cf. European Commission 1997: 3).

The Fifth Framework Programme's Thematic Programmes are divided into so-called Key Actions. These are primarily defined with the intention of achieving a thematic focus – although the actual selection is frequently guided by contemporary discussions of science policy. The QUALITY OF LIFE programme, for instance, responded to public controversies on topics such as mad cow disease and genetically modified economic crops such as soya and maize and the sensitivity of the European public to nutrition-related topics. The Key Action "Food, nutrition and health" was defined against this background, for example. The Key Action entitled "The cell factory" was aimed at helping the Community's enterprises, either established or starting up, to exploit the advances made in the life sciences and biotechnology and to use these to develop high value-added products in the fields of health, environment, agriculture and agro-industries (cf. http://www.cordis.lu/life/src/a-oj-en4.htm).

In the "User-friendly information society (IST)" programme, on the other hand, another programme highlighted here as an example, the Key Action "Systems and Services for the Citizen" included exemplary projects for the development of information systems for medical information and patient data for doctors, as well as technologies to improve the safety and environment friendliness of vehicles, and projects designed to contribute to improving the situation regarding information in the field of environmental change (such as air pollution in cities or the destruction of the rain forest). The Key Action "New Methods of Work and Electronic Commerce", to take a final example, aimed to support projects dealing with research issues in the fields of remote working, virtual enterprises, logistics and distribution management and electronic commerce.

The so-called "Horizontal Programmes" are aimed primarily at supporting the training and mobility of researchers in the European Research Area as well as improving access to research resources such as major research centres with a lot of equipment. One of the fundamental ideas behind the development of the programmes was the establishment of so-called "Research Training Networks", within which young researchers at both the pre- and post-doctoral level are promoted through international collaborative research projects. Another measure intended specifically to promote young researchers are the "Marie Curie fellowships", which are awarded to excellent young researchers who want to transfer to a different working environment and country, irrespective of the research topic. The networking principle was also at the heart of the Key Action "Access to Research Infrastructures (ARI)" – which primarily aims to maximise the impact and benefit of the EU's excellent research facilities for the benefit of the research community.

The EU Framework Programmes, as suggested by this brief overview, do have some thematic emphasis, but are fundamentally open to researchers from all

research areas. Some focal points can be established, however. The Fifth Framework Programme, for example, was of particular interest to researchers with a biomedical or engineering background and a number of other natural scientists also participated. The scope of international collaboration was, on the other hand, very limited amongst social scientists and humanists – a situation which needs to be borne in mind when interpreting the findings below[7].

A new development of the Fifth Framework Programme was the fact that it was also opened up to participation by the so-called "Newly Associated States (NAS)" – according to more-or-less the same conditions as for researchers within the EU. A special feature which already applied to the Fourth Framework Programme is the association with Israel. This allowed Israeli research institutions to cooperate according to the same terms and conditions applicable to institutions in the European Union as Project Coordinator (and thus as applicant for and manager of EU funds). Finally, organisations from other countries (with a few exceptions) can also participate, in addition to the required minimum number of partners (usually three independent organisations), although on a self financing basis.

6.4.2 Data Basis and Methodology

The data used in this section documents the participation of German universities in the Fifth EU Framework Programme in the programmes described above[8]. The data sets consist of the corresponding contract number, the name, location and country of the institution involved, and the title of the programme funded. There is thus no information on either the subject orientation of the projects, nor the subject orientation of the institution of each of the contract partners. The data can therefore only be analysed at an institutional level.

After cleansing of the data sets relating to Germany (deleting incorrect or wrongly classified data sets, standardising institution names, additioning and correctioning of country classifications etc.) there was information on a total of 17,270 contracts signed. These contracts relate to a total of 5,622 approved projects, which corresponds to an average of three university partners per project[9]. Figure 6-7 shows the proportion of contracts signed in each of the programmes for projects carried out with German participation.

According to this figure, the largest number of contracts were signed for the programme "User-friendly information society (IST)" (30 percent), which – as already mentioned above – was also the largest in terms of the total budget (3.6 billion euros). A large proportion was also accounted for by the programmes "Quality of life and management of living resources (QUALITY OF LIFE)" (27 percent), and "Energy, environment and sustainable development (EESD)" (17 percent), as well as "Competitive and sustainable growth (GROWTH)" (16 percent). The Horizontal Programmes, described above, and the Euratom Programme account for relatively small proportions of the total in comparison to their total financial volume.

6.4.3 Participation in the Fifth EU Framework Programme by Country

In relation to the question of the international integration of German universities in the Fifth EU Framework Programme let us first consider a comparison at country level: To what extent were the various countries in the EU and countries with other partner institutions involved in these programmes?

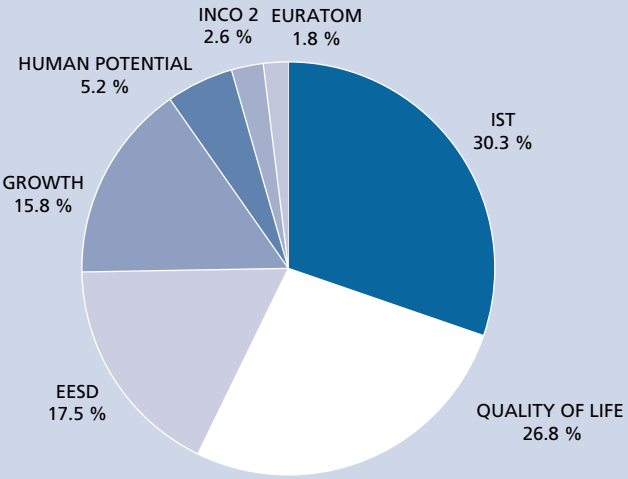
In total researchers from 110 countries participated in the Fifth EU Framework Programme by signing contracts. According to the goal of the programme, the majority of the contracts signed were between partners from the 15 member states of the EU (84 percent), 5 percent included partners from the so-called Newly Associated States, while a further 11 percent of the

[7] With the Sixth Framework Programme this has changed with the introduction of the activity area "Citizens and governance in a knowledge-based society", a programme designed specifically to *"mobilise in a coherent effort, in all their wealth and diversity, research capacities in economic, political, social and human sciences that are necessary to develop an understanding of and to address issues related to the emergence of the knowledge-based society and new forms of relationships between people on the one hand and between people and institutions on the other."* (cf. European Commisson 2002 and http://www.kowi.de/rp6/dokumente/download/fp6inbrief_en.pdf). Further considerations on the future funding of the humanities and social sciences by the EU can be found at http://www.cordis.lu/citizens/publications.htm.

[8] Excluding the programme "Promotion of innovation and encouragement of SME participation (Innovation/SMEs)". In the area of "Improving the human research potential and the socio-economic knowledge base (Improving Human Potential)" the data is not yet complete, since some contracts were signed in 2003 and could therefore not be included in the database currently available.

[9] As well as these universities there are four other non-university partners (not included in the database currently available) involved per project on average (cf. Eckern 2003: 2).

Figure 6-7:
Participation of German universities in the Fifth EU Framework Programme 1998 to 2002 by programme



Source: Eckern, Mèlanie, 2003: "Beteiligung von Hochschulen am 5. Forschungsrahmenprogramm der EU" (Participation of universities in the Fifth EU Framework Programme), published by the European Liaison Office of the German Research Organisations (KOWI), Brussels (28 April 03).

contracts were signed by partners from non-EU countries. The majority of these contracts went to Israel, Switzerland and Norway (6 percent of the total). There is also evidence of partners from China (38 instances of participation), the USA (59) and – to name two other examples – partners from Thailand (12) and Tanzania (13). Thus the EU programmes are clearly also of interest to researchers who are able to profit from the know-how transfer with the partners chosen in the EU, even though they cannot benefit directly from the funding provided by the EU in the Fifth Framework Programme.

Table 6-5 compares the countries which signed the most contracts in total with the countries from which partners in projects involving participation by German universities came. It is first of all worth highlighting the high number of contracts signed with universities in the United Kingdom (3,367 contracts/19.5 percent). Scientists and academics at German universities follow in second place, with a proportion of over 12 percent. Other countries with a comparatively high percentage include Italy (9 percent), France (7 percent) and Spain (6 percent). Together these 5 countries accounted for over half of all of the contracts signed (54 percent). From the group of Newly Associated States Poland is most worthy of note, which, with a total of 277 contracts signed (2 percent), was highly involved in projects in the Fifth Framework Programme.

If this total distribution is then compared with the distribution of the countries from which project partners with researchers at German universities came, then there is an astonishing correlation: The majority of the countries listed appeared as partners in "German" projects just as frequently in relative terms as for their total participation in the Fifth Framework Programme. Small, but nevertheless revealing discrepancies from this "rule" are seen for the Netherlands as well as Switzerland, Poland and Israel, which were all involved in projects including German participation to a somewhat greater extent than their participation overall – at the expense of Spain, Belgium, Portugal and Norway, who were correspondingly slightly less often involved in partnerships with Germany.

While this overview gives an impression of the frequency of participation by university scientists and academics from different countries in EU programmes, Figure 6-8 enables us to reach conclusions on the cooperation structure resulting from these relationships using the method introduced in Chapter 4.

A cooperative relationship between two countries exists if at least one partner in each country participated in a project funded by the EU. The figure shows the core of such a cooperation structure. It incorporates countries for which five or more joint projects with university researchers from at least one other country

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Table 6-5:
Participation of German universities in the Fifth EU Framework Programme 1998 to 2002 by country overall [1] and by partner countries of German universities

Countries overall			Partner countries of German universities		
Country	Number	in %	Country	Number	in %
United Kingdom	3,367	19.5	Germany	2,145	29.2
Germany	2,145	12.4	United Kingdom	1,147	15.6
Italy	1,481	8.6	Italy	523	7.1
France	1,227	7.1	France	433	5.9
Spain	1,109	6.4	Netherlands	385	5.2
Netherlands	951	5.5	Spain	337	4.6
Sweden	908	5.3	Sweden	321	4.4
Belgium	705	4.1	Switzerland	261	3.6
Switzerland	681	3.9	Belgium	221	3.0
Greece	665	3.9	Greece	190	2.6
Finland	452	2.6	Finland	177	2.4
Austria	408	2.4	Austria	169	2.3
Denmark	389	2.3	Denmark	135	1.8
Ireland	376	2.2	Ireland	116	1.6
Portugal	335	1.9	Poland	116	1.6
Poland	277	1.6	Portugal	98	1.3
Norway	224	1.3	Israel	78	1.1
Israel	201	1.2	Norway	72	1.0
Czech Republic	134	0.8	Czech Republic	67	0.9
Hungary	103	0.6	Hungary	41	0.6
Other countries	1,132	6.6	Other countries	316	4.3
In total	**17,270**	**100.0**		**7,348**	**100.0**

[1] Listing all countries which signed at least 100 contracts.

Source: European Commission Directorate-General Research and Information Society (2003), special report compiled for KOWI as well as calculations carried out by the DFG.

could be determined. International cooperation between researchers from 38 countries existed at this frequency. The contracts on which this cooperation is based account for 88 percent of all contracts signed in the Fifth Framework Programme.

The graphic is based on an algorithm that places countries which signed contracts for cooperative links to a large number of other countries in the middle, and countries with less involvement correspondingly nearer the edge. The stronger the relationship between two countries, or a cluster of countries, the shorter the distance between the circles representing these countries. The diameter of the circles, finally, correlates to the cumber of contracts signed by each country, while the light yellow segment of the circle represents the proportion of projects involving German participation.

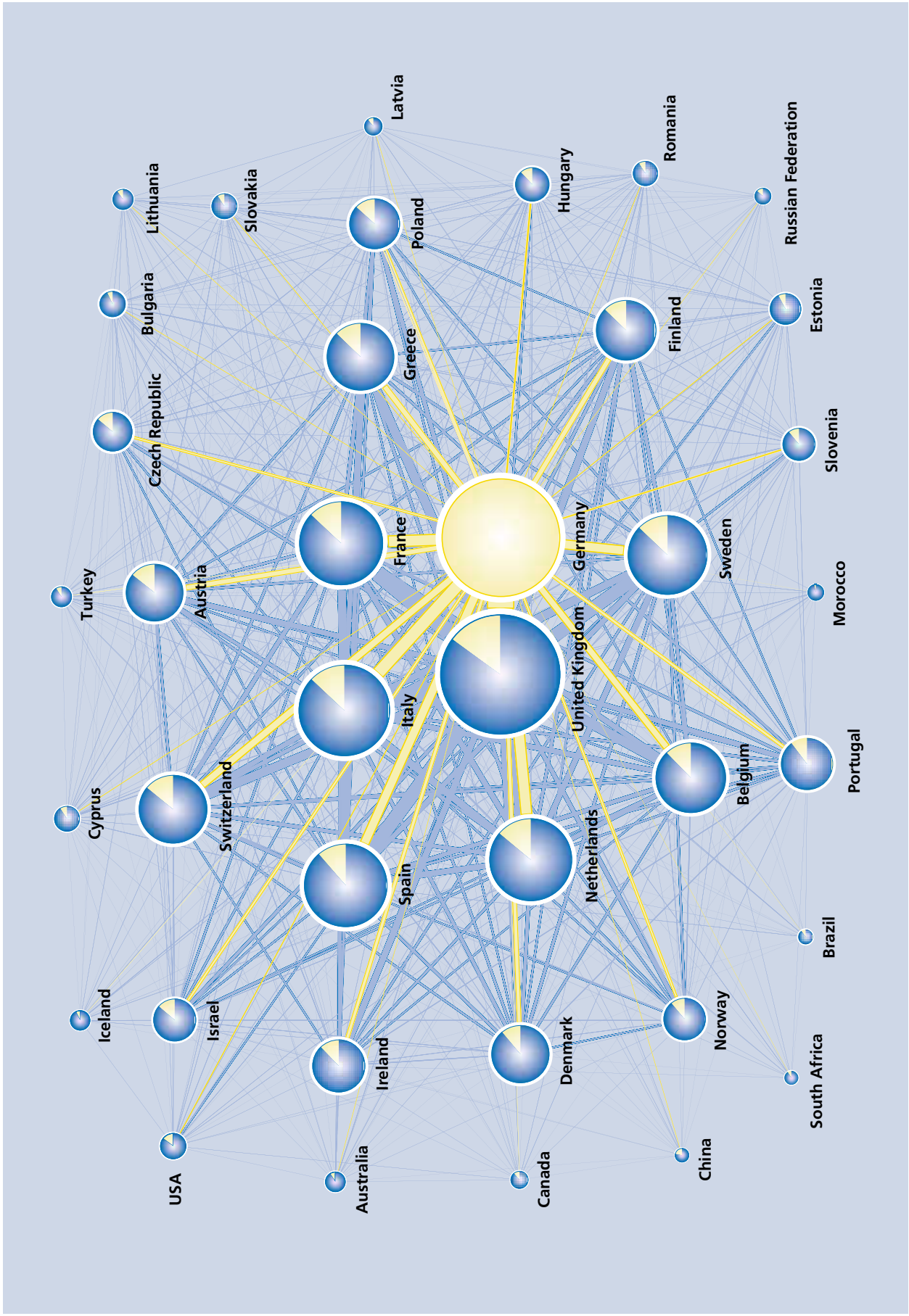
A core structure clearly emerges, consisting primarily of EU member states. The central position is taken by the United Kingdom, which took advantage of its strong participation in the Fifth Framework Programme to establish cooperative links to researchers in almost all countries involved in the programme. Germany's position also reflects its strong participation in the EU programme, whereby – as was already evident from Table 6-5 – the partnership with the United Kingdom is particularly robust. A comparison of the segments representing cooperation with Germany does not yield any conspicuous surprises. Between the countries in the centre of the graphic, which have relatively homogeneous structures of cooperation between each other, the proportion hardly varies and even amongst the less well incorporated countries – for instance the Newly Associated States or non-EU countries – there are only a few individual instances (for example Morocco) where partnerships with German universities play a less significant role.

Regional concentrations are found, if at-all, towards the edges of the core structures – for instance in the bottom and predominantly in the left half, where primarily the northern European countries form a loose network as a result of their direct and indirect relationships, as well as in the right half of the graphic, which reflects the association between the eastern European countries.

6.4.4 Participation of German Universities in the Fifth EU Framework Programme

The data basis contains details on 113 German higher education institutions (76 universities as well as 37 universities of

Figure 6-8:
German and international participation in projects of the Fifth EU Framework Programme 1998 to 2002



applied sciences and academies of art) which participated in the Fifth EU Framework Programme. Table A6-18 in the appendix lists the participation of universities which signed at least five contracts. At the top of the ranking are the Technical University of Aachen, which signed a total of 135 contracts, and the University of Stuttgart (130 contracts). A considerable way behind are the Technical University of Munich (91), the University of Karlsruhe (84) and the University of Munich (83). Altogether almost a quarter of all contracts signed by German universities are at these five universities, the 50 percent margin is reached at 15 universities.

Looking into the relationship between the number of contracts signed with the EU and the approval volume attracted from the DFG by scientists and academics at a university we see the results shown in Table 6-6 differentiated by DFG approval ranking group (cf. Chapter 2).

Of 80 universities which received at least half a million euros in approvals from the DFG between 1999 and 2001, 72 were involved in EU programmes with a total of 2,094 contracts (plus the University of Witten-Herdecke which is not shown in the table due to a lack of staff data). So about 98 percent of all contracts signed between German universities and the EU are attributable to these universities. Participation is seen for all universities on the top 20 places in the ranking as well as for places 21 to 40; of the universities on places 41 to 60 there is no evidence of participation for just one; for the group on places 61 to 79 there are six (plus the University of Witten-Herdecke, once again).

While this distribution already indicates a close correlation between DFG and EU approvals, this impression is reinforced if the number of EU contracts is put in relation to staff numbers working at universities in any one of the approval ranking groups. On average there are 12.7 EU contracts per 100 professors at the most "DFG-active" universities on places 1 to 20 (scientists and academics in total: 1.8), in the lower groups the average numbers drop constantly in comparison to this figure, down to just 6 contracts per 100 professors in the fourth group (scientists and academics in total: 1.1 contracts).

In general it can thus be noted that universities which are strong in terms of DFG approvals also perform above average in relation to the number of funding applications to the EU granted per professor.

Looking finally at the relationship between the volume of DFG approvals and the number of contracts signed with the EU by university as represented by a scatter diagram (cf. Figure 6-9) the high correlation is confirmed (Spearman's r: 0.90).

To the right of the diagonal line which has been added are the universities which were above average in terms of contracts with the EU, relative to the volume of approvals received from the DFG, while universities with lower than average numbers of contracts are to the left of the line. It can be noted that it is primarily universities with an engineering sciences focus that take advantage of the programmes offered by the EU

Table 6-6: Participation of German universities in the Fifth EU Framework Programme 1998 to 2002 by DFG approval ranking group in relation to the number of professors/scientists and academics in total at universities (status: 2000)

DFG approvals ranking group	Participation in the Fifth EU Framework Programme		Professors		Scientists and academics in total	
	Number of Universities	Number of projects	n	Participation per 100 prof.	n	Participation per 100 sci.
Place 1 to 20	20	1,176	9,240	12.7	65,509	1.8
Place 21 to 40	20	576	6,250	9.2	40,804	1.4
Place 41 to 60	19	244	3,426	7.1	18,473	1.3
Place 61 to 79	13	95	1,578	6.0	6,781	1.4
In total	**72**	**2,091**	**20,494**	**10.2**	**131,567**	**1.6**

Based on: 72 universities which received a total of more than half a million euros in approvals from the DFG between 1999 and 2001 (excluding the University of Witten-Herdecke [no staff data]) and for which at least one instance of participation with the EU is reported. A further 41 universities were involved with 53 projects. The allocation to a ranking group is calculated from the sum total of DFG approvals granted (cf. Table A3-10).

Sources:
European Commission Directorate-General Research and Information Society (2003), special report compiled for KOWI as well as calculations carried out by the DFG.

Federal Statistical Office (2002), Full time employment scientific and artistic staff according to organisational classification, university, fields of teaching and research and staff unit (status: 2000), special report.

Figure 6-9:
DFG approvals 1999 to 2001 in comparison to participation in the Fifth EU Framework Programme 1998 to 2002 by university

For DFG approvals refer to Table A-3-10, details on the source and basis of details on the Fifth EU Framework Programme are documented in Table A6-18. For practical display purposes only universities which received more than 10 million euros in DFG approvals are named.

comparatively often. Worth noting in particular are the University of Stuttgart and the technical universities of Aachen, Munich, Berlin and Dresden. This can primarily be attributed down to the subject focus of the Fifth Framework Programme mentioned above – for instance the "User-friendly information society (IST)" programme, which accounted for 30 percent of the total funding volume on its own and was first and foremost directed at computer scientists and researchers from related research areas. This comparison thus basically documents the high degree of correlation between DFG approvals on the one hand and participation in the Fifth Framework Programme on the other; it is however also clear that this correlation is influenced by the actual subject emphasis of each of the universities included in the analysis.

7. Bibliometric Findings

7.1 Introduction

Third party funding in general, and DFG approvals in particular, represent investments in research. If their distribution to universities and non-university institutions is presented, then this is not primarily done in order to provide information on the financial income of these institutions. Rather, this income, which is fundamentally preceded by strict review of the funding proposals, is first and foremost seen as an indicator of their research activity or research output: Universities which attract a large amount of third party funding have a far greater prominence as research institutions than institutions where this mode of income plays a less significant role.

The question of output is nevertheless raised time and again, picking up the topic of the relationship between funding income and "yield": Are research institutions that are particularly successful at attracting third party funding also able to show above-average productivity by the researchers working there? Do their research publications have a greater impact, for instance by receiving a better reception from the international scientific community? Is the research carried out there perhaps of even higher "quality" than research at institutions that are less successful at attracting third party funding?

Although these are very obvious questions to raise, it is difficult to find answers to them. Even over many decades of research it has not been possible to develop a generally recognised method which can be applied to translating such a multifaceted phenomenon as "quality within research" into a generally accepted parameter (cf. Hornbostel 1997). This is not least due to the fact that there is insufficient data to allow at least an approximate empirical evaluation of this extremely multifaceted phenomenon. Whereas it has recently been possible, particularly in Germany, to successfully establish an increasingly reliable data basis with regard to input data, material which is able to provide quantitative information even on selected partial aspects of the "yield" or "effect" of research is scarce.

This applies not least to a comparatively widely accepted "performance indicator", such as the number of research papers published within a given period. Even if the basically justified argument of "quality not quantity" is frequently put forward for consideration, there is a general consensus that for larger units of measurement – such as institutes, institutions, disciplines or even states (albeit explicitly not for individuals) – the number of scientific papers published gives a reliable indication of the productivity of researchers working there.

The fact that the processes used for this purpose are anything but trivial is, however, evident just from the supposedly easy task of determining the number of publications by the scientists and academics at a university or in a department within a certain period. This can be most clearly demonstrated by looking at a current example: At the end of 2002 two studies were published in quick succession, both dealing with the publication output of economists amongst other things. The study by the Centre for University Development (Centrum für Hochschulentwicklung, CHE), promoted on the Internet under the ambitious title of "THE University Ranking" ("DAS Hochschulranking"), reached entirely different conclusions than the study by the German Science Council, which reported its findings in a bibliometric addendum analysed

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by the Institute for Science and Technology Studies (Institut für Wissenschafts- und Technikforschung, IWT) at the University of Bielefeld [1].

The differences can primarily be seen in the data basis and the different methods of data processing used in each case: The CHE based its analyses on data collected by searching for professors of economics by name in the economic literature databases SOLIS (Social Sciences Literatures Information System) (social sciences information centre (Informationszentrum Sozialwissenschaften, IZ, Bonn), HWWA (Hamburg Institute of International Economics, (Hamburgisches Welt-Wirtschafts-Archiv), Hamburg), ECONIS (ECONomics Information System, Kiel Institute for World Economics (Institut für Weltwirtschaft, IfW, Kiel) and BLISS (business management literature references and abstracts (German Business Information (GBI), Munich). This data, primarily on publications in German, was weighted according to the number of publications and number of authors and presented in the form of annual averages. The report covered the period 1998 to 2000 (for further details on the methodology see Berghoff et al., 2002: 16). In contrast to this study, the analyses carried out for the German Science Council by the IWT were based on data from the international Social Sciences Citation Index (SSCI) database. This source predominantly lists English language publications in leading international scientific journals. The IWT restricted its analyses to articles in journals classified under either "economics" or "management" by the Institute for Scientific Information (ISI), Philadelphia, which is responsible for the SSCI database (cf. Table A7-1 in the appendix). This data was not researched by name, but according to the address of the institute listed for the author of each article in a separate field. This study covered the period 1993 to 1999, no weighting was applied to the data (cf. Wissenschaftsrat 2002: 142 pp.).

So, whereas one study predominantly looked at German language publications (including monographs) by named university professors, the other concentrated on publications with international prominence in selected journals, selected purely on the basis of their German address. These differences in the institutional demarcation lines lead to the general inclusion of publications by authors from institutes which are not primarily institutes of economics (for example by social scientists) in journals of economics in the study by the German Science Council. Conversely, publications by authors in the "Mittelbau" (all research students and junior research-active and teaching university staff, but not undergraduate students, senior academic staff or administrative staff) are excluded from the analyses carried out by the CHE. Finally, discrepancies also arise as a result of the different periods covered by the two studies.

In spite of all the differences, neither of the methods selected can be described as fundamentally flawed, let alone wrong – they simply each focus on different segments of the publication output. In the case of the CHE these are, for instance, more application-oriented publications aimed at a target audience which could barely be reached by articles in journals (particularly in English). The IWT, on the other hand, looks more at basic research aimed at the international scientific community. The significant discrepancy between the results of these two studies does, however, indicate that the segments selected do not have a high degree of overlapping. Hence these studies really did investigate two very different target groups. The fact that the problem of such discrepancies arises primarily for studies looking into subjects from the humanities and social sciences is not least as a result of the fact that this area really does often serve different "markets": While the natural sciences are a great exception

[1] The CHE determined the following universities as the "leading publication universities" in economics (Volkswirtschaftslehre, VWL): the universities of Bremen, Mannheim, Frankfurt am Main, Hamburg and Freiburg, and for business administration (Betriebswirtschaftslehre, BWL) the list was topped by the universities of Saarbrücken, Bochum, Mannheim, Duisburg, Hohenheim and Münster (cf. http://www.dashochschulranking.de). In the study published by the German Science Council, which covers economics (Wirtschaftswissenschaften) in general (including institutions other than universities), the following institutions led the ranking: the University of Bonn, the IfW Kiel, the University of Mannheim, the Humboldt University in Berlin, the University of Munich, and the universities of Kiel and Münster (cf. http://www.wissenschaftsrat.de/texte/5455-02-1.pdf). Of the ten leading universities in terms of publication in the German Science Council ranking, only four of the business management or economics "strongholds" attain a top-ten place in the CHE ranking (overlapping: five universities). There are significant differences: For example the University of Bonn leads the German Science Council ranking, but only attains 39th place on the CHE ranking (for economics) – clearly contradictory to the reputation enjoyed by this university amongst professors in this subject: Here the University of Bonn – according to the CHE's findings – is in second place after Mannheim (cf. Berghoff et al. 2002: 147).

in terms of publishing books intended for a general audience (and are therefore fundamentally excluded from bibliometric studies), this is – not least in economics – a factor which must not be ignored [2].

Hence the data basis and methodological aspects are very significant for bibliometric analyses, especially for the interpretation of their results.

This ranking makes use of bibliometric findings published previously in other studies. It is based on material which – as was the case for the example of the German Science Council study mentioned above – is based on the Institute for Scientific Information (ISI) databases in Philadelphia. Conclusions which can be reached on this basis relate to the international prominence of research publications, primarily published in journals dedicated to basic research. The selection is restricted to two cases taken as examples:

> Details comparing the total number of publications from German universities at an international level were drawn from a study conducted by the Center for Science and Technology Studies (CEST) in Bern, Switzerland.

> Data on publications and citations in the field of medical research – again relating to German universities – was taken from a study carried out by the Dutch Centre for Science and Technology Studies (CWTS) in Leiden, the Netherlands.

The data from these sources is primarily used to investigate the relationship between the volume of DFG approvals received and the number of publications produced as well as – in the case of the CWTS study – citations of these publications per university. The following section describes the data basis as well as methodological peculiarities that should be borne in mind when interpreting the data.

7.2 Data Basis and Methodology

The analyses below are based on data compiled and edited by the Swiss Center for Science and Technology Studies (CEST) as part of "The International Champions League of Research Institutions" study (cf. http://www.cest.ch). This study aimed to contribute towards improved transparency in the area of research achievement. The task pursued by the CEST is expressed by this quotation:

This need for information can neither be met by simple, uni-dimensional rankings, nor by singular opinions and impressions alone […]. A systematic and continual method of information gathering, which is nevertheless as up-to-date and accessible as possible, on trends within the area of research and on the position in the international context is therefore important (cf. Da Pozzo et al. 2001: 15).

The CEST sees its study as a contribution towards international "benchmarking", which allows comparison to particularly successful points of reference and institutions. The CEST study referred to here is based entirely on bibliometric data. This is not least due to the fact that only such data is available in adequate depth and in a suitable format to allow international comparisons of sufficient quality. On the one hand a publication indicator published by CEST is used, which measures the number of articles published in journals that can be apportioned to researchers working at an institution. Secondly an "effect indicator", which differentiates according to subject, was constructed to express the success of the response to these publications (measured in citations). This "impact" is deliberately not equated to "quality" or "significance" by the team responsible for the study,

although it must be stated that the international attention which a research contribution receives from the author's peers is recognised as being regarded as an important aspect of the complex and ambiguous phenomenon of quality (cf. Da Pozzo et al. 2001: 21).

The analysis was based on more than seven million addresses in approximately four million articles with over 120 million references contained in the Institute for Scientific Information in Philadelphia (ISI) databases for publications listed from 1994

[2] Detailed analyses of the data on publications by professors collected by the CHE (here only for VWL) result in the following proportions: Journal articles: 36 percent, contributions to collected works: 32 percent, monographs: 10 percent, grey literature: 10 percent. The Social Science Information Centre (IZ Sozialwissenschaften) reports proportions of the same order of magnitude for sociology (cf. Herfurth/Hradil/Schönfeld 2002).

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to 1999. For this the "Science Citation Index (SCI)", "Social Sciences Citation Index (SSCI)" and the "Arts & Humanities Citation Index (A&HCI)" databases were combined to form a single integrated data basis. For these bibliographic databases, leading international journals and those acknowledged as being internationally important are fully evaluated (currently comprising approx. 4,100 titles in the natural sciences, 2,800 in the social sciences and 1,400 in the humanities) (cf. Da Pozzo et al. 2001: 29 p.). This data basis was used by CEST to conduct analyses on the respective publication output and the resulting citations of these publications for a total of 107 fields of research (according to the classification system used by the Current Contents, ISI).

The ISI databases are practically unrivalled worldwide. The authors of the study do point out some peculiarities that should be borne in mind when interpreting the data obtained from ISI (cf. Da Pozzo 2001: 29 p.).

> The data primarily relates to basic research as a consequence of the makeup of the set of journals covered by ISI. Areas of applied research and development are less well represented. Experience has shown for example that this material is less selective and representative for the engineering sciences than it is for the area of basic biomedical research.

> There is a bias towards English language and in particular towards American journals. This is particularly a problem for research areas where a non-anglophile research culture predominates – for example large areas of the German humanities and social sciences as well as the engineering sciences, where articles published in German continue to retain a high status.

> Again it is primarily for the humanities and social sciences that the limitation of the databases to articles in journals has an effect. In the majority of subjects within this spectrum, monographs and articles published in collections continue to be the "leading" publication format (cf. footnote 2). Both large portions of the publication output as well as the citations concentrated on this output are therefore not covered by the ISI databases.

In order to be included in the CEST's "Champions League" an institution needed to meet the following conditions (cf. Da Pozzo et al. 2001: 32 p.):

a) Within the period under consideration, 1994 to 1999, a minimum of 50 publications needed to be listed in the SCI databases in at least one of the 107 fields of research covered by the SCI classification (cf. Table A7-1 in the appendix) (this corresponds to an annual average of about eight publications).

b) Institutions which met requirement a) also had to achieve a citation success rate in at least one of these fields well above the global average in the respective field of research. This is expressed by the relative citation index (RCI), which was defined using a standardised threshold value of +20. This means that the citation success rate for an institution in the respective field of research has to be at least 20 percent higher than the global average.

In principle this method makes it possible even for small institutions to meet the stated conditions – although the requirement to produce at least eight publications in at least one of the 107 ISI fields of research is certainly met more frequently than the requirement to achieve a relative citation rate significantly above the global average.

The study carried out for the Federal Ministry of Education and Research (BMBF) by the Dutch institute (of the same name) the Centre for Science and Technology Studies (CWTS), one of the most renowned European institutions for empirical scientific research, is also based on the ISI's bibliographic databases. The main aim of this study is to draw conclusions on the international prominence of German basic medical research. Empirical findings are again concentrated on the number of articles published in international journals as well as the relative citation rate of these publications. The study covers the years 1994 to 1998, so more or less the same period as the CEST study. The CWTS authors also emphasise that citations alone should only be interpreted as a rough indicator for the "impact" of research, but by no means as a measure of its "quality" (which can barely be measured using empirical-quantitative methods) (cf. Tijssen et al. 2002: 10).

Comparing the two studies, the following characteristics can be noted:

> Whereas the CEST team aimed to identify those institutions with "outstanding" publication output across the entire

range of research institutions worldwide contained in the ISI databases according to the conditions stated above, the CWTS restricted its analyses to a predefined set of institutions agreed with the BMBF and the DLR, for whom the study was carried out (39 universities, 6 Helmholtz institutions and 8 institutes belonging to the Leibniz Association).

> International comparisons in the CEST study are at the level of individual institutions, whereas the CWTS only conducts such analyses at country level.

> The CEST study is based on all publications contained in the ISI databases (SCI, SSCI, A&HCI), whereas the CWTS study is based exclusively on publications in English. This not only affects the number of publications attributed to each institution, but most of all influences the citation rate. Looking just at publications in English this is, as is to be expected, significantly higher than if the calculation base also includes German publications (or those not in English).

> Whereas the CEST study is based on the ISI Current Contents field system, the CWTS uses a system it developed itself that only approximates to the ISI classification system. In subject terms the CWTS study relates to a total of seven fields of research covering a total of 77 subsidiary areas[3]. The CEST study presents results differentiated according to 107 fields of research (according to the ISI system) and also offers an overview incorporating the entire spectrum (only this is used here).

> The CEST study only indirectly incorporates citation data in the analysis by including institutions identified as being cited above average in each field of research. This affects the design of the studies in that only institutions are included in the presentation of each field of research which, as well as producing the required number of publications also met the requirement on citation (20 percent above the global average in at least one of the 107 fields of research). It is therefore not possible to relate publication output and the citation success rate to other data (such as DFG approvals) on the basis of the CEST data. Using the CWTS data it is, on the other hand, possible to compare the publication output and the citation success rate separately.

> Finally, the data collection method according to the so-called "work done at" method is common to both studies: Allocation to an institution is carried out according to the reference to the author's (or authors') address(es) contained in the source databases, not according to direct name searches (e.g. – as in the case of the CHE study mentioned above – professors in a department (a so-called current potential survey)). This means – in this case only for the CWTS study – that publications found in medical journals may also have been written by authors in non-medical departments or institutes (such as psychologists, biologists or chemists). In reference to third-party data (here in the form of staff posts or DFG approvals) this leads to grey areas to a certain extent, which need to be borne in mind when interpreting the data.

The findings reported below, it must be noted, are based on data covering only a segment of the publication output (and the citation of these publications). These segments relate both to the type of publication (articles in journals with an international readership) and language (publications predominantly (CEST) or only (CWTS) in English) as well as the institutions that either meet certain conditions (CEST) or that are agreed with the organisations which commissioned the study (CWTS). In any case, the material is sufficiently reliable to at least approach an investigation of the question of the relationship between the amount of approvals granted by the DFG and the publication output or – in the case of the CWTS study – the citation success rate in an exemplary manner.

[3] To give an impression of the data basis the following overview gives the number of journals used to describe the following areas: clinical medicine (1,650 journals), biomedical science (1,019 journals), basic life science (922 journals), pharmacology (343 journals), food science and nutrition (115 journals), health sciences (246 journals) and public health and social welfare (289 journals). A complete list of these journals may be found at http://www.cwts.leidenuniv.nl (cf. Tijssen, van Leeuwen, van Raan 2002: 8).

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7.3 Findings

7.3.1 Center for Science and Technology Studies (CEST) Study

Before comparing the material from the studies described to the data on DFG approvals prepared for this ranking, some key findings are quoted. From the interim report of the very complex CEST study, which is available on the institute's website (see http://www.cest.ch) and provides extensive and very detailed data (including individual profiles of the "outstanding" institutions identified in the study) the following results are noted (cf. Da Pozzo et al. 2001: 10 p.):

> A total of 934 institutions worldwide met the conditions laid down by CEST (more than 50 publications in at least one of 107 fields of research (according to the ISI classification system) as well as a citation rate of these publications exceeding the global average by at least 20 percent). On the basis of projections the CEST concluded that these institutions account for approximately two percent of all institutions included in the ISI database worldwide. However, a total of 69 percent of all publications in these databases are accounted for by these institutions; in terms of citations even a proportion of 79 percent is attained (cf. Da Pozzo et al. 2001: 41).

> Approximately 62 percent of the institutions in the "Champions League" belong to the university sector, 24 percent are classified as "non-profit non-university research institutions", a further 12 percent are "private sector", the remaining 2 percent are international organisations and institutions.

> Overall these institutions, which are described as particularly productive, are mostly in the richest industrialised nations: 94 percent of the institutions in the university and non-university sector, ordered according to geopolitical criteria, are located in one of the 27 OECD countries with at least one institution in the "Champions League", the remaining 6 percent are distributed amongst 15 non-OECD countries. The greatest proportion is claimed by the USA (34 percent), the other G7 nations follow some way behind, with Germany and the United Kingdom in the lead (9 percent each), followed by Canada and Japan (6 percent each) and France and Italy (5 percent each).

> Europe and America account for almost equal proportions of the total number of universities and non-university institutions represented in the overview, with around 43 percent and 42 percent of the institutions. In Europe no less than 42 percent is accounted for by western Europe. Eastern Europe, on the other hand, accounts for just 1 percent of the institutions. In America the USA dominates with 34 percent, followed by Canada (6 percent) then Central and South America (2 percent).

The list of the institutions with the highest global publication output with an above average citation rate in at least one of 107 fields of research compiled by the CEST encompasses 575 institutions. The list[4] is topped by the University of London, in the UK (83,278 publications), the University of Tokyo, Japan (61,955 publications), Harvard University, Cambridge, USA (60,206 publications), and the Universités de Paris (I – XIII) (49,261 publications). A total of 47 universities in Germany met the conditions specified by CEST. For the University of Munich (place 51) the ranking lists 16,823 publications. The University of Heidelberg follows in 73rd place (13,619 publications), the Free University in Berlin is in 84th place

[4] These examples already reveal a fundamental problem with international comparisons. As the authors explain, pointing out London and Paris in particular, certain "institutions" consist of a group of basically independent (sub)institutions. In the case of the "University of London" there are more than 40 colleges and institutes, and the situation is similar for the "Université de Paris" (13 different universities) (cf. Da Pozzo et al. 2001: 31). If the universities in Berlin were to count as a single entity in a similar way they would be 15th in this "Champions League". Naturally an international comparison is complicated by administratively determined groupings of this kind. In this problem lies the basic reason why the data on German non-university institutes reported by CEST is not used in this ranking. For instance, publications by researchers at Max Planck institutes are all grouped under the heading "Max Planck Society for the Advancement of Science, Munich, Germany" and the situation is similar for the Fraunhofer-Gesellschaft. The CEST has announced more detailed analyses in this area for the future. In its current form this material is not suitable for drawing any sufficiently detailed conclusions.

(12,684 publications), the University of Tübingen is 117th (10,437 publications), and the University of Hamburg 129th (9,792 publications)[5].

So what is the relationship between the success which leads to a university being included in this CEST list and the volume of approvals granted by the DFG to scientists and academics working at this university? In order to investigate this question, the analysis below compares the figures on publications reported by CEST and the total volume of approvals granted by the DFG to universities between 1999 and 2001 as determined for this ranking.

In terms of methodology, it should be borne in mind that due to the chronological order these approvals from the DFG cannot be regarded as directly causal for the publications reported in the CEST study. Rather, both are very generalised indicators, compared to each other on the assumption of relatively stable distribution over time. The question is thus not: Do DFG approvals cause an increase in publication output, but rather, is there – at the university level – a general correlation between the publication output and the volume of approvals granted by the DFG attracted by the scientists and academics working there over a longer period?

As an initial interim finding it should first be noted that all 47 German universities in the CEST "Champions League of research institutions" are also to be found amongst the leaders in terms of the volume of approvals. Table 7-1 shows the proportions that these universities constitute according to the ranking groups defined on the basis of the volume of DFG approvals.

The correlation to the volume of DFG approvals is obvious. While 19 of the 20 universities with the highest volume of approvals are listed in the CEST study and even amongst those on places 21 to 40 there are still 16 out of 20 with a correspondingly high success rate for publications and citations, this is only achieved by nine of the universities on places 41 to 60 and merely three of the universities on places 61 to 80. Of the total of 276,000 publications from German universities recorded in the CEST study, more than 62 percent are penned by scientists or academics at the 19 highest ranking DFG universities, another 30 percent can be attributed to the 16 "CEST universities" on places 21 to 40. The remaining 12 universities ranked in the third or fourth group in terms of the volume of approvals received from the DFG (places 41 to 80) altogether account for a proportion of less than 9 percent of the total.

Figure 7-1 shows the relationship between the volume of approvals received from the DFG and the publication output per institution determined by CEST differentiated by university in the form of a scatter diagram. Represented in this way the correlation also proves to be high – the correlation value between the two parameters is very high, with Spearman's r = 0.86.

Table 7-1: Institutions in the "Champions League of research institutions" (CEST study) and publications in international journals attributed to these institutions 1994 to 1999 by DFG approval ranking group

DFG approvals ranking group	of which "Champions League"			
	Institutions		Publications	
	n	%	n	%
Place 1 to 20	19	40.4	171,641	62.2
Place 21 to 40	16	34.0	80,567	29.2
Place 41 to 60	9	19.1	17,839	6.5
Place 61 to 80	3	6.4	5,947	2.2
In total	**47**	**100.0**	**275,994**	**100.0**

Based on: 47 universities which received a total of more than half a million euros in approvals from the DFG between 1999 and 2001 (excluding the University of Witten-Herdecke [no staff data]) and which are also listed in the CEST study. The allocation to a ranking group is calculated from the sum total of DFG approvals granted (cf. Table A3-10).

Source: Center for Science and Technology Studies (CEST) (2002), The international Champions League of research institutions: Ranking of the 575 Universities and Colleges of the Champions League, by number of Total Publications (http://www.cest.ch). See also Figure 7-1 and Table A7-2 for details on the definition and data basis.

[5] The complete list is available under http:// adminsrv3.admin.ch/cest_ccs/hamster/rankings/uni_per_pub.pdf Overviews for each of the 107 fields of research in the SCI classification system are also available there. A list of the German universities is also provided in the appendix to this ranking (cf. Table A7-2).

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Figure 7-1:
DFG approvals 1999 to 2001 and publications in international journals 1994 to 1999 (CEST study) by university

For DFG approvals cf. Table A3-10, for details on the source and basis of the publications in international journals (CEST study) cf. Table A7-2.

Correspondingly, the majority of the institutions are placed relatively close to the diagonal line representing perfect correlation.

Deviations from the mean result primarily for the technical universities. These tend to publish in international journals less frequently than average. This can primarily be attributed to the peculiarities of the research culture in the engineering sciences already mentioned above. As well as a basically low publication output in comparison to the life sciences or natural sciences, the engineering sciences are also affected by the tendency to publish in German language journals. Such journals are definitely underrepresented in the SCI's literature databases. Additionally, it is primarily in the engineering sciences that a significantly high proportion tends to be published by publishers with a bias towards applied research. Publications of this kind also receive inadequate coverage in the ISI databases. First and foremost these databases allow conclusions to be drawn on publications of basic research findings predominantly in English language journals with an international readership. Researchers at technical universities are evidently (also) active in other markets – this is clearly visible for the Technical University of Aachen, for instance. This technical university, which takes first place in terms of DFG approvals, is not included as a member of the CEST "Champions League" – it did not quite, as was discovered by asking the authors of the study, meet the specified conditions (more than 50 publications in at least one of 107 fields of research as well as a citation rate exceeding the global average by at least 20 percent) during the period considered, 1994 to 1999[6].

Table 7-2 additionally compares the publication data already reported on above by ranking group to the number of professors and scientists and academics in total working at the 47 "CEST universities". In this concentrated form the higher than average significance attached to publications in international journals at universities which attract large volumes of DFG approvals is emphasised once again: While there are nearly 2,000 publications per 100 professors on average at the 19 "CEST universities" with the most approvals in absolute terms and even the second group achieves almost 1,800 publications, the numbers for universities in the third and fourth ranking groups fall noticeably, to 1,000 and 900 publications per 100 professors respectively. The differences are similar in relation to the total number of scientific staff working at a university.

So universities which perform well in terms of DFG approvals are not only above average for publication output in absolute terms, but are also – in terms of the number of scientists and academics working there – above average.

Table 7-2: Publications in international journals 1994 to 1999 (CEST study) per DFG approval ranking group in relation to the number of professors/scientists and academics in total at universities (status: 2000)

DFG approvals ranking group	Universities	Publications	Professors		Scientists and academics in total	
	n	n	n	Publications per 100 prof.	n	Publications per 100 sci.
Place 1 to 20	19	171,641	8,852	1,939	61,579	279
Place 21 to 40	16	80,567	4,584	1,758	30,292	266
Place 41 to 60	9	17,839	1,763	1,012	9,120	196
Place 61 to 79	3	5,947	633	939	2,850	209
In total	**47**	**275,994**	**15,832**	**1,743**	**103,841**	**266**

Based on: 47 universities which received a total of more than half a million euros in approvals from the DFG between 1999 and 2001 (excluding the University of Witten-Herdecke [no staff data]) and which are also listed in the CEST study. The allocation to a ranking group is calculated from the sum total of DFG approvals granted (cf. Table A3-10).

Sources:
Center for Science and Technology Studies (CEST) (2002), The international Champions League of research institutions: Ranking of the 575 Universities and Collegs of the Champions League, by number of Total Publications (http://www.cest.ch). See also Figure 7-1 and Table A7-2 for details on the definition and data basis.

Federal Statistical Office (2002), Full time employment scientific and artistic staff according to organisational classification, university, fields of teaching and research and staff unit (status: 2000), special report.

[6] A long-term analysis currently being prepared by the CEST for the period 1981 to 2002 shows that this finding is restricted purely to the time window under consideration here, which is all that has been published so far.

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7.3.2 Centre for Science and Technology Studies (CWTS) Study

What about the relationship between the volume of approvals received from the DFG and the publication output or citation success rate if attention is turned to a particular research area, rather than looking at the general perspective of whole universities – in this instance for medicine, which accounts for the greatest proportion of the total funding volume granted by the DFG (as well as in terms of total third party funding income) (cf. Table 3-5)? It is possible to approach this question using data from the study carried out by the Dutch Centre for Science and Technology Studies (CWTS) mentioned above. Here again we will first quote a few general findings from the study's final report (cf. Tijssen, van Leeuwen, van Raan 2002: 1 pp.):

> Measured in terms of the number of publications, German medical research is in fourth place internationally (following the USA, the United Kingdom and Japan). Over a 15 year period (1982 to 1998) consistent growth is reported (primarily in the fields of "basic life science" and "biomedical science"). In comparison to the countries perceived as the leaders, the authors of the study still see room for improvement by German medical research nevertheless.

> In terms of publications in English, German medics enjoy a citation rate slightly higher than the global average (publications in German or generally publications not in English have a citation rate well below average, on the other hand). The highest citation rates are achieved in the area of "basic life sciences", with the subsidiary fields of "cell biology", "microbiology" and "biophysics" being most noteworthy. However, the authors of the study also point out a list of fields which are well below the global average citation rate.

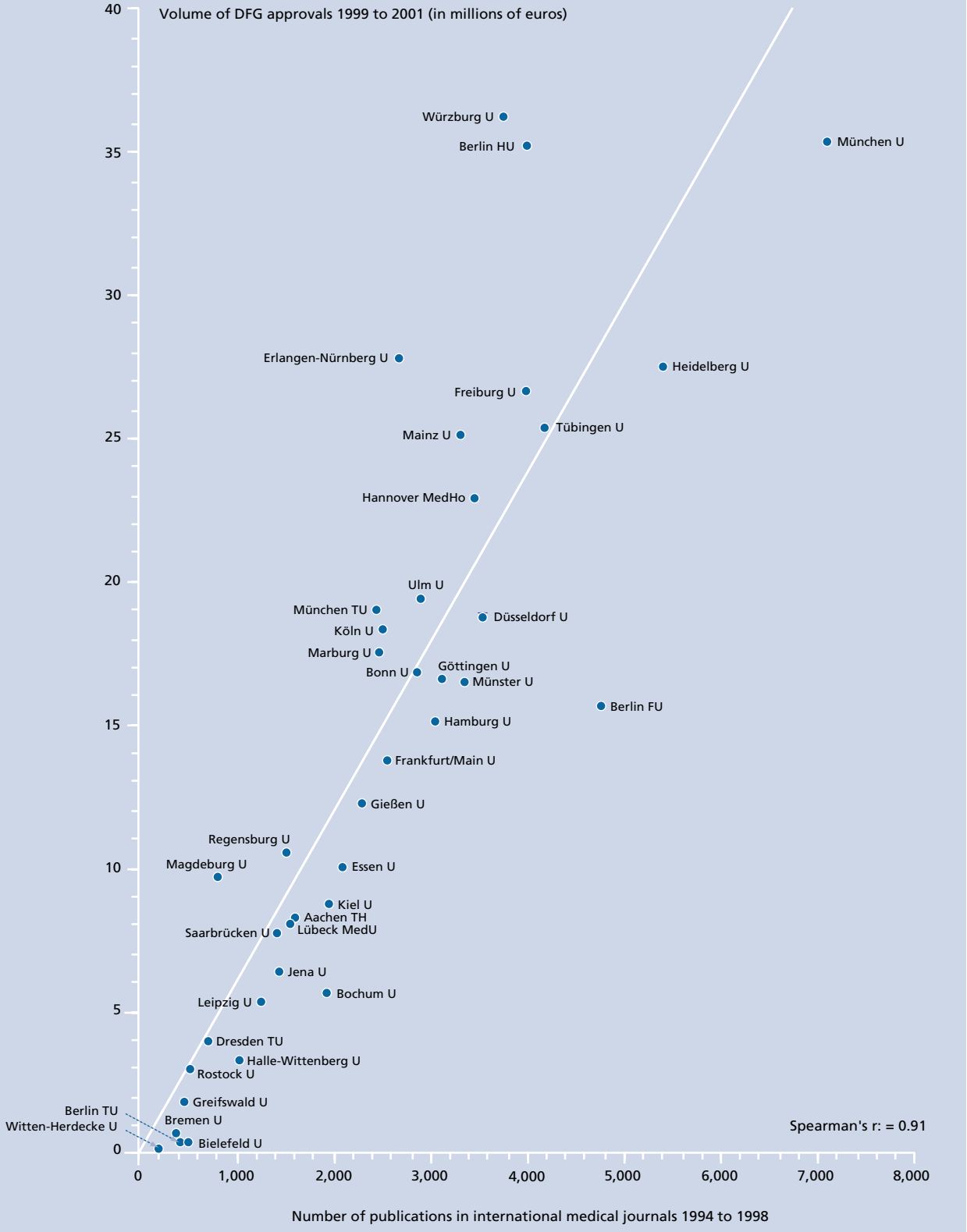
> The universities of Munich and Heidelberg and the Free University in Berlin are the main producers of international research publications in basic medical research. Within the selected group of non-university institutions – in total the analyses carried out by the CWTS were restricted to six institutions belonging to the Helmholtz Association (HGF) and eight Leibniz Association institutes (WGL) – the German Cancer Research Center (DKFZ) is highlighted in particular, which distinguishes itself with an especially high publication output. The National Research Center for Environment and Health (GSF) in Munich and the Max Delbrück Center for Molecular Medicine (MDC) in Berlin follow in second and third place. Publications from the DKFZ are rated at 50 percent, and those from the Research Centre in Karlsruhe (Forschungszentrum Karlsruhe), in fifth place in terms of its publication output, are even 200 percent above the global average citation rate.

The analyses carried out by the CWTS are based on 93,878 publications from 39 German universities on publications in international journals between 1994 and 1998. The following analyses on the relationship between the volume of approvals granted by the DFG and the publication output are therefore restricted to these 39 universities[7]. As already explained for the CEST study, it must be borne in mind that the publication data used refers to a period which preceded the approvals granted by the DFG (1999 to 2001). So here again the DFG approvals and CWTS publications are not compared by way of a direct causal relationship, but rather as two general indicators for research achievement.

As for the data on universities overall (CEST study), the correlation is initially presented in the form of a scatter diagram (cf. Figure 7-2). All of the points fall very close to the diagonal representing a 1:1 correlation between the volume of DFG approvals and the number of publications attributed to a university. With a Spearman's r = 0.91 the correlation value is found to be even slightly higher than it was for the CEST data for universities overall (Spearman's r = 0.86). The conclusion reached above is therefore confirmed here too at the level of an individual research area and on the basis of a method-

[7] DFG approvals are reported for precisely 60 universities in the research area of medicine, whereby the universities not counted by the CWTS only attracted small amounts as a rule. At these universities DFG-funded medical projects are conducted at institutes which are located in departments that are not primarily medical. Taking the University of Konstanz as an example – which, with 3.7 million euros, reports the highest volume of approvals in medicine of any university outside the CWTS sample – these are the chair of biochemical pharmacology or the chair of biochemistry for instance. Both of these institutes belong to the department of biology (see also the methodological details in Chapter 2).

Figure 7-2:
DFG approval volume 1999 to 2001 in the research area of medicine and publications in international medical journals 1994 to 1998 (CWTS study) by university



For DFG approvals cf. Table A3-10, for details on the source and basis of the publications in international medical journals (CWTS study) cf. Table A7-3.

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ologically different study: There is a close relationship between the amount of third party funding income received from the DFG and the prominence of research – measured here according to the number of articles published in English in international journals.

If, once again, the number of publications is related to the number of professors and scientists and academics in total working at a university then the results shown in Table 7-3 are found. This comparison is based on 35 of the 39 "CWTS universities" for which the Federal Statistical Office reported staff in the subjects belonging to fields in the teaching and research of medicine. The other universities included in the CWTS study – Bielefeld, the Technical University of Berlin, and the universities of Bremen and Witten-Herdecke – either had no staff who were explicitly allocated to the subject area of medicine or for which – as in the case of the private university mentioned last – there is no staff data at all. It should once again be pointed out that this comparison of staff numbers and publication output only allows an approximation to the relative publication output typical of each institution to be determined: The method of investigation used by the CWTS fundamentally includes publications published in medical journals by authors at non-medical departments. There is thus a bias towards universities where medical departments are embedded in a correspondingly differentiated disciplinary environment (it is a similar situation for DFG approvals in the research area of medicine which – as mentioned for one example in footnote 6) – are also not exclusively awarded to researchers working in medical departments).

This table groups the 35 universities taken into consideration here into four ranking groups according to the value of the volume of approvals received from the DFG. According to data provided by the Federal Statistical Office there are a total of 3,309 professors and 40,779 scientists and academics in the research area of medicine at these universities (date of record 2000). Scientists and academics at the ten universities with the highest volume of approvals from the DFG published a total of nearly 41,000 papers in English in international journals between 1994 and 1998 – thus comprising approximately 44 percent of all publications from the universities under consideration here. Together with the next ten institutions in the ranking the scientists and academics working at these universities were responsible for almost 78 percent of the entire publication volume. In comparison to the number of scientists and academics working at these universities in the field of teaching and research of medicine there is – as was already seen for the CEST study – again a clear correlation: At the top ten institutions there are more than 3,400 publications per 100 professors over five years, on places 11 to 20 there are still 2,800 publications, on places 21 to 30 this drops to 2,600 and on places 31 to 35 finally it falls to less than 1,100 publications. The relationship is less clear cut when looking at all of the

Table 7-3: Publications in international medical journals 1994 to 1998 (CWTS study) per DFG approval ranking group in the research area of medicine in relation to the number of professors/scientists and academics in total at universities (status: 2000)

DFG approval ranking group	Publications in medical journals		Professors		Scientists and academics in total	
	n	%	n	Publications per 100 prof.	n	Publications per 100 sci.
Place 1 to 10	40,854	44.3	1,189	3,436	16,615	246
Place 11 to 20	30,788	33.3	1,109	2,776	11,742	262
Place 21 to 30	16,665	18.1	636	2,620	8,152	204
Place 31 to 35	3,976	4.3	375	1,060	4,270	93
In total	**92,283**	**100.0**	**3,309**	**2,789**	**40,779**	**226**

Based on: 35 universities which received more than half a million euros in DFG approvals in the research area of medicine between 1999 and 2001 (excluding the University of Bremen, no staff working in the field of medicine) and which are mentioned in the CWTS study. The allocation to a ranking group is calculated from the sum total of DFG approvals granted in the research area of medicine (cf. Table A3-7 in the appendix).

Sources:
Tijssen, Robert J.W.; Leeuwen, Thed N. van and Raan, Anthony F.J. van (2003), Mapping the Scientific Performance of German Medical Research. An International Comparative Bibliometric Study, Leiden: 70 pp. (cf. Table A7-3 in the appendix).

Federal Statistical Office (2002), Full time employment scientific and artistic staff according to organisational classification, university, fields of teaching and research and staff unit (status: 2000), special report.

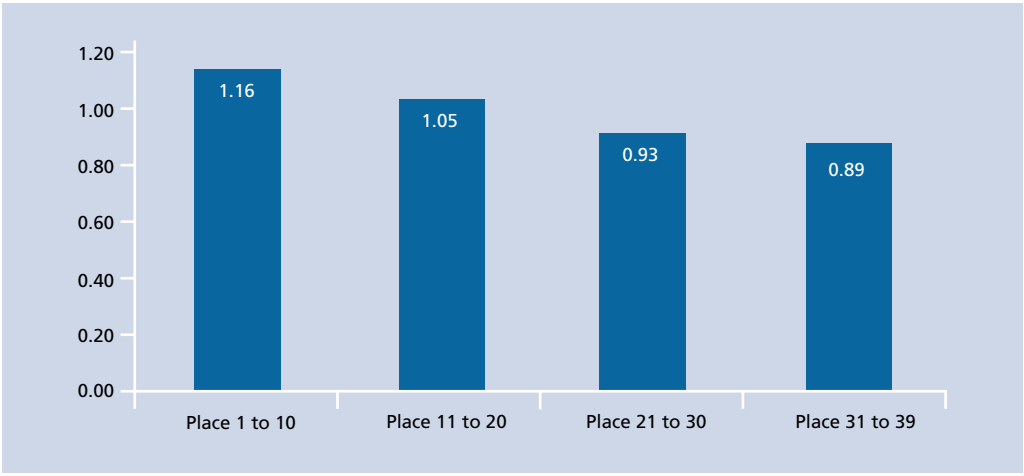
medics working at any given university, although it should be noted that the high ranking "DFG universities" basically report a higher relative publication output per researcher than universities further down the ranking. As was already shown in Table 7-2 for universities overall, a positive correlation between the sum total of DFG approvals granted to a university and the relative publication output by the scientists and academics working there is evident for medicine too.

Just as in the CEST study the relative citation rate for publications per research area was also determined by the CWTS, although it is only possible – as already mentioned above – to subject this citation data to separate analysis in the case of the CWTS study. These figures are given in Table A7-3 in the appendix according to five fields of medical research[8]. This method of representation makes it possible on the one hand to draw conclusions on a selected subject focus by university, by only listing the proportion of the total publications from that university represented by the publications per field of research. On the other hand the international citation success rate for articles published (in English) for each field of research also becomes clear. Taking the university with the highest publication output as an example – the University of Munich – this reveals a particular emphasis in the area of "clinical medicine". Not only are the majority of the publications recorded for this university attributed to this area (43 percent); in addition these publications also achieve a relative citation rate significantly above the global average in this subject area (RCI = 1.21)[9]. The University of Heidelberg, in second place in terms of its publication output, has a similar emphasis (48 percent, RCI = 1.31), but primarily achieves relative citation rates which are significantly above average in the areas of "basic life sciences" (22 percent, RCI = 1.49) and "biomedical science" (25 percent, RCI = 1.51).

Finally turning to the question of the general correlation between the volume of approvals granted by the DFG and the citation frequency for publications from a given university, we see the results shown in Figure 7-3.

The analysis was based on the average RCI values per university for the five fields of research shown in Table A7-3. These averages are then used to calculate the

Figure 7-3:
Relative citation index (RCI) 1994 to 1998 (CWTS study) per DFG approval ranking group in the research area of medicine



Based on publications in international journals published between 1994 and 1998 researched by the Centre for Science and Technology Studies (CWTS) in Leiden, and contained in the CWTS database (based primarily on the databases [SCI, SSCI and various specialty citation indices] published by the Institute for Scientific Information (ISI), Philadelphia). This study incorporated a total of 39 universities (cf.Tijssen et al. 2002 and Table A7-3 in the appendix). The allocation to a ranking group is calculated from the sum total of DFG approvals granted in the research area of medicine (cf. Table A3-7 in the appendix).

[8] In total the CWTS study investigated seven fields of medical research. The fields of "health sciences" and "public health and social welfare" were excluded from the citation analysis according to universities as there were only low numbers of publications reported for the majority of these institutions (cf. Tijssen et al. 2002: 68).

[9] A relative citation index (RCI) of 1.21 means that publications from this institution in the specified field of research were cited 21 percent more often than the global average for all publications in this field.

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average for the institutions in each of the DFG ranking groups. As is shown by the figure the ten universities with the highest sum total of approvals from the DFG achieved a relative citation rate 16 percent above the global average on average and even for the universities on places 11 to 20 an above-average RCI was noted (+5 percent). The impact of publications in medical journals submitted by scientists and academics at universities on places 21 to 30 and 31 to 39, which can be inferred from the citation rate, is slightly below the global average overall (RCI = 0.93 and 0.89).

Thus universities which are strong in terms of approvals not only distinguish themselves through above-average publication output in international journals – the research findings published there also enjoy greater international attention.

8. Summary

The findings presented in this "Funding Ranking" demonstrate that the information available to those involved in research funding, as well as that which is freely available to the public, can substantiate statements on a variety of different dimensions of research achievement, extending well beyond the scope of normal ranking studies. Publicly funded research is measured not simply by the amount of funding provided – in the form of "third party funds received" this already constitutes part of the standard repertoire of research rankings (in this instance taking the example of the third party funds provided by the DFG as well as spanning all funding bodies in the form of data from the Federal Statistical Office). Publicly funded research is also represented by the decision-making structures, which – as is the case here for the DFG – are expressed through a broad participation by appropriate experts in the review process of proposals. The networks resulting from joint participation in inter-institutional programmes are also – again taking the DFG as an example – stimulated by public funding. An important characteristic of outstanding research is its international prominence. On the basis of information on participation in the Fifth EU Framework Programme this report offers an insight into a relevant cross-section of internationally cooperative research. Figures on visiting researchers funded by the German Academic Exchange Service (Deutscher Akademischer Austauschdienst, DAAD) and the Alexander von Humboldt Foundation (Alexander von Humboldt-Stiftung, AvH) broaden the picture by giving an impression of the international response of top researchers, selected according to strict selection processes, to research at particular locations and in particular research areas. The results of bibliometric studies, which provide information on the number and effect (in terms of citations) of articles in international journals, go on to offer a further indication of the international prominence of the research carried out at the locations being looked at.

„Institutions – Regions – Networks" is the subtitle of this report. This subtitle describes the aspects to which the analyses presented here refer. „Institutions" are the classic subject of ranking studies. The comparison of various measured values is primarily used for "benchmarking": Which institutions show signs of outstanding activity, or of models which may be adopted and/or improved upon for the purposes of comparative competition? „Regions" – here the concept of resources comes to the fore. Admittedly this is also of central significance for institutions – just as competition between regions may be envisaged and indeed takes place. In looking at the regions however, the additional aspect of infrastructure also comes into play, for instance in the form of neighbouring universities and non-university research institutions with comparable subject profiles. The fact that these regional resources are first and foremost fundamental for networking in research is shown by the analyses presented in chapter 4 on the establishment of networks resulting from joint participation in coordinated programmes funded by the DFG.

The summary below serves primarily to recap the main findings of the previous chapters. This is followed by a comparison at university level. This is done on the basis of two tables, which compare the results of the various ranking lists in this report clearly and concisely, both in absolute terms and also weighted by professor. These comparisons are carried out initially without differentiating between scientific discipline or research area: Are there universities which, irrespective of the differences mentioned above in the reference values of the indicators used here,

achieve high results overall? Are there, to put it simply, indications of corporate structural elements of "good research"?

Finally there is a summary of the most significant results differentiated according to 16 research areas. The most important thing which becomes evident here is whether, and if so what emphasis is placed on research in particular subjects by individual universities. Where the information available allows, conclusions are also drawn on the integration of non-university research institutions. The keyword description also provides a kind of "introductory guide" into the wealth of information presented in the tabular appendix.

8.1 Key Findings

Five chapters present analyses based upon information from a variety of sources, which illuminate the various facets of research activity at universities and – in selected cases – at non-university research institutions, in a statistically quantified way. The list below mentions a few of the key findings:

- In 1999 and 2000 scientists and academics at German universities attracted third party funding amounting to 5.4 billion euros in total. The DFG provided a 34 percent proportion of this. This makes it the largest single source of third party funded research at universities.

- There is a strong correlative relationship between the volume of DFG approvals at a university and the total third party funding received from various sources. Universities which receive a large amount of approvals from the DFG are also above average in terms of third party funding overall.

- The majority of the information presented in the report on universities refer to a total of 80 institutions which attracted at least half a million euros in grant approvals from the DFG between 1999 and 2001. If these are split into four groups of 20 universities each, according to the total amount of approvals received, then it is possible to draw comparisons on aggregate between the "Top 20" universities with the largest amounts, and three groups of universities with overall lower funding levels in descending order. Using this tool it was possible to draw the following conclusions:

  - "Top 20" universities account for approximately 56 percent of the total volume of funding approvals for universities. The remaining 44 percent is distributed between 122 universities.

  - In the period under consideration (1999 to 2001) each professor at one of the 20 best funded „DFG universities" with the most approvals attracted – statistically speaking – almost six times as much as a professor at one of the universities in the fourth group. Even in the group of universities from place 41 to 60 the factor is still 1.8:1, the difference to the group on places 21 to 40 is 1.3:1. The total approval funding revenue is thus not simply an effect of the size of a university, but also of the orientation towards third party funding of the scientists and academics working there.

  - This correlation also applies in relation to third party funding income overall: Universities amongst the top 20 DFG approval recipients register three times as much third party funding per professor as those belonging to the fourth group in terms of their total volume of approvals from the DFG. There are also substantial differences between this group and the groups in between in the ranking.

- The general orientation towards third party funding varied considerably between subjects. Measured in terms of the per capita approvals awarded to professors, they amount to approximately 220,000 euros on average over two years (1999 and 2000). Looking at the 16 research areas of the DFG subject classification system there is a spread from 55,000 euros in "history and fine arts studies" ranging up to 710,000 euros in "general engineering sciences and mechanical engineering". So third party funding clearly plays a very diverse role for research in different areas. It is therefore of varying importance as an indicator of research achievement from subject area to subject area.

- This general finding is confirmed for the particular case of DFG approvals. Here the general average, based on approvals over three years (from 1999 to 2001), was 148,000 euros per professor. Above average amounts were primarily granted to "general engineering sciences (including mechanical engineering)" (470,000 euros) and to "biology" (500,000 euros), as well as to the small subject area of "mining and metallurgy" (520,000 euros). On the other hand there are

the humanities and social sciences, where amounts range from 37,000 euros to 95,000 euros as well as the research areas of "veterinary medicine", "mathematics" and "architecture, urban development, civil engineering" with amounts ranging from 50,000 euros to 70,000 euros per professor.

> A comparison between general third party income and the approvals granted by the DFG per research area confirm conclusions on the relative orientation towards (or even the „dependency upon") the DFG of the individual research areas. The relative importance is particularly high in "history and fine arts studies" for instance, but also in "biology", and it is still above average in "linguistic and literary studies", as well as in the subject group "psychology, education, philosophy, theology". It is below average, on the other hand, in "social sciences", "medicine", "veterinary medicine", "agriculture and forestry science" as well as in "architecture, urban development, civil engineering". It may come as a surprise to some to discover that in "general engineering sciences and mechanical engineering", the proportion of total third party funding is almost identical to that granted to this research area in DFG approvals.

> In general the placements in the ranking attained by universities in terms of the volume of approvals received from the DFG are very stable over time. In comparison to the previous "DFG ranking", which covered the period from 1996 to 1998, changes of just one or two places are typical in most cases. Exceptions are to be observed at universities in eastern Germany, for example. The growth process already reported on in the last report has, albeit at a considerably more moderate rate, continued in the majority of cases.

> Non-university research institutions attract 11 percent of the funds from the DFG. The largest single portion of this goes to Max Planck Society institutes (Max-Planck-Gesellschaft, MPG) (2.7 percent) The proportion of non-university recipients of approvals continues to be significantly above average in the eastern states of Germany, although this was also the case in Schleswig-Holstein.

> The regional evaluation of the distribution of DFG approvals was carried out for the first time in this report with reference to the analytical level of rural and urban districts. Approvals are recorded for 150 districts (of 439). A total of 71 districts received over 2 million euros in the period covered by the report. Map representations contained in the appendix to the report illustrate the distribution of approvals split into four scientific disciplines and 16 research areas.

> A first for this report is that the networks were observed according to the participation of research institutions in coordinated programmes run by the DFG. A total of 1,129 Collaborative Research Centres, Priority Programmes, Research Units and Research Training Groups were funded in the period between 1999 and 2001. Scientists and academics from 351 institutions were involved in these programmes. Inter-institutional participation is recorded for 489 programmes:

>> On average in the coordinated programmes run by the DFG each institution established cross-programme contacts to 46 other institutions. There are significant differences both between research areas and between institutions.

>> Using network visualisation processes it is possible to visualise the structures resulting from the relationships between the institutions involved in coordinated programmes. In the print version of the report these structures are presented for four scientific disciplines (further differentiations are planned for the internet version of the report). In the humanities and social sciences the relationship net is very "filigree". The Humboldt University in Berlin stands out as a central actor within this network. A similar position is assumed by the University of Munich in the biology and medicine network. Strong integration of non-university research institutions is characteristic there too, mostly in close connection to the local universities. The density of the relationship net in the natural sciences gives a clear indication of the particular significance of inter-institutional cooperation in this area. It is similar for engineering science.

> Another first for this report is the statistical evaluation of the distribution of reviewers consulted by the DFG in the written review process. This is based on approximately 10,000 reviewers for proposals decided upon between 1999 and 2001. Introduced

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by various findings on demographics the analyses carried out under ranking considerations yielded the following results:

>> Approximately 15 percent of all DFG reviewers in Germany work at a non-university institute. The majority are from Max Planck Society institutes (3.6 percent), although the Helmholtz Association (Helmholtz-Gemeinschaft) and the Leibniz Association (Leibniz-Gemeinschaft) also provide a significant number of DFG reviewers.

>> There are considerable differences between the groups of recipients of DFG approvals mentioned. "Top 20" universities provide approximately three times as many reviewers, relatively speaking, as universities in the fourth group.

>> At technical universities there are comparatively fewer reviewers in relation to the approval volume than at other universities. This is mostly due to the narrower range of subjects at these universities, which correspondingly makes activity over the whole range of subjects by the scientists and academics working there more difficult.

> Conclusions on the international prominence of German research are based on figures on international scientists and academics funded by the AvH and DAAD, amongst others. The most important points to mention here are:

>> The main countries from which these visiting researchers originate are China, USA, Russia, India and Japan (AvH), and China, Russia, Poland, Indonesia and Egypt (DAAD).

>> Scientists and academics funded by both of these organisations are predominantly – in relation to the number of professors at German universities – from "chemistry", "physics", "biology", "engineering science" and "geosciences". The DAAD also places emphasis (as a result of programmatic influences) on "linguistic and literary studies" and on "agriculture and forestry science".

>> Twenty one percent of recipients of funding from the AvH choose a non-university institution and amongst these predominantly Max Planck Society institutes (12 percent), as well as the Helmholtz Association (4 percent) (for recipients of funding from the DAAD no figures are available for visits to non-university institutions).

>> There is a high correlation between the overall volume of DFG approvals to a university and the appeal to AvH visiting researchers: For each professor at one of the "Top 20" DFG universities, there are approximately ten times as many AvH visiting researchers as at a university in group 4. There is also a significant difference in comparison to the intermediate groups. The same principle applies, although somewhat less markedly, for the number of scientists and academics funded by the DAAD per group in the ranking and per professor.

> The „International" chapter also presents findings on data providing information on the participation by universities in the Fifth EU Framework Programme (1998 to 2002). The most important findings here are:

>> German universities submitted the second largest contingent of contracts with universities within this programme, behind England but ahead of Italy and France.

>> The distribution of countries participating in projects with German involvement was more or less the same as that of countries participating in the programme overall. Cooperation was slightly above average between university researchers in Germany and partners in the Netherlands, Switzerland, Poland and Israel.

>> In the "Network of countries", which is defined by the number of cooperative relationships, Germany assumes a central position alongside Great Britain. There were cooperative relationships to all of the countries involved to a significant extent.

>> In relation to the number of professors there are almost three times as many EU projects at the "Top 20" DFG universities (relative to the total volume of approvals), as at universities in the fourth group.

> The final chapter compares and contrasts figures from generally accessible bibliomet-

ric studies with figures on DFG approvals. In the case of the first study, conducted by the Center for Science and Technology Studies (Zentrums für Wissenschafts- und Technologiestudien, CEST) in Berne, Switzerland, the data provide information on the number of publications (weighted on the basis of their citations) by whole universities, in the case of the Centre for Science and Technology Studies (CWTS) in Leiden in the Netherlands, the data refer to publications in medical journals as well as citations of these. The comparison to the volume of approvals from the DFG attracted by scientists and academics at universities showed that:

>> Forty percent of the publications from German universities incorporated in the CEST study (n = 47) were by scientists and academics at universities belonging to the top 20 approval recipients from the DFG. A further 34 percent went to universities on places 21 to 40.

>> Per professor there were almost twice as many publications at universities in the DFG approval group 1 to 20 as in the bottom two groups. In comparison to the group 21 to 40 the publication output in international journals is still about 10 percent higher.

>> With reference to figures from the Dutch CWTS study on articles in international medical journals, the publication output by universities on places 1 to 10 (here relating to research income in "medicine") was at least three times as great as at universities in the 4th group. In comparison to universities in the middle of the field the factor is about 1.3 : 1.

>> A comparison of the number of citations from publications evaluated in the CWTS study results in a value 16 percent above the global average for universities in the DFG approval group 1 to 10. In the group from 11 to 20 the international citation rate was still around 5 percent above average. For universities on places 21 to 30 and 31 to 39 the value was slightly below average (-7 and -11 percent respectively).

As a whole, the various findings first and foremost confirm the assumption that was already a central theme of the first so-called "DFG ranking": DFG approvals are a good performance indicator. They display a high correlation to third party funding overall, with the appeal to visiting researchers from abroad, with the participation in international programmes and with the level of publication activity as well as the acceptance success in international journals.

8.2 Comparative Summary at University Level

Tables 8-1 and 8-2 compare the findings calculated using the methods presented in the individual chapters in summarised form for 40 universities. On the one hand those universities are considered, which attracted over 30 million euros in approvals from the DFG between 1999 and 2001. The other shows the 40 universities with the highest relative volume of DFG approvals per professor working full-time at a university (over 125,000 euros in approvals per professor).

In addition to the nine research indicators taken into consideration, various factors influencing the ranking in a certain group are shown, which result from the simple size of an institution – again in relation to the number of professors or the total number of scientists and academics working at these universities in 2000 according to official statistics.

Table 8-1 shows the ranking of each university based on absolute values and the indicators. The colour coding displays a high degree of agreement at first glance, despite the different accentuations of the various key performance indicators already mentioned – an initial indication of the existence of localised general conditions for research.

If you concentrate first of all on the ten universities with the highest total volume of DFG approvals then the highest correlations become apparent

> to the total third party funding income of these universities (9 of the "Top Ten" DFG universities are also amongst the top 10 institutions here)

> to participation in the Fifth EU Framework Programme (8 out of 10 matches)

> to the centrality in networks of coordinated programmes funded by the DFG (measured according to the number of institutions with which scientists and academics are jointly participating in these programmes) (6 out of 10 matches)

> to the number of visiting researchers funded by the AvH who chose these universities as the destination for an extended research stay (again 6 out of 10 matches)

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> to the number of scientists and academics and students or graduates funded by the DAAD (again 5 out of 10 matches each)

> to the number of DFG reviewers working at these universities (5 out of 10 matches) and finally

> to the number of articles in international journals (weighted according to their relative citation success) (4 out of 9 matches) (data missing for one university).

Two universities, the University of Munich and the University of Heidelberg, even managed to achieve, if you will, "full marks". They are in the "Top Ten" for all of the categories taken into consideration here. The University of Tübingen achieves this in eight out of nine instances, the Technical University of Munich of is only ranked in the lower groups with respect to the two DAAD performance indicators. The Humboldt University in Berlin reaches a position in the "Top Ten" in six out of nine cases, as does the Technical University of

Table 8-1:
Summary comparison of ranking groups for the key performance indicators presented in this report: In absolute terms

University[1]	DFG-approvals 1999-2001	Scientific staff 2000: Professors	Scientific staff 2000: Scientists and academics in total	Third party funding in total 1999-2000	Centrality in networks of DFG-funded coordinated programmes 1999-2001	Number of DFG reviewers 1999-2001	Number of AvH visiting researchers 1997-2001	Number of DAAD scientists and academics 2000-2001	Number of DAAD students/ graduates 2000-2001	Participation in the 5th EU-Framework Programme 1998-2002	Publications in international journals (CEST study) 1994-1999
Aachen TH	R 1-10	R 21-30	R 1-10	R 1-10	R 1-10	R 11-20	R 21-30	R 1-10	R 1-10	R 1-10	n/a[2]
München U	R 1-10	R 1-10	R 1-10	R 1-10	R 1-10	R 1-10	R 1-10	R 1-10	R 1-10	R 1-10	R 1-10
München TU	R 1-10	R 11-20	R 1-10	R 1-10	R 1-10	R 1-10	R 1-10	R 11-20	R 21-30	R 1-10	R 1-10
Tübingen U	R 1-10	R 11-20	R 1-10	R 1-10	R 1-10	R 1-10	R 1-10	R 1-10	R 11-20	R 1-10	R 1-10
Erlangen-Nürnberg U	R 1-10	R 1-10	R 1-10	R 1-10	R 11-20	R 11-20	R 1-10	R 21-30	R 21-30	R 1-10	R 11-20
Heidelberg U	R 1-10	R 11-20	R 1-10	R 1-10	R 1-10	R 1-10	R 1-10	R 1-10	R 1-10	R 1-10	R 1-10
Stuttgart U	R 1-10	R 31-40	R 11-20	R 1-10	R 11-20	R 21-30	R 11-20	R 11-20	R 11-20	R 1-10	R 21-30
Würzburg U	R 1-10	R 21-30	R 11-20	R 11-20	R 11-20	R 11-20	R 11-20	R 31-40	R 21-30	R 11-20	R 11-20
Berlin HU	R 1-10	R 1-10	R 1-10	R 1-10	R 11-20	R 1-10	R 1-10	R 1-10	R 1-10	R 21-30	R 11-20
Karlsruhe U	R 1-10	R 31-40	R 21-30	R 1-10	R 1-10	R 21-30	R 11-20	R 11-20	R 1-10	R 1-10	R 21-30
Freiburg U	R 11-20	R 21-30	R 11-20	R 11-20	R 1-10	R 1-10	R 11-20	R 11-20	R 11-20	R 11-20	R 1-10
Bonn U	R 11-20	R 1-10	R 11-20	R 11-20	R 11-20	R 1-10	R 1-10	R 1-10	R 1-10	R 11-20	R 1-10
Berlin FU	R 11-20	R 1-10	R 11-20	R 11-20	R 11-20	R 1-10	R 1-10	R 1-10	R 1-10	R 21-30	R 1-10
Hamburg U	R 11-20	R 1-10	R 1-10	R 11-20	R 1-10	R 1-10	R 21-30	R 1-10	R 11-20	R 11-20	R 1-10
Göttingen U	R 11-20	R 11-20	R 11-20	R 21-30	R 21-30	R 1-10	R 1-10	R 1-10	R 1-10	R 11-20	R 1-10
Köln U	R 11-20	R 1-10	R 11-20	R 11-20	R 21-30	R 11-20	R 1-10	R 11-20	R 21-30	R 21-30	R 11-20
Bochum U	R 11-20	R 11-20	R 21-30	R 21-30	R 1-10	R 11-20	R 11-20	R 21-30	R 11-20	R 21-30	R 21-30
Frankfurt/Main U	R 11-20	R 1-10	R 11-20	R 11-20	R 21-30	R 11-20	R 11-20	R 11-20	R 21-30	R 11-20	R 11-20
Münster U	R 11-20	R 1-10	R 1-10	R 21-30	R 21-30	R 11-20	R 11-20	R 11-20	R 31-40	R 31-40	R 11-20
Berlin TU	R 11-20	R 11-20	R 21-30	R 11-20	R 11-20	R 11-20	R 11-20	R 1-10	R 11-20	R 1-10	R 21-30
Hannover U	R 21-30	R 21-30	R 21-30	R 11-20	R 11-20	R 31-40	R 31-40	R 21-30	R 1-10	R 11-20	R 1-10
Mainz U	R 21-30	R 11-20	R 11-20	R 11-20	R 31-40	R 11-20	R 21-30	R 11-20	R 31-40	R 11-20	R 11-20
Marburg U	R 21-30	R 21-30	R 21-30	R 21-30	R 31-40	R 11-20	R 11-20	R 21-30	R 21-30	R 51-60	R 11-20
Dresden TU	R 21-30	R 1-10	R 1-10	R 1-10	R 31-40	R 21-30	R 31-40	R 11-20	R 1-10	R 1-10	n/a
Darmstadt TU	R 21-30	R 31-40	R 31-40	R 21-30	R 1-10	R 21-30	R 11-20	R 21-30	R 11-20	R 21-30	R 31-40
Gießen U	R 21-30	R 21-30	R 21-30	R 31-40	R 41-50	R 21-30	R 21-30	R 1-10	R 21-30	R 31-40	R 21-30
Düsseldorf U	R 21-30	R 31-40	R 21-30	R 21-30	R 41-50	R 21-30	R 31-40	R 31-40	R 41-50	R 21-30	R 11-20
Bremen U	R 21-30	R 21-30	R 31-40	R 21-30	R 11-20	R 31-40	R 41-50	R 31-40	R 21-30	R 11-20	n/a
Konstanz U	R 21-30	R 51-60	R 51-60	R 41-50	R 21-30	R 31-40	R 21-30	R 41-50	R 31-40	R 31-40	R 31-40
Dortmund U	R 21-30	R 21-30	R 31-40	R 31-40	R 11-20	R 31-40	R 31-40	R 31-40	R 41-50	R 21-30	R 31-40
Bielefeld U	R 31-40	R 41-50	R 41-50	R 41-50	R 41-50	R 31-40	R 21-30	R 31-40	R 31-40	R 41-50	R 31-40
Jena U	R 31-40	R 21-30	R 21-30	R 31-40	R 21-30	R 21-30	R 31-40	R 21-30	R 21-30	R 31-40	n/a
Braunschweig TU	R 31-40	R 41-50	R 31-40	R 21-30	R 21-30	R 21-30	R 41-50	R 41-50	R 51-60	R 21-30	R 31-40
Leipzig U	R 31-40	R 11-20	R 11-20	R 31-40	R 21-30	R 31-40	R 31-40	R 21-30	R 11-20	R 41-50	n/a
Saarbrücken U	R 31-40	R 31-40	R 31-40	R 31-40	R 31-40	R 31-40	R 31-40	R 41-50	R 21-30	R 21-30	R 21-30
Kiel U	R 31-40	R 11-20	R 21-30	R 21-30	R 31-40	R 21-30	R 21-30	R 21-30	R 31-40	R 21-30	R 11-20
Ulm U	R 31-40	R 41-50	R 31-40	R 21-30	R 31-40	R 31-40	R 11-20	R 41-50	R 51-60	R 11-20	R 21-30
Halle-Wittenberg U	R 31-40	R 11-20	R 21-30	R 31-40	R 21-30	R 31-40	R 51-60	R 41-50	R 31-40	R 41-50	R 21-30
Regensburg U	R 31-40	R 31-40	R 31-40	R 31-40	R 41-50	R 21-30	R 21-30	R 51-60	R 41-50	R 31-40	R 21-30
Kaiserslautern U	R 31-40	R 51-60	R 41-50	R 31-40	R 21-30	R 41-50	R 31-40	R 51-60	R 41-50	R 41-50	R 31-40
Basis (universities):	**80**	**79**	**79**	**80**	**80**	**80**	**80**	**79**	**79**	**80**	**47**

Key:
Rank 1 to 10 (R 1-10)
Rank 11 to 20 (R 11-20)
Rank 21 to 30 (R 21-30)
Rank 31 to 40 (R 31-40)
Rank 41 to 50 (R 41-50)
Rank 51 to 60 (R 51-60)
Rank 61 to 80 (R 61-80)

[1] Only universities which received over 30 million euros in DFG approvals in total in the period stated.
[2] n/a = not available.

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Aachen in five cases. If you also take into consideration the group of DFG approval recipients on places 11 to 20, then the list of especially frequently high ranking institutions can be extended to include the universities of Bonn and Göttingen, which take a place in the top group in five out of nine ranking categories.

None of the 20 universities with the highest volume of DFG approvals reaches a place below the middle of the range in the ranking (below 40), there are only two "outliers", which are ranked in the group between 31 and 40 in exceptional cases (the University of Würzburg (DAAD scientists and academics), the University of Münster (DAAD-funded international students or graduates, and participation in the Fifth EU Framework Programme).

If you consider, more or less as a transition to Table 8-2, the "ranking groups" to which the universities belong on the basis of their size, measured according to the number of professors working there, it turns out that this placement is in fact the weakest factor for predicting placement in other groups of the ranking. All of the key performance indicators considered here correlate least well to the number of professors working at any given university. For example the DFG: Of the ten universities with the most approvals, only three (Munich, Erlangen-Nürnberg and the Humboldt University in Berlin) are amongst the ten largest in Germany in terms of the number of professors. Four more universities belong to the "size ranking group" 11 to 20, two more are in the group from 21 to 30 and two more, the University of Stuttgart and the University of Karlsruhe, are ranked as average in terms of their number of professors (ranking 31 to 40).

Just as strong as it is trivial is, in contrast, the relationship between the various third party funding indicators and the total number of scientists and academics working at a university. Of the ten universities with the most approvals from the DFG there are, after all, eight which also rank amongst the ten largest in terms of the number of scientists and academics working there. In the comparison to the total third party funding income there are even nine out of ten universities where the highest third party funding income coincides with the largest number of scientists and academics. This close correlation can however probably be best explained by the fact that a significant proportion of the scientists and academics belonging to the academic central block are financed using precisely these third party funds: The number of scientists and academics at a university is not least a result of the extent to which third party funds could be obtained in order to fund research projects.

Table 8-2 illustrates the relationships between the various indicators normalised according to the number of professors working at the universities represented. As expected, this point of view gives a much more differentiated impression. But here again the similarities between the various indicators remain greater than the differences.

The most obvious thing which stands out from this table is the strong agreement between the top groups in absolute and relative terms: Seven out of the ten overall top "DFG universities" for approvals – the universities of Stuttgart, Karlsruhe, the Technical University of Aachen, the Technical University of Munich, Würzburg, Tübingen and Heidelberg – are also amongst the top universities for approvals in relation to per capita approvals per professor. None of these seven universities is also amongst the ten largest universities in Germany (in terms of the number of professors). Even if the scope is expanded to include the 20 relatively highest ranking universities in terms of approvals, only one university – Erlangen-Nürnberg – is amongst the ten largest universities in terms of the number of professors. Conversely, neither is it the smallest universities which "score", but rather it is institutions which, in relation to the number of professors working there, are ranked on places from 11 to 40 in terms of size. Correspondingly it is mainly large (although not the largest) universities, which achieve high values overall, also relatively speaking, when considering the key performance indicators taken into consideration here:

Of the ten universities with the highest per capita approval volume per professor

- seven universities also have the highest per capita involvement in the Fifth EU Framework Programme
- six universities also command the highest total third party funding income per professor
- six universities also provide the largest number of DFG reviewers per professor
- six universities are also especially popular in terms of the relative number of visiting researchers funded by the AvH
- four universities are also in one of the top positions for scientists and academics funded by the DAAD and

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Table 8-2:
Summary comparison of ranking groups for the key performance indicators presented in this report: Relative to the number of professors working at each university

University[1]	DFG-approvals 1999-2001	Scientific staff 2000: Pro-fessors	Scientific staff 2000: Scientists and aca-demics in total	Third party funding in total 1999-2000	Centrality in networks of DFG-funded coordinated programmes 1999-2001	Number of DFG reviewers 1999-2001	Number of AvH visiting researchers 1997-2001	Number of DAAD scientists and academics 2000-2001	Number of DAAD students/ graduates 2000-2001	Participation in the 5th EU-Frame-work Programme 1998-2002	Publications in inter-national journals (CEST study) 1994-1999
Stuttgart U	R 1-10	R 31-40	R 11-20	R 1-10	R 11-20	R 1-10	R 1-10	R 1-10	R 1-10	R 1-10	R 11-20
Hannover MedHo	R 1-10	R 61-80	R 41-50	R 1-10	R 11-20	R 1-10	R 31-40	R 61-80	R 41-50	R 1-10	n/a[2]
Karlsruhe U	R 1-10	R 31-40	R 21-30	R 1-10	R 11-20	R 11-20	R 1-10	R 1-10	R 1-10	R 1-10	R 11-20
Aachen TH	R 1-10	R 21-30	R 1-10	R 1-10	R 21-30	R 11-20	R 21-30	R 11-20	R 11-20	R 1-10	n/a
Konstanz U	R 1-10	R 51-60	R 51-60	R 21-30	R 1-10	R 1-10	R 1-10	R 11-20	R 1-10	R 1-10	R 11-20
München TU	R 1-10	R 11-20	R 1-10	R 1-10	R 21-30	R 1-10	R 1-10	R 31-40	R 31-40	R 1-10	R 1-10
Würzburg U	R 1-10	R 21-30	R 11-20	R 11-20	R 31-40	R 11-20	R 11-20	R 41-50	R 31-40	R 11-20	R 1-10
Tübingen U	R 1-10	R 11-20	R 1-10	R 11-20	R 31-40	R 1-10	R 1-10	R 1-10	R 11-20	R 1-10	R 1-10
Freiberg TU	R 1-10	R 61-80	R 61-80	R 1-10	R 1-10	R 41-50	R 31-40	R 1-10	R 31-40	R 21-30	n/a
Heidelberg U	R 1-10	R 11-20	R 1-10	R 11-20	R 31-40	R 1-10	R 1-10	R 21-30	R 11-20	R 11-20	R 1-10
Freiburg U	R 11-20	R 21-30	R 11-20	R 11-20	R 31-40	R 1-10	R 11-20	R 11-20	R 21-30	R 11-20	R 1-10
Ulm U	R 11-20	R 41-50	R 31-40	R 1-10	R 1-10	R 1-10	R 1-10	R 41-50	R 51-60	R 1-10	R 1-10
Kaiserslautern U	R 11-20	R 51-60	R 41-50	R 1-10	R 1-10	R 21-30	R 21-30	R 31-40	R 21-30	R 21-30	R 21-30
Clausthal TU	R 11-20	R 61-80	R 61-80	R 1-10	R 1-10	R 11-20	R 11-20	R 1-10	R 21-30	R 21-30	n/a
Erlangen-Nürnberg U	R 11-20	R 1-10	R 1-10	R 11-20	R 51-60	R 11-20	R 11-20	R 41-50	R 41-50	R 21-30	R 11-20
Darmstadt TU	R 11-20	R 31-40	R 31-40	R 11-20	R 11-20	R 21-30	R 1-10	R 11-20	R 11-20	R 11-20	R 31-40
Hannover U	R 11-20	R 21-30	R 21-30	R 21-30	R 31-40	R 41-50	R 41-50	R 21-30	R 1-10	R 11-20	R 1-10
Düsseldorf U	R 11-20	R 31-40	R 21-30	R 21-30	R 31-40	R 11-20	R 31-40	R 31-40	R 51-60	R 21-30	R 1-10
Bochum U	R 11-20	R 11-20	R 21-30	R 21-30	R 31-40	R 1-10	R 11-20	R 31-40	R 21-30	R 31-40	R 21-30
Bielefeld U	R 11-20	R 41-50	R 41-50	R 41-50	R 21-30	R 21-30	R 11-20	R 21-30	R 31-40	R 51-60	R 31-40
Braunschweig TU	R 21-30	R 41-50	R 31-40	R 11-20	R 11-20	R 11-20	R 41-50	R 51-60	R 61-80	R 11-20	R 31-40
Hamburg-Harburg TU	R 21-30	R 61-80	R 61-80	R 21-30	R 1-10	R 21-30	R 21-30	R 11-20	R 1-10	R 21-30	R 31-40
Göttingen U	R 21-30	R 11-20	R 11-20	R 31-40	R 51-60	R 11-20	R 11-20	R 21-30	R 1-10	R 31-40	R 11-20
Berlin TU	R 21-30	R 11-20	R 21-30	R 11-20	R 41-50	R 31-40	R 11-20	R 1-10	R 11-20	R 1-10	R 21-30
Bonn U	R 21-30	R 1-10	R 11-20	R 31-40	R 51-60	R 11-20	R 11-20	R 11-20	R 11-20	R 31-40	R 11-20
München U	R 21-30	R 1-10	R 1-10	R 11-20	R 61-80	R 21-30	R 11-20	R 21-30	R 21-30	R 11-20	R 1-10
Chemnitz TU	R 21-30	R 51-60	R 51-60	R 31-40	R 1-10	R 51-60	R 41-50	R 11-20	R 61-80	R 51-60	n/a
Berlin HU	R 21-30	R 1-10	R 1-10	R 21-30	R 61-80	R 31-40	R 21-30	R 1-10	R 11-20	R 51-60	R 21-30
Marburg U	R 21-30	R 21-30	R 21-30	R 41-50	R 41-50	R 21-30	R 21-30	R 41-50	R 31-40	R 61-80	R 11-20
Bayreuth U	R 21-30	R 51-60	R 41-50	R 21-30	R 1-10	R 21-30	R 1-10	R 11-20	R 41-50	R 41-50	R 11-20
Frankfurt/Main U	R 31-40	R 1-10	R 11-20	R 31-40	R 61-80	R 31-40	R 21-30	R 21-30	R 41-50	R 31-40	R 21-30
Saarbrücken U	R 31-40	R 31-40	R 31-40	R 31-40	R 31-40	R 31-40	R 31-40	R 41-50	R 11-20	R 21-30	R 21-30
Mainz U	R 31-40	R 11-20	R 11-20	R 31-40	R 61-80	R 31-40	R 31-40	R 31-40	R 41-50	R 21-30	R 11-20
Lübeck MedU	R 31-40	R 61-80	R 41-50	R 1-10	R 1-10	R 1-10	R 61-80	R 31-40	R 61-80	R 11-20	R 1-10
Dortmund U	R 31-40	R 21-30	R 31-40	R 41-50	R 21-30	R 41-50	R 41-50	R 51-60	R 41-50	R 21-30	R 41-50
Magdeburg U	R 31-40	R 41-50	R 31-40	R 21-30	R 11-20	R 41-50	R 41-50	R 21-30	R 41-50	R 41-50	n/a
Regensburg U	R 31-40	R 31-40	R 31-40	R 31-40	R 41-50	R 21-30	R 21-30	R 61-80	R 51-60	R 31-40	R 21-30
Köln U	R 31-40	R 1-10	R 11-20	R 41-50	R 61-80	R 31-40	R 21-30	R 51-60	R 51-60	R 51-60	R 31-40
Bremen U	R 31-40	R 21-30	R 31-40	R 21-30	R 21-30	R 51-60	R 51-60	R 41-50	R 31-40	R 11-20	n/a
Berlin FU	R 31-40	R 1-10	R 11-20	R 31-40	R 61-80	R 31-40	R 1-10	R 1-10	R 21-30	R 41-50	R 11-20
Basis (universities):	**79**	**79**	**79**	**79**	**79**	**79**	**79**	**78**	**78**	**79**	**47**

Key:
Rank 1 to 10 (R 1-10)
Rank 11 to 20 (R 11-20)
Rank 21 to 30 (R 21-30)
Rank 31 to 40 (R 31-40)
Rank 41 to 50 (R 41-50)
Rank 51 to 60 (R 51-60)
Rank 61 to 80 (R 61-80)

[1] Only universities which received over 125,000 euros in DFG approvals per professor in the period stated.
[2] n/a = not available.

> another four universities are also in the "Top Ten" in terms of their relative publication output (weighted according to the acceptance) in international journals (there is no information available for three other universities in the study quoted).

There is only weaker agreement regarding the number of international students or graduates funded by the DAAD and for the centrality in networks.

As stated above for the absolute figures, a number of universities are also consistently highly placed in the per capita evaluation:

> The University of Stuttgart, which ranks highly in terms of the DFG approval volume per professor, also achieves a place in the "Top Ten" in six out of eight other ranking categories, and in two others it is to be found in the next group (from 11 to 20).

> It is a similar picture for the University of Karlsruhe, with five "Top Ten" places and three placements in the 11 to 20 group.

> The University of Konstanz is ranked between 1 and 10 in six instances, and in two instances it is ranked between 11 and 20, while it is only in the group from 21 to 30 in once instance (for total third party income).

> The University of Tübingen is also leading in 6 out of 9 instances in relative terms, in relation to total third party income and to the number of DAAD-funded international students it is ranked in the group between 11 and 20. In terms of the centrality in networks of DFG coordinated programmes it ranks in the group from 31 to 40.

> The Technical University of Munich is represented in the "Top Ten" six times, in networks of DFG coordinated programmes it is ranked in group 21 to 30, in terms of DAAD figures it is placed in the group 31 to 40 (relative proportion of DAAD-funded scientists and academics and students or graduates).

> Last but not least, the University of Heidelberg manages to get into the "Top Ten" four times for the per capita evaluation, and in three more instances (total third party income, DAAD fellowship recipients and participation in the Fifth EU Framework Programme) it is ranked in the second group. The relative consideration of the number of DAAD scientists and academics results in a placement in the third group (ranking group 21 to 30) and finally the relative number of partner institutions with which contact was established in the context of coordinated programmes funded by the DFG placed it in the group 31 to 40.

For the majority of the indicators, the evaluation of the 40 universities with the highest volume of DFG approvals per professor gives a complete picture of the "Top Ten" per indicator. Exceptions arise for the "centrality in networks", in which the University of Mannheim, which is not listed here, also achieved a "Top Ten" ranking in relative terms. In respect to the number of DAAD-funded international students or graduates, the same applies to the universities of Hohenheim, Trier, Dresden and Passau. The University of Hohenheim also achieves a ranking amongst the top ten in terms of its per capita involvement in the Fifth EU Framework Programme.

8.3 Comparative Summary at Research Area Level

Whereas the findings presented so far relate to universities as a whole, below selected results on the 16 research areas from the DFG subject classification system are compared. It is primarily the representations differentiated by research area which highlight the priorities of each individual university and how successful these are in terms of the various key performance indicators considered here. Conclusions are also reached regarding the specific involvement of non-university research institutions.

For the evaluation according to research area the following key performance indicators were taken into consideration:

> volume of DFG approvals from 1999 to 2001[1)]

> the centrality in networks of coordinated programmes funded by the DFG between 1999 and 2001, measured according to the number of partner institutions with which cross-programme cooperative contact was established

> the number of DFG reviewers consulted in the written review process for proposals decided upon between 1999 and 2001

> research stays by Alexander von Humboldt Foundation visiting researchers between 1997 and 2001

> visits between 2000 and 2001 by scientists and academics and students or graduates funded by the DAAD (universities only)

> publications in international journals between 1994 and 1998 (medicine only, universities only)

For methodological reasons the total third party income of universities is not taken into consideration (the figures are not comparable, primarily due to the very inconsistent handling of central funds at subject level (cf. chapter 3)),

[1)] The findings referring to non-university institutions reported on below for individual research areas are not mentioned separately in the tabular appendix. There the findings are only distinguished according to four scientific disciplines.

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as is also the case for participation in the Fifth EU Framework Programme (for which no information according to subject is available). It is also not possible to carry out a weighting according to the number of professors or scientists and academics working at a university due to a lack of compatibility between the figures at the research area level.

It should be emphasised that the comparisons are only a rough guide to correlation at an institutional level, but cannot, for instance, offer a comparison at a departmental or even institute level: An AvH visiting researcher assigned to "chemistry" may have spent his/her research visit at a medical institute, just as a greater or lesser number of publications in medical journals may have been written by authors from biological institutes. So the figures are hardly, if at all, suitable for measuring the "research achievement" of institutes. Rather, they give an indication of the specialist profile of an institution, reflecting various measured values.

The subject-specific characteristics of the various key performance indicators discussed in the previous chapters should be borne in mind when interpreting them. These are briefly summarised here:

> DFG approvals are fundamentally available to scientists and academics from all research areas – demand varies from one research area to another, however. Just as is the case for third party funding in general, these approvals primarily constitute a good part of the characteristic research activities for those subjects which, as so called "third party funded subjects", actually do conduct large-scale research projects which are conceived as projects for a specific period of time. Overall it is the natural sciences and engineering sciences subject areas (with the exception of mathematics) which can generally be described as placing a strong emphasis on third party funding, and above average per capita income is also typical for the life sciences research areas as a general rule. This basically also applies to third party funding by the DFG, although within the life sciences the biologists are comparatively more active in submitting proposals than medics. For the DFG, as for third party funding overall, there is on the other hand below average third party funding for the humanities and social sciences as well as for "mathematics", for "veterinary medicine", and for the research area "architecture, urban development, civil engineering". Third party funding indicators are therefore less meaningful for these research areas.

> The integration in networks of coordinated programmes funded by the DFG is also most meaningful for subject areas in which inter-institutional cooperation is part of everyday research life. Taking the participation in coordinated programmes and the networks resulting from this participation into consideration, this primarily applies to the natural and engineering sciences. Inter-institutional cooperation is somewhat less pronounced in the life sciences. Network structures of this kind are least characteristic for the humanities and social sciences.

> The visiting researcher programmes run by the Alexander von Humboldt Foundation are open to participants from all disciplines. The greatest demand for the opportunities offered by the AvH programmes is from natural scientists (in particular chemists and physicists) as well as from biologists and engineering scientists.

> The DAAD programmes for scientists and academics (predominantly graduates) and international students are also taken up to a large extent by participants from the disciplines mentioned above. As a result of particular subject (and regional) emphases in various special programmes there are however also various accentuations – expressed in particularly high numbers of funding recipients in "linguistic and literary studies" as well as in the otherwise rather small research area of "agriculture and forestry science".

Hence each indicator illuminates its own sections of research activity. Each indicator is also of varying significance in the evaluations according to research area.

Humanities and Social Sciences

Social sciences: The highest volumes of DFG approvals in the period from 1999 and 2001 were attracted by the Humboldt University in Berlin, the University of Mannheim, the University of Frankfurt am Main, the University of Bonn and Bielefeld University. Of those universities which attracted the highest volume of approvals from the DFG, six turned out to be particularly well "networked" in the DFG coordinated programmes – expressed in terms of the number of partner institutions with which these universities came into contact within the framework of these programmes. The fact that even those universities which rank in the middle of the field in terms of the approval volume can achieve above-average

network centrality through participation in these programmes is demonstrated by the examples of Potsdam, Dortmund and Hannover. There is also a high correlation to the number of reviewers from a university, here there are seven out of ten universities with a high number of approvals which provide more reviewers than average – led by the University of Bonn, the Humboldt University in Berlin and the University of Cologne. Amongst the non-university institutions the Social Science Research Center Berlin (Wissenschaftszentrum Berlin, WZB) provided the most reviewers. "Voting with your feet" by prizewinners and AvH fellowship recipients was also predominantly to the benefit of universities which ranked highly in terms of DFG approvals – with increased preference evident for the universities ranked 3rd, 4th and 5th, the universities of Frankfurt, Munich and Bonn. Similar emphasis was shown by DAAD funded scientists and academics, although for these the University of Munich, the FU Berlin and the Humboldt University in Berlin and the University of Bonn (in this order) were the most appealing.

The most popular non-university institution chosen as a destination for recipients of AvH funding in this research area is the Max Planck Institute for Comparative Public Law and International Law (MPI für ausländisches und internationales Strafrecht) in Freiburg, as well as the WZB. The WZB is, after the German Institute for Economic Research (Deutsches Institut für Wirtschaftsforschung) in Berlin, and the Centre for European Economic Research (Zentrum für Europäische Wirtschaftsforschung) in Mannheim, also amongst the largest non-university recipients of approvals from the DFG in this research area.

History and fine arts studies: In this research area there are again six out of ten universities with the highest volumes of approvals from the DFG amongst the universities with the highest number of institutional cooperation partners within DFG coordinated programmes. Taking a high position for both of these is the University of Tübingen (with the second highest approval volume after Frankfurt am Main) and the third highest number of cooperation partners (after the University of München and the Humboldt University in Berlin). The good scientific reputation of this university is also reflected in the number of reviewers (ranked 4th) who compiled expert reviews for the DFG there. Worthy of note here are also the University of Cologne, the FU Berlin and the University of Hamburg (in terms of their approval volume ranked 3rd, 5th and 7th), which provided the most reviewers in this research area. In relation to DAAD scientists and academics, seven out of ten of the universities with the highest number of approvals from the DFG were chosen as a destination – amongst the most popular universities are, after the FU Berlin and the Humboldt University in Berlin but also, for example, the University of Heidelberg, which, when considering the volume of approvals, is ranked 14th. These three universities are also most popular amongst AvH visiting researchers – followed by the universities of Cologne, Munich and Tübingen.

Amongst the 20 institutions with the highest number of AvH visiting researchers from this research area are, as far as non-university institutions are concerned, the Max Planck Institute for the History of Science (MPI für Wissenschaftsgeschichte) in Berlin and the Max Planck Institute for History (MPI für Geschichte) in Göttingen. The German Archaeological Institute (Deutsches Archäologisches Institut, DAI), which is based in Berlin, is worth mentioning as a non-university institution with an above average number of DFG reviewers in this area. The DAI is amongst the largest non-university recipients of approvals from the DFG after the four DFG Humanities Research Centres in this research area.

Linguistic and literary studies: The highest ranking in terms of the volume of DFG approvals here are the universities of Konstanz, Tübingen and Munich. The integration into networks of coordinated programmes funded by the DFG draws an entirely different picture however – not only for those at the top (the Humboldt University in Berlin, the University of Hamburg and the University of Leipzig), but also for those ranked below them, where a certain degree of congruency (approvals: ranked 4th, cooperation partners: ranked 2nd) can only be seen for the University of Hamburg. There is, on the other hand, a high correlation to the number of reviewers (seven of the ten universities with the highest volume of approvals are also leading in terms of the number of reviewers). The ranking category is led by the universities of Munich, Hamburg, FU Berlin and Tübingen. AvH visiting researchers preferred to visit the FU Berlin and the universities of Munich, Cologne and the Humboldt University in Berlin. DAAD visiting researchers also concentrated on the FU Berlin and the University of Munich, followed by the University of Tübingen and the Humboldt University in Berlin, while the University of Cologne does not appear until place 18.

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Worthy of note here, with respect to non-university recipients of approvals from the DFG, are the Humanities Research Centre for Literary Studies (geisteswissenschaftliches Zentrum für Literaturwissenschaft) and the Centre for General Linguistics (geisteswissenschaftliches Zentrum für Allgemeine Sprachwissenschaft). AvH visiting researchers frequently chose to visit the Institute for the German Language (Institut für Deutsche Sprache) in Mannheim.

Psychology, education, philosophy, theology: As a result of the particularly broad spectrum of disciplines combined in this group of subjects, the comparisons of the various ranking positions are only meaningful to a limited extent. Ranking highly in terms of DFG approvals once again is the University of Tübingen, followed by Heidelberg, Bonn, Munich and Marburg. Good integration into networks of coordinated programmes are recorded for five of the ten universities with the most approvals, whereby the University of Munich stands out in particular, whose scientists and academics working in this group of subjects in DFG coordinated programmes came into contact with partners from 49 other institutions, followed by the Humboldt University in Berlin and the universities of Münster and Freiburg, which only made places 11 and 20 in terms of approvals. There is, on the other hand, a high degree of agreement to the number of reviewers, where the ranking is led by the universities of Munich, Tübingen, Münster, Freiburg and Göttingen, or to put it another way, seven out of ten universities with a large number of approvals are also ranked as "strong in terms of reviewers". The number of AvH vsiting researchers from this research area who visited German universities is relatively low, at just 106, and hence also the number of cases attributable to the individual institutions. Even so, there is considerable agreement, at least for the two universities with the most approvals in Tübingen and Heidelberg, which were also in the "Top Three" of the AvH statistics – together with the Humboldt University in Berlin, which attracted the eighth highest volume of approvals from the DFG in this group of subjects. The summary of recipients of DAAD funding, which also includes significantly shorter stays than for the AvH visiting researchers, also displays a comparatively low number of funding recipients in this research area (176 visiting researchers). Here the ranking is led by the Humboldt University and the FU Berlin, which are ahead of Tübingen, Heidelberg and Konstanz – all of which were amongst the "Top Ten" approval recipients from the DFG with the exception of the FU Berlin. There again, there is a high degree of agreement between the recipients of DAAD and AvH funding at the top of the list: Heidelberg, the Humboldt University in Berlin and Tübingen all rank in the "Top Five" here.

DFG approvals to non-university research institutions in this research area went primarily to the Forschungszentrum Europäische Aufklärung in Potsdam as well as to the Max Planck Institute for Psychological Research (Max-Planck-Institut für Psychologische Forschung) in Munich, the Max Planck Institute of Cognitive NeuroScience (Max-Planck-Institut für neuropsychologische Forschung) in Leipzig, and the Max Planck Institute for Human Development (Max-Planck-Institut für Bildungsforschung) in Berlin.

Biology/Medicine

Medicine: The highest ranking recipients of approvals from the DFG are the universities of Würzburg, Munich, the Humboldt University in Berlin, Erlangen-Nürnberg, Heidelberg, Freiburg, Tübingen and Mainz. Amongst the ten leading universities in terms of approvals in "medicine" there are six which are also amongst the ten universities with the most partner institutions in DFG coordinated programmes. At the top of this list are the universities of Heidelberg, Würzburg, Freiburg and Cologne (all at the same level), followed by the Humboldt University in Berlin, Göttingen, Munich and Tübingen. Measured in terms of the volume of approvals (place 6) the University of Erlangen-Nürnberg turns out to be less integrated in these networks, for example, being on place 12 of the universities with the largest number of partner institutions. The correlation between the approval ranking and the position in terms of the respective number of reviewers delegated is even higher: Seven universities achieve single-figure places both for the volume of approvals and for the number of reviewers. Most prominently positioned here is the University of Munich, followed by Heidelberg, Freiburg, Würzburg and the Humboldt University in Berlin. The University of Munich is also a leader in relation to the number of visiting researchers from the Alexander von Humboldt Foundation (although it should be noted that medics from abroad receive funding from the AvH and the DAAD less frequently in relative terms), followed by the universities of Freiburg and Würzburg. Scientists and academics funded by the DAAD have other priorities, on the oth-

er hand: Here the Humboldt University takes first place, followed by the universities of Heidelberg and Munich.

The significant role played by non-university institutions especially in "medicine", as hosts for scientists and academics in programmes run by the AvH, should be pointed out. In a prominent position is the German Cancer Research Center (Deutsches Krebsforschungszentrum, DKFZ) in Heidelberg, for instance, and others amongst the twenty most popular destinations of choice for recipients of AvH funding are the Max Planck Institute for Brain Research (MPI für Hirnforschung) in Frankfurt and the Max Planck Institute of Neurobiology (MPI für Neurobiologie) in Planegg.

On the research area level for medicine alone chapter 7 reports on the findings of a bibliometric study carried out by the Dutch Centre for Science and Technology Studies (CWTS). Distinguished both in terms of the absolute number of publications, as well as by their above average global success for citations, are the universities of Munich, Heidelberg and the FU Berlin. Significantly above average citation rates in two or more medical fields of research are also recorded for the universities of Freiburg, Würzburg, the Technical University of Munich and Essen (cf. Table A7-3 in the appendix).

Biology: In "biology" the University of Munich takes top place in practically all of the ranking categories taken into consideration here. Only in terms of the number of DAAD scientists and academics does it rank behind Bonn, Frankfurt am Main and the FU Berlin in fourth place. The DAAD category is thus the one which breaks away from the otherwise uniform picture in this research area. The universities which take the top places there, Bonn, Frankfurt, and the FU Berlin, only make places 7 and 18 in terms of the selection by AvH visiting researchers, and the FU Berlin doesn't even make it into the "Top 20". Conversely, the University of Heidelberg, popular amongst the recipients of AvH funding, is only seldomly visited by the recipients of DAAD funding, but there again achieves a high placement in terms of the volume of DFG approvals. On the other hand, the agreement between the categories is high: Alongside Munich it is primarily the universities of Würzburg and Heidelberg which take top positions. Würzburg's special reputation is also expressed through the decision to establish one of the first DFG Research Centres there in 2001 (the "Rudolf-Virchow-Zentrum für Experimentelle Biomedizin") (approvals there during the period covered by the report are attributed to "biology"). The universities of Freiburg and Marburg proved to be the most strongly networked in coordinated programmes, which are also ranked highly overall in terms of approvals. The Technical University of Munich (in 11th place) and the University of Cologne (place 13), and Göttingen (place 16), on the contrary, drop down the ranking when measured according to the number of partner institutions in coordinated programmes in comparison to their positions for the volume of approvals (places 5, 4 and 8).

In "biology" again, a large number of non-university institutions manage to achieve high positions in a variety of categories. Biologists funded by the AvH, for instance, frequently chose to visit the European Molecular Biology Laboratory (Europäisches Laboratorium für Molekularbiologie, EMBL) in Heidelberg, as well as the Max Planck Institute for Biophysical Chemistry (Max-Planck-Institut für biophysikalische Chemie) in Göttingen, the Max Planck Institute for Biochemistry (MPI für Biochemie) in Planegg, and the Max Planck Institute for Brain Research (MPI für Hirnforschung) in Frankfurt am Main. The Max Planck Institute for Biophysical Chemistry proves to be very well integrated in the networks of DFG coordinated programmes, as is the Max-Delbrück-Centre for Molecular Medicine (Max-Delbrück-Centrum) in Berlin which, as is the case for many other non-university institutions, places emphasis on "biology" as well as on "medicine" (it should also be pointed out that consideration which concentrates strictly on these two research areas alone is only of limited significance). The MPI for Biochemistry and the MPI for Biophysical Chemistry are also at the top of the list of non-university approval recipients in this research area, followed by the Max-Delbrück-Centre for Molecular Medicine and the DKFZ in Heidelberg (which both receive about half of their approvals for projects with a biological or medical emphasis). Worth mentioning is also the EMBL in Heidelberg as well as the Max Planck Institute of Molecular Physiology (MPI für molekulare Physiologie) in Dortmund.

Veterinary medicine: Conclusions here are based upon a very small data basis and are therefore only open to interpretation according to ranking positions to a limited extent. Not very surprisingly the lead position is taken by the School of Veterinary Medicine (Tiermedizinische Hochschule) in Hannover, which

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stands out for three indicators (approval volume, number of partner institutions and the number of DAAD scientists and academics). The University of Giessen and – to a lesser extent – those of Leipzig and Munich also achieve high positions: The University of Giessen ranks in second place for three indicators (approval volume, number of reviewers and the number of DAAD scientists and academics). In terms of the same indicators Munich ranks amongst the top four and Leipzig amongst the top six places.

Agriculture and forestry science: Five universities achieve top ten rankings for all five indicators: the universities of Hohenheim, Göttingen, Giessen, Kiel and the Technical University of Munich. The University of Hohenheim distinguishes itself in this respect not only by having the highest volume of approvals, but also maintaining the most contacts to partner institutions and attracting the most DAAD funding recipients. For visiting researchers however, the University of Göttingen has strong appeal; the majority of visiting researchers taking part in AvH programmes and the second highest number of DAAD scientists and academics chose to go there. The University of Giessen stands out as being particularly well networked in coordinated programmes, which takes third place in terms of the volume of approvals. It also ranks in the top five in terms of all five indicators. The scientific reputation of the Technical University of Munich is clearly somewhat higher in "agriculture and forestry science" than the ranking in fifth place, which it takes for the volume of DFG approvals, would suggest: It delegates the most reviewers and is also in third place for the number of partner institutions in DFG coordinated programmes.

The Federal Biological Research Centre for Agriculture and Forestry (Biologische Bundesanstalt für Land- und Forstwirtschaft, BBA), based in Braunschweig, is particularly popular with AvH visiting researchers in this research area. It also achieves a high ranking for the reviewers consulted by the DFG in this subject area – along with the Federal Agricultural Research Centre (Bundesforschungsanstalt für Landwirtschaft), also in Braunschweig. Both are also leaders in this research area in terms of the total amount of DFG approvals – after the Research Institute for the Biology of Farm Animals (Forschungsinstitut für die Biologie landwirtschaftlicher Nutztiere, FBN) in Dummerstorf and the Institute of Plant Genetics and Crop Plant Research (Institut für Pflanzengenetik und Kulturpflanzenforschung) in Gatersleben.

Natural Sciences

Geosciences: The picture is somewhat more heterogeneous in this research area, if you ignore the fact that the University of Tübingen takes undisputed first place for the volume of approvals, the number of reviewers and the number of visiting researchers in both AvH and DAAD programmes. At the same time it is, alongside the University of Göttingen, the only university which takes one of the first ten places for all of the criteria under consideration here. An outstanding ranking is also achieved by the University of Karlsruhe, which takes one of the top ten places for all indicators with exception of the number of DAAD scientists and academics, where it comes in at eleventh place. For all of the other universities which follow in the ranking for the volume of approvals (with the exception of the University of Göttingen, as already mentioned) at least one of the indicators drops more or less significantly down the ranking: For the University of Bremen (in 3rd place) it is the number of AvH visiting researchers (for which it is ranked 16th), for the universities of Bochum and Münster it is the number of DAAD scientists and academics (both ranked 13th), for the universities of Bonn, Kiel and the FU Berlin the number of partner institutions in coordinated programmes run by the DFG (places 19, 13 and 16) and for the University of Cologne the number of reviewers (place 14). It is also worth mentioning that the University of Bremen and the FU Berlin could not attract a significant number of DAAD scientists and academics.

The non-university recipients of approvals from the DFG in this research area the Research Center for Marine Geosciences (Forschungszentrum für marine Geowissenschaften, GEOMAR) in Kiel, the Alfred Wegener Institute Foundation for Polar and Marine Research (Alfred-Wegener-Institut für Polar- und Meeresforschung, AWI) based in Bremerhaven and the GeoForschungsZentrum Potsdam (GFZ) are primarily worthy of note. The latter is also at the top of the ranking for AvH visiting researchers at non-university institutes. Together with the University of Bremen, and four other institutions, the AWI is involved in the DFG Research Centre Ocean Margins (DFG-Forschungszentrum Ozeanränder, DCOM), established in 2001, which is attributed to "Geosciences".

Chemistry: For "chemistry" the results are, once again, mixed. In relation to DFG approvals the highest ranking are the Technical University of Munich and the universities of Karlsruhe, Heidelberg and Münss-

ter. There are significant variations primarily for the number of partner institutions in networks of coordinated programmes funded by the DFG, where the ranking is led by the Technical University of Darmstadt, the University of Hannover and the Technical University of Chemnitz. The leading position of the Technical University of Munich is supported in particular by the indicators for the volume of approvals, the number of reviewers and the number of AvH scientists and academics and – to a lesser extent – the ranking in fifth place for the number of DAAD scientists and academics. With the exception of this example there is little correlation between the DFG approvals and the visits by visiting researchers. AvH visiting researchers prefer, after the Technical University of Munich, the universities of Göttingen, Ulm and Munich most of all, those funded by the DAAD on the other hand show a preference for the Technical University of Berlin and the universities of Tübingen, Karlsruhe and Rostock.

Non-university institutions with a high proportion of approvals in "chemistry" are, for example, the Max Planck Institute for Coal Research (MPI für Kohlenforschung) in Mülheim an der Ruhr, the Max Planck Institute for Polymer Research (MPI für Polymerforschung) in Mainz and the Leibniz Institute of Polymer Research (WGL-Institut für Polymerforschung) in Dresden, followed closely by the Max Planck Institute of Colloids and Interfaces (MPI für Kolloid- und Grenzflächenforschung) in Golm. This is also very popular with AvH visiting researchers, as is the Max Planck Institute in Mainz mentioned above.

Physics: Just as is the case for "chemistry" there is a weaker correlation between research achievement in terms of third party funding volume and integration in networks of coordinated programmes funded by the DFG in "physics" in comparison to other research areas. In contrast to the other natural sciences, no single institution can be identified as having a clear leadership claim; the University of Karlsruhe which, alongside Bremen and Würzburg, founded one of the first three DFG Research Centres ("Center for Functional Nanostructures", Funktionelle Nanostrukturen, CFN), in this case with the emphasis in "physics" and "chemistry", takes first place for the volume of approvals from the DFG and is also in high demand amongst AvH visiting researchers (after the universities of Frankfurt am Main, Munich and the Technical University of Munich, which each have 21 visiting researchers, and in joint position with the FU Berlin and the University of Erlangen-Nürnberg, each with 17 visiting researchers). In the category for DAAD scientists and academics on the other hand, it comes in at place 14. The Technical University of Aachen and the University of Frankfurt am Main, which, in terms of the DAAD visiting researchers and of AvH visiting researchers respectively, take first place, are on places 36 and 29 in terms of the volume of approvals, and are similarly inconspicuous for the number of cooperation partners in coordinated programmes funded by the DFG and the number of DFG reviewers working there. The universities of Hamburg, Munich and the Technical University of Munich distinguish themselves as leading locations in "physics" in that they each occupy single figure places in the rankings with regard to at least four indicators.

Amongst non-university research institutions which receive high volumes of approvals from the DFG for research projects classified as placing the emphasis on physics are first and foremost the Institute of Marine Research (Institut für Meereskunde, IfM) at the University of Kiel and the Institute of Solid State and Materials Research (Institut für Festkörper- und Werkstoffforschung) in Dresden. Also worthy of note are the Max Born Institute for Nonlinear Optics and Short Pulse Spectroscopy (Max-Born-Institut für nichtlineare Optik und Kurzzeitspektroskopie) in Berlin and the Research Centre Jülich (Forschungszentrum Jülich). AvH visiting researchers in "physics" comparatively frequently chose to visit the research center DESY (Deutsches Elektronen-Synchrotron, DESY) in Hamburg, the Max Planck Institute for Solid State Research (MPI für Festkörperforschung) in Stuttgart, and the Max Planck Institute for Quantum Optics (MPI für Quantenoptik) and the Max Planck Institute for Extraterrestrial Physics (MPI für extraterrestrische Physik), both in Garching. The Research Centre Jülich and the Kiel Institute of Marine Research are, finally, also both comparatively equally well represented by similar numbers of reviewers in the DFG's decision-making processes.

Mathematics: In "mathematics" a leading group of five universities is discernible: the universities of Heidelberg, Bonn, the Technical University of Berlin, and Bielefeld, as well as the Humboldt University in Berlin (in the order of the amount they attracted in approvals from the DFG). The final university in this list proves to be particularly attractive internationally, as a result of its achievement of second place in the ranking for the number of AvH and DAAD scientists and academics.

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The University of Bielefeld is the leader for AvH visiting researchers, for the DAAD on the other hand it only ranks ninth. There are also outliers in the group of leaders: The University of Bonn and the Technical University of Berlin, which are on places two and three for approvals, are both in ninth place for the number of DAAD scientists and academics (with very low absolute incidence rates), the University of Bielefeld is comparatively poorly integrated in networks in coordinated programmes funded by the DFG and in the case of the University of Heidelberg, the highest ranked for approvals, the poor response amongst international visiting researchers is conspicuous. For the top six places there is a high correlation between the ranking according to the volume of approvals and the number of reviewers.

The Weierstrass Institute for Applied Analysis and Stochastics (Weierstraß-Institut für Angewandte Analysis und Stochastik, WIAS) in Berlin proves to be particularly well integrated into networks in coordinated programmes funded by the DFG amongst non-university institutions. After the University of Bonn it is linked to the second highest number of partner institutions in these programmes. The WIAS is also on the list of the 20 most visited institutions by visiting researchers funded by the AvH, and in relation to DFG approvals it achieves the highest volume of approvals amongst non-university institutions after the Max Planck Institute for Mathematics in the Sciences (MPI für Mathematik in den Naturwissenschaften) in Leipzig.

Engineering Sciences

General engineering sciences and mechanical engineering: Five universities achieve top ten rankings for all indicators: the Technical University of Aachen, the universities of Stuttgart and Karlsruhe and the technical universities of Berlin and Munich. Regarding the number of partner institutions in coordinated programmes the Technical University of Munich, the Technical University of Aachen, and the Technical University of Darmstadt are a considerable way ahead of the rest. Amongst these, the Technical University of Aachen asserts itself as the clear leader whilst, although the Technical Universities of Munich and Darmstadt prove to be highly networked, they are rather less prominently ranked in terms of the volume of approvals they attract (places 7 and 8). The University of Karlsruhe manages to consolidate its fourth place for the volume of approvals by similar positions in terms of the number of partner institutions and the number of reviewers. As regards visiting researchers on the other hand, it only makes 8th (AvH) and 13th place (DAAD). The University of Hannover, which ranks in 3rd place for approvals, drops considerably lower for all other indicators (number of reviewers: 10th place; partner institutions in coordinated programmes funded by the DFG place 15, DAAD scientists and academics: place 13). The same applies, with slightly less significant differences in position, for the University of Erlangen-Nürnberg (approvals and AvH scientists and academics: 5th place; number of partner institutions: 11th place, number of reviewers: 13th place).

There are an especially large number of non-university research institutions in this research area which are very popular amongst visiting researchers funded by the AvH. For instance the Max Planck Institute for Metals Research (MPI für Metallforschung) in Stuttgart takes second place, immediately behind the Technical University of Darmstadt. Also very attractive for international engineers are the German Aerospace Center (Deutsches Zentrum für Luft- und Raumfahrt, DLR) at its various locations, as well as the Forschungszentrum Karlsruhe and the Research Centre Jülich. The DLR is also well integrated into the networks of coordinated programmes funded by the DFG, and of the non-university recipients of approvals from the DFG it also attracted the highest amount in this research area (ahead of the Federal Institute for Materials Research and Testing (Bundesanstalt für Materialforschung und –prüfung) in Berlin, the Institute of Plastics Processing at the Technical University of Aachen (Institut für Kunststoffverarbeitung in Industrie und Handwerk an der RWTH Aachen), the Institute for Mechanics of Materials (Institut für Werkstoffmechanik) in Bremen and the Institute of Composite Materials (Institut für Verbundwerkstoffe, IVW) in Kaiserslautern).

Architecture, urban development, civil engineering: The picture from the "general engineering sciences" is repeated here with other parties involved. Half of the universities in the top ten places according to the volume of approvals received are also ranked in the "Top Ten" region for the other indicators. Here it is the universities of Karlsruhe and Stuttgart, the Technical University of Dresden, the University of Bochum and the Technical University of Munich. The University of Stuttgart proved to have a strong international character (taking first position for DAAD scientists and academics), as were the Technical University of Aachen and the University of

Bochum (both in first place for AvH scientists and academics).

In this research area there were no non-university institutions which received more than half a million euros in approvals for projects assigned to this area in the period covered by the report. For visiting researchers funded by the AvH there are also at most records of statistically insignificant individual visits.

Mining and metallurgy: In this overall very small research area the Technical University of Aachen takes the lead by a long way in terms of the volume of approvals received from the DFG, followed by Clausthal, Erlangen-Nürnberg, Freiberg and Bochum. In total there were just twelve visiting researchers in this research area, eleven of which were in DAAD programmes (where the leader was the Technical University of Clausthal with six DAAD visiting researchers). Ignoring the number of visiting researchers participating in AvH programmes, there are four universities which are in the top ten places for the remaining indicators: the Technical University of Aachen, the University of Erlangen-Nürnberg, the Technical University of Freiberg and the University of Stuttgart. The figures for the number of partners in coordinated programmes funded by the DFG are barely relevant for this research area, since they are based upon only two programmes in total (one Research Unit located at several institutions and one Priority Programme).

What is remarkable is the finding that, in comparison to the other research areas, there is a very strong involvement of non-university experts in the review process of DFG proposals. For instance, scientists and academics from the Max Planck Institute for Iron Research (MPI für Eisenforschung) in Düsseldorf, the Max Planck Institute for Metals Research (MPI für Metallforschung) in Stuttgart, DLR institutes and the Leibniz Institute for Solid State and Materials Research (Leibniz-Institut für Festkörper- und Werkstoffforschung, IfW) in Dresden are consulted comparatively frequently. The IfW and the MPI for Metals Research also command the highest volume of approvals for non-university institutions in this research area.

Electrical engineering, computer science: The Technical University of Munich takes a clear lead, being in first place for four indicators (volume of approvals from the DFG, number of partner institutions in coordinated programmes funded by the DFG, the number of DFG reviewers and the number of AvH scientists and academics). It is not on the list for the most preferred universities amongst DAAD scientists and academics on the other hand. Three universities achieve top ten rankings for all of the indicators: the University of Karlsruhe, the Technical University of Aachen and the Technical University of Darmstadt. The University of Dortmund should also be highlighted, which is in 4th place for the volume of approvals, in 2nd place for the number of institutional partners in networks of coordinated programmes funded by the DFG, and which displays evidence of a good response amongst international visiting researchers (AvH scientists and academics: 6th place; DAAD scientists and academics: 8th place). On the other hand there are relatively few DFG reviewers from this university (16th place).

DFG approvals to non-university institutes in this research area go primarily to the Fraunhofer-Institute for Telecommunications, Heinrich-Hertz-Institut (Fraunhofer-Institut für Nachrichtentechnik (Heinrich-Hertz-Institut)) in Berlin, the Fraunhofer Institute for Autonomous Intelligent Systems (Fraunhofer-Institut für autonome intelligente Systeme, AIS) in Sankt Augustin, and to the Fraunhofer Institute for Integrated Circuits (Fraunhofer-Institut für integrierte Schaltungen, IIS) in Erlangen. Also worth mentioning are the Max Planck Institute for Computer Science (MPI für Informatik) and the German Research Center for Artificial Intelligence (Deutsches Forschungszentrum für Künstliche Intelligenz), both in Saarbrücken. AvH visiting researchers in this research area only chose non-university institutions for their research visits in exceptional cases (only two visits each to the Research Centre Jülich and the Forschungszentrum Karlsruhe are recorded).

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9. Perspectives

Reports on the research achievements of German universities – using a wide variety of methodologies and at completely different levels – have proliferated in recent years. The DFG has itself contributed significantly towards this intensification through the previous editions of its "Funding Ranking". The fact that the DFG is now reporting on its funding activities for the third time, in greater detail and more comparatively than before, also demonstrates that such reports are not simply a phenomenon of some kind of "evaluationitis", but are met with enduring interest and are also becoming a useful supplement to the information base for university and research funding policy decision-making processes.

Both the chronological comparison between the three DFG reports as well as the cross-sectional comparison with other indicators presented here show that while, on the one hand, these indicators are not identical, although they do correspond fairly well, on the other hand the differences in research achievement between whole universities – ignoring the changes resulting from German reunification – also remain fairly stable over time. In this respect DFG approvals prove to be not only a very good indicator for the overall volume of third party funding received by a university. The appeal of a university for international researchers, examined taking the example of AvH and DAAD-funded visiting researchers, also correlates well with DFG approvals. However, these findings do not only shed light upon the German research landscape, they also raise a series of questions, which, while touched upon by the information presented here, remain far from being answered.

The most important question is probably that of the conditions required for vigorous, high quality research activity. The information presented shows very clearly that it is not only the condition of each of the smallest organisational unit (working group, institute, department) which is important, but also the surrounding infrastructure. The size of a university, its overriding infrastructure, the regional scientific infrastructure, the structures for opportunities resulting from established cooperations, networking with neighbouring universities and non-university research institutions nearby, all of these factors appear, as the network analyses (in chapter 4) in particular suggest, to have an effect not only on the absolute research "output", but also on efficiency and effectiveness. These results by no means apply only to the volume of third party funding, but are reflected analogously for other research indicators (compare, for example, the position of the particularly strong "Top 20 universities" in terms of approvals in the bibliometric analyses (in chapter 7)). Even so, this report stops at a cautious, tentative approach to this topic because to go into this question thoroughly would require a uniform body of data, which would make it possible to systematically link various levels of aggregation as well as subject and cross-subject indicators. There is no institution, however, either within the DFG or elsewhere, which is able to provide the necessary information for such a task in the form of a routine report. Rather, in general there is only information gathered according to different standards and organisational classifications – and hence only compatible to a limited extent – which at best make it possible to draw comparisons at a relatively high aggregated level.

Naturally this report concentrates on third party funding income, but for good reason it also attempts to take other research indicators into consideration – as far as possible and available. In this respect it is primari-

ly indicators on the internationality of research (international cooperation in the Fifth EU Framework Programme, the international appeal of German universities and non-university research institutions amongst DAAD (for universities only) and AvH-funded visiting researchers (in chapter 6), and the international prominence and reception of articles published in (mainly English language) journals (in chapter 7)).

Fundamentally this raises the question of specific indicators suitable for representation of research achievement by subject. The fact that third party funding income is not a suitable indicator of this for all subject areas is shown by this report. Visiting researchers also place a specific emphasis depending on their subject, although an international study would be required to examine whether the good response in numerical terms observed in certain subject areas follows subject-specific rules (because scientists and academics in these subjects are fundamentally more frequently involved in maintaining international exchange in the form of research visits), or whether this may be due to the particular appeal of the research being carried out in Germany in these areas in comparison internationally. Limited third party funding in certain subject areas on the one hand, and subject-specific concentration on certain funding programmes (in the Fifth EU Framework Programme in this instance) on the other, mean that for an analysis in terms of subjects it would be necessary to, on the one side, specify the importance or the "normality" of third party funded research and, conversely to differentiate according to the origin of the third party funds. This is because the proportion of DFG funding within the total third party funding volume varies significantly depending on the subject. However, this objection also applies to other indicators. The publication and citation analyses used in this report, based upon the Science Citation Index (SCI), are also not universally applicable for a multitude of reasons, but rather they are primarily applicable to highly international disciplines, which follow specifically standardised publication conventions.

Even if it is generally accepted that reporting on research needs to be based upon a variety of indicators, the definition of subject-specific indicator sets with suitable databases and the need to test them for their empirical significance has so far not been addressed. This is a particularly urgent issue for the humanities, economics and social sciences, since intensive third party funded basic research, applied research and conventional "textbook science" coexist in this field. Equally it is hardly possible to evaluate the publications and their relevance on the basis of the ISI database, with its strong focus on journal articles published in English. Here questions remain, not only with regard to appropriate assessment of the research achievement using indicators, but also in terms of the results of DFG funding in these disciplines.

Finally this report shows that a ranking simply according to a variety of different performance indicators can only attempt to add to the knowledge available – in particular to that of the research funding bodies. Rather, there is a wealth of information already available, which in principle allows much more thorough analyses than the necessarily competitive orientation of a ranking suggests. In particular for the question of the effectiveness of individual funding programmes, but also with regard to the cooperative relationships hoped for, or even the promotion of young researchers, there is a wealth of other possibilities. The network analyses presented in chapter 4 could only hint at this.

The "Funding Ranking" which has been developed here is thus an important step on the way towards elaborated reporting on research, but also towards an increased level of reflective knowledge within the DFG itself. It becomes clear, however, that the questions and needs which are touched upon here can firstly not be dealt with as part of the normal operation of the DFG, and secondly can only be dealt with logically if the DFG's knowledge is augmented and linked to other sources of information which provide information on other aspects of research activity. The Donors' Association for the Promotion of Sciences and Humanities (Stifterverband für die Deutsche Wissenschaft) has made project funds available for this purpose under the heading "Regions of research excellence" and has called an advisory board into being, which is comprised of representatives from all of the major funding and research organisations (AvH, DAAD, DFG, FhG, HGF, MPG, WGL), the Association of Universities and Other Higher Education Institutions in Germany (Hochschulrektorenkonferenz) and the German Science Council (Wissenschaftsrat), as well as from the Donors´ Association. The present "Funding Ranking", with its focus on data provided by the research funding organisations mentioned (the AvH, DAAD and DFG), is the first result of this new form of cooperation. More will follow.

For the future development of output-oriented reporting on research, which first and

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foremost is intended to contribute towards the appraisal of the success of funding programmes offered by the DFG (so-called programme evaluation), but also has to set its sights from the beginning on the fact that it is necessary to reach conclusions on the effectiveness of these programmes according to location and subject by the collection of corresponding data, the DFG also plans to establish an "Institute for Research Information and Quality Assurance (IFQ)" (Institut für Forschungs-information und Qualitätssicherung, IFQ). The task of this agency, which is intended to be a scientific auxiliary facility, will first of all be to improve the information base for the DFG with regard to the form and effectiveness of its funding activities. For this it will be necessary to develop processes which will make it possible to reach quantified conclusions on international networking and on the situation of young researchers within the context of research funded by the DFG. The "output" too, for example (although not only) in the form of publications and the reception of research reports could be – initially for selected research areas – documented and analysed in an appropriate way for each specific subject culture. In particular, the barriers resulting from the frequently all too thoughtless use of the publication and citation databases provided by the American Institute for Scientific Information (ISI) due to a presumed lack of alternatives need to be overcome: Neither do they allow output-oriented conclusions to be reached for non-English cultural sciences, nor do they suitably represent the productivity of the engineering science disciplines. In close consultation with representatives of the disciplines to be taken into consideration and in cooperation with a variety of partners it would, for example, be possible to examine the usefulness of existing sources of information (for instance literature databases for individual disciplines or – as presented here – databases from large funding bodies). Equally, it is necessary to define catalogues of requirements for new sources of information and forms of analysis which are yet to be developed.

This report has only been able to hint at the fact that it is possible to take new approaches which, although until now widely viewed as unconventional, can nevertheless be revealing.

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11. Appendix

Notes:

> The numbering used for the tables and figures relates to the corresponding chapter of the ranking (A2 = Chapter 2, A3 = Chapter 3 etc.). All table and figure numbers in the appendix are preceded by an A.

> Tables and figures relating to institutions generally refer to universities and non-university research institutes which received more than half a million euros from the DFG between 1999 and 2001.

> Percentages and totals may be rounded to the nearest whole number.

> Abbreviations used:

cum. %	=	Cumulative percent
k €	=	Thousands of euros
Mio. €	=	Millions of euros
n	=	Number
n/a	=	Not available
Prof.	=	Professor
Sci.	=	Scientist or academic
FernU	=	Distance Teaching University
FH	=	University of Applied Sciences
FU	=	Free University
HdK	=	University of the Arts
HU	=	Humboldt University
Kath. U	=	Catholic University
MedHo	=	Medical School
TiHo	=	School of Veterinary Medicine
TU/TH	=	Technical University
U	=	University
UdBW	=	University of the German Armed Forces

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Table A2-1:
Index of DFG subject areas and Review Committees (status: 2003)

No.	Review Committee/Subject Area
Humanities	
101	**Protestant theology**
101-01	Old Testament
101-02	New Testament
101-03	Historical theology (ancient and modern ecclesiastical history with their subdisciplines)
101-04	Systematic theology
101-05	Practical theology
102	**Roman Catholic theology**
102-01	Biblical theology (Old and New Testaments)
102-02	Historical theology (ancient and modern ecclesiastical history with their subdisciplines)
102-03	Systematic theology
102-04	Practical theology (ecclesiastical law, pastoral theology, religious education, catechetics, liturgy homiletics)
103	**Jurisprudence**
103-01	Philosophy of law and government
103-02	Legal and constitutional history
103-03	Civil law, law of intellectual property, law of civil procedure, law of non-contentious jurisdiction
103-04	Public law, international administrative law and foreign public law
103-05	Criminal law and law of criminal procedure
103-06	Law of nations
103-07	Canonic law
103-08	Law of trade, of the economy, and of labour relations
103-09	International and foreign law on private and civil procedure
103-10	Criminology
107	**Ancient and Oriental cultures (Antiquity)**
107-01	European prehistory
107-02	Classical studies
107-03	Ancient history
107-04	Classical archaeology
108	**Ancient and Oriental cultures (Oriental studies)**
108-01	Egyptology
108-02	Assyriology, archaeology of Asia Minor
108-03	Semitic, new Iranian, Turkish and Islamic studies
108-04	Indology and ancient Iranian language and literature
108-05	Chinese and Japanese studies and related fields
109	**Linguistic and literary studies and contemporary ethnology (Group A)**
109-21	General and applied linguistics (including boundary fields)
109-22	Historical and comparative linguistics
109-23	German linguistics
109-24	Older German literature
109-25	Modern German literature
109-26	European ethnology
109-27	Theatre, film and television studies
110	**Linguistic and literary studies and contemporary ethnology (Group B)**
110-11	Linguistic English and American studies
110-12	English and American literature
110-13	Linguistics of Romance languages
110-14	Romance literatures
110-16	Byzantine studies
110-17	Linguistics of Slavic Languages
110-18	Slavic literatures
111	**History**
111-01	Medieval history
111-02	Modern history
111-03	East European history

>> Continued over

Contents

No.	Review Committee/Subject Area
112	**Fine arts studies**
112-01	History of medieval and modern art
112-02	Musicology
113	**Ethnology**
113-01	Ethnology
113-02	African, Indonesian and South Sea languages
114	**History of science, medicine, and technology**
114-01	History of biology, medicine and pharmacy
114-02	History of the natural and engineering sciences
115	**Geography**
115-01	Physical geography
115-02	Anthropogeography and economic geography
116	**Philosophy**
116-01	History of philosophy
116-02	Systematic philosophy
117	**Education**
117-03	Education: general, historical and philosophical aspects
117-04	Research on learning and teaching and on qualification processes in general
117-05	Research on socialisation, educational institutions and professions
118	**Economics**
118-01	Economic theory
118-02	Economic and social policy
118-03	Finance
118-04	Business administration
118-05	Statistics
118-06	Social and economic history
119	**Social sciences**
119-01	Sociology
119-02	Empirical social research
119-03	Journalism and communication studies
119-04	Political science
120	**Psychology**
120-01	General and physiological psychology, psychological methodology and history of psychology
120-02	Developmental and educational psychology
120-03	Industrial and organizational psychology
120-04	Clinical & differential psychology, psychological diagnostics
Biology/Medicine	
201	**Theoretical medicine**
201-01	Anatomy
201-02	Physiology and pathophysiology
201-04	Pathology
201-05	Medical microbiology, virology, immunology, and hygiene
201-06	Pharmacology and toxicology
201-08	Forensic medicine
201-09	Human genetics
202	**Clinical medicine**
202-01	Internal medicine
202-02	Surgery
202-03	Orthopaedics
202-04	Urology
202-05	Neurosurgery
202-06	Ophthalmology
202-07	Obstetrics and gynaecology
202-08	Neurology
202-09	Psychiatry, medical phychology, psychotherapy, and psychosomatic medicine
202-10	Oto-rhino-laryngology
202-11	Pediatrics
202-12	Dermatology
202-13	Dentistry, stomatology and oral surgery
202-15	Radiology, nuclear medicine and radiation biology
202-16	Social und industrial medicine
202-17	Medical physics and biomedical technology
202-18	Medical information technology and biometrics
202-19	Anaesthesiology

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No.	Review Committee/Subject Area
203	**Biology**
203-02	Botany
203-03	Zoology
203-05	General biology, genetics and cell biology
203-06	Microbiology
203-07	Physical anthropology
204	**Agriculture and horticulture**
204-02	Phytopathology and phytomedicine
204-03	Agricultural chemistry and plant nutrition
204-04	Soil science
204-05	Animal breeding and keeping
204-06	Animal nutrition and nutritional physiology
204-07	Horticulture, fruit growing, and viticulture
204-08	Agricultural and horticultural technology
204-10	Processing technology for agricultural produce
204-11	Economics and social science of agriculture
204-12	Plant breeding
204-13	Plant cultivation
205	**Veterinary medicine**
205-01	Theoretical veterinary medicine
205-02	Practical veterinary medicine
206	**Forestry and wood science**
206-01	Scientific foundations of forestry and wood science
206-02	Special forestry
206-03	Wood science
207	**Biological chemistry and biophysics**
207-01	Clinical chemistry and pathobiochemistry
207-02	Biochemistry
207-03	Molecular biology
207-04	Biophysics and biophysical chemistry
Natural Sciences	
301	**Solid earth sciences**
301-01	General geology
301-02	Historical and regional geology
301-03	Engineering geology and hydrogeology
301-04	Paleontology
301-05	Mineralogy and petrology
301-06	Crystallography
301-07	Geochemistry and geology of mineral deposits
301-08	Geophysics
301-09	Geodesy
302	**Chemistry**
302-01	Inorganic chemistry
302-02	Organic chemistry
302-04	Physical and theoretical chemistry
302-05	Polymer science
302-06	Pharmacy
302-07	Food chemistry
302-08	Technical chemistry
302-09	Analytical chemistry
303	**Physics**
303-01	Solid state physics
303-02	Physics of atoms, molecules, gases, and plasmas
303-03	Nuclear and particle physics
303-04	General physics
303-05	Astrophysics and astronomy
303-06	Atmospherical physics and physical oceanographie
304	**Mathematics**
304-01	Pure mathematics
304-02	Applied mathematics and mathematical stochastics
306	**Hydrology and water management**
306-01	Physical hydrology
306-02	Water management

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No.	Review Committee/Subject Area
	Engineering Sciences
401	**General engineering sciences**
401-01	Metallic materials
401-02	Non-metallic materials
401-03	Synthetic materials, plastics
401-04	Measuring technology
401-05	Technical mechanics
401-06	Control engineering
401-08	Micro- and precision engineering
402	**Architecture, urban development, and regional planning**
402-01	Architecture
402-02	Urban and regional planning, urban architecture
403	**Civil engineering**
403-01	Building construction and site management
403-02	Hydraulic engineering
403-03	Soil mechanics
403-04	Transport management
404	**Mining and metallurgy**
404-01	Lithology, dressing, and deep drilling technology
404-02	Metallography
404-03	Metallurgy
406	**Electrical engineering**
406-01	General electrical engineering
406-03	Communication engineering
406-04	High-frequency engineering
406-05	Energy generation and transmission
406-06	Energy application
407	**Computer science**
407-01	Theoretical computer science
407-02	Practical computer science
407-03	Information technology
408	**Mechanical engineering and production technology**
408-01	Design elements
408-02	Manufacturing technology
408-03	Land vehicle technology
408-04	Textile and paper technology
408-05	Conveying and handling technology
408-07	Ergonomics
409	**Mechanical engineering and process engineering**
409-01	Fluid mechanics
409-04	Hydraulic and turbo engines
409-05	Naval architecture
409-06	Aerospace technology
409-07	Combustion engines
409-08	Technical thermodynamics
409-09	Energy process engineering
409-10	Thermal and chemical process engineering
409-11	Mechanical process engineering
409-12	Biological process engineering

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Table A2-2: Concordance of the classification systems used by the Federal Statistical Office for fields of teaching and research and by the DFG for scientific disciplines and research areas.

T&R code	Field of teaching and research (T&R)	DFG research area	Scientific discipline
220	Law, economics and general humanities	Social sciences	Humanities
225	Regional science		
230	Political science		
235	Social sciences		
240	Social welfare		
250	Law		
270	Administrative studies		
290	Economics		
310	Economic engineering		
420	Geography		
050	History	History and fine arts studies	
160	Cultural sciences (in the strict sense)		
780	Art, general fine arts studies		
790	Fine arts studies		
800	Design		
820	Performing arts, film + television, theatr. stud.		
830	Music, musicology		
010	Linguistics and general cultural sciences	Linguistic and literary studies	
070	Library science, documentation, media stud.		
080	General & comparative literary + linguist. stud.		
090	Ancient philology (classical philology)		
100	Germanic studies (Ger., germanic lang. excl. Engl.)		
110	English, American studies		
120	Romance languages		
130	Slavonic stud., Baltic stud., Finno-Ugric stud.		
140	Other/non-Europ. linguistic and literary stud.		
020	Evangelical theology	Psychology, education, philosophy, theology	
030	Catholic theology		
040	Philosophy		
170	Psychology		
180	Educational studies		
190	Special education		
440	General human medicine	Medicine	Biology/ Medicine
450	Preclinical human medicine (incl. dentistry)		
470	Theo. clinical human medicine (incl. dentistry)		
490	Pract. clinical human medicine (excl. dentistry)		
520	Dentistry (clinical practical)		
970	Clinics overall, central services		
980	Clinics, social services		
986	Other clinical teaching units		
990	Institutions related to and not related to clinics		
540	Veterinary medicine	Veterinary medicine	
550	Preclinical veterinary medicine		
560	Theoretical clinical veterinary medicine		
580	Practical clinical veterinary medicine		
400	Biology	Biology	
610	Agriculture, forestry and dietetics	Agriculture and forestry science	
615	Landscape and environmental architecture		
620	Agricultural sciences		
640	Forestry, timber trade		
650	Dietetics and home economics		
330	Mathematics, general natural sciences	Mathematics	Natural Sciences
340	Mathematics		
360	Physics, astrophysics	Physics	
370	Chemistry	Chemistry	
390	Pharmacy		
410	Geosciences (excl. geography)	Geosciences	

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T&R code	Field of teaching and research (T&R)	DFG research area	Scientific discipline
670	Engineering sciences	General engineering sciences and mechanical engineering	Engineering Sciences
690	Mechanical engineering/process engineering		
720	Traffic technology, nautical science	Architecture, urban development, civil engineering	
730	Architecture		
740	Regional development planning		
750	Civil engineering		
760	Surveying		
680	Mining and metallurgy	Mining and metallurgy	
350	Computer science	Electrical engineering, computer science	
710	Electrical engineering		
200	Sport studies		Not classified
870	Universities in total		
880	Central university administration		
900	Central library		
910	University computing centres		
920	Central scientific services		
930	Central operating and supply services		
940	Social services		
950	Other educational institutions		
960	Institutions related to and not related to universities		

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Table A2-3:
Professors employed full time per university[1)] and DFG scientific discipline (status: 2000)

University	Total	Humanities and Social Sciences	Biology/ Medicine	Natural Sciences	Engineering Sciences	Not classified
Aachen TH	388	68	78	97	144	1
Augsburg U	144	106		33	4	1
Bamberg U	127	126				1
Bayreuth U	177	82	14	66	11	4
Berlin FU	607	285	177	110	7	28
Berlin HdK	197	184			13	
Berlin HU	562	238	230	70	13	11
Berlin TU	392	99	33	76	175	9
Bielefeld U	237	133	19	55	6	24
Bochum U	401	197	55	74	60	15
Bonn U	480	187	150	105	26	12
Braunschweig TU	231	65	17	57	91	1
Bremen U	343	189	24	74	39	17
Chemnitz TU	159	65		37	54	3
Clausthal TU	76	5		30	41	
Cottbus TU	129	10		21	98	
Darmstadt TU	277	58	17	72	118	12
Dortmund U	304	119	3	68	105	9
Dresden TU	539	155	110	78	196	
Duisburg U	212	99		49	62	2
Düsseldorf U	238	78	111	47		2
Eichstätt Kath. U	117	108		9		
Erfurt U	31	31				
Erlangen-Nürnberg U	468	185	130	91	60	2
Essen U	352	148	74	52	74	4
Frankfurt/Main U	473	249	115	90	11	8
Frankfurt/Oder U	64	59				5
Freiberg TU	112	17	3	36	56	
Freiburg U	375	135	154	61	23	2
Gießen U	370	139	174	41	3	13
Göttingen U	427	166	181	75	2	3
Greifswald U	221	97	79	42		3
Hagen FernU	75	46		10	19	
Halle-Wittenberg U	397	165	134	73	21	4
Hamburg U	773	361	211	154	24	23
Hamburg UdBW	95	65		2	28	
Hamburg-Harburg TU	101				101	
Hannover MedHo	86		83			3
Hannover TiHo	77		76			1
Hannover U	344	136	37	71	93	7
Heidelberg U	410	151	160	89		10

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University	Total	Humanities and Social Sciences	Biology/ Medicine	Natural Sciences	Engineering Sciences	Not classified
Hildesheim U	45	39	1	4		1
Hohenheim U	105	28	69	8		
Ilmenau TU	93	22		16	55	
Jena U	351	149	110	72	14	6
Kaiserslautern U	144	15	11	44	74	
Karlsruhe U	267	40	11	77	131	8
Kassel U	273	134	28	27	81	3
Kiel U	401	146	137	62	28	28
Koblenz-Landau U	127	91	4	15	12	5
Köln U	565	278	196	84		7
Konstanz U	145	88	22	31	2	2
Leipzig U	433	204	134	71	18	6
Lübeck MedU	75		61	3	9	2
Lüneburg U	63	54		9		
Magdeburg U	192	56	54	23	56	3
Mainz U	429	210	123	81	2	13
Mannheim U	114	93		10	11	
Marburg U	364	172	107	78	3	4
München TU	394	14	156	88	127	9
München U	710	306	274	122	7	1
München UdBW	171	68			103	
Münster U	559	257	175	108	5	14
Oldenburg U	181	101	16	45	15	4
Osnabrück U	176	126	17	28	5	
Paderborn U	283	86	13	60	119	5
Passau U	102	85		7	9	1
Potsdam U	200	111	25	47	7	10
Regensburg U	260	132	71	54		3
Rostock U	297	86	97	49	63	2
Saarbrücken U	265	113	67	44	38	3
Siegen U	231	113	2	42	73	1
Stuttgart U	243	38	11	55	131	8
Trier U	151	126		19	6	
Tübingen U	406	201	105	85	11	4
Ulm U	178	8	95	43	30	2
Weimar U	82	28			54	
Wuppertal U	285	121		64	97	3
Würzburg U	340	125	133	73	8	1
269 other universities	16,506	7,898	565	685	7,182	176
In total	**37,794**	**16,768**	**5,539**	**4,548**	**10,364**	**575**

[1] Only universities which received a total of more than half a million euros in approvals from the DFG in the period stated (excluding the University of Witten-Herdecke [no staff data]).

Source: Federal Statistical Office (2002), Full time employment scientific and artistic staff according to organisational classification, university, fields of teaching and research and staff unit (status: 2000), special report.

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Table A2-4:
Full time employment scientific and artistic staff in total per university [1)] and DFG scientific discipline (status: 2000)

University	Total	Humanities and Social Sciences	Biology/ Medicine	Natural Sciences	Engineering Sciences	Not classified
Aachen TH	3,930	306	1,200	570	1,759	95
Augsburg U	650	425	2	173	19	31
Bamberg U	392	369	1	3		19
Bayreuth U	934	312	100	412	70	40
Berlin FU	3,169	1,066	1,270	617	40	176
Berlin HdK	366	336			19	11
Berlin HU	4,484	1,140	2,796	384	69	95
Berlin TU	2,402	372	170	455	1,177	228
Bielefeld U	1,394	576	146	306	32	334
Bochum U	2,354	752	377	509	508	208
Bonn U	3,133	684	1,437	581	144	287
Braunschweig TU	1,527	221	117	342	816	31
Bremen U	1,713	645	123	367	403	175
Chemnitz TU	898	262		207	388	41
Clausthal TU	441	12		154	263	12
Cottbus TU	599	50		82	453	14
Darmstadt TU	1,743	201	80	395	878	189
Dortmund U	1,523	372	8	319	762	62
Dresden TU	3,669	609	1,160	399	1,419	82
Duisburg U	891	323		214	317	37
Düsseldorf U	2,115	345	1,445	287		38
Eichstätt Kath. U	315	291	1	20		3
Erfurt U	87	87				
Erlangen-Nürnberg U	3,340	707	1,268	506	619	240
Essen U	1,886	380	913	267	281	45
Frankfurt/Main U	2,636	886	1,169	441	40	100
Frankfurt/Oder U	216	189				27
Freiberg TU	633	56	15	191	358	13
Freiburg U	3,222	604	1,952	404	162	100
Gießen U	2,239	509	1,417	205	6	102
Göttingen U	2,975	675	1,746	495	3	56
Greifswald U	1,189	332	639	198		20
Hagen FernU	418	223		32	112	51
Halle-Wittenberg U	2,488	628	1,182	423	135	120
Hamburg U	3,533	1,016	1,552	755	103	107
Hamburg UdBW	328	178	1	8	136	5
Hamburg-Harburg TU	524			5	486	33
Hannover MedHo	1,436		1,390			46
Hannover TiHo	312		297			15
Hannover U	2,207	477	194	386	1,003	147
Heidelberg U	3,396	629	2,033	527		207
Hildesheim U	234	196	3	17	1	17

>> Continued over

University	Total	Humanities and Social Sciences	Biology/ Medicine	Natural Sciences	Engineering Sciences	Not classified
Hohenheim U	788	164	505	54		65
Ilmenau TU	625	83		75	436	31
Jena U	2,517	652	1,254	500	61	50
Kaiserslautern U	953	69	89	269	483	43
Karlsruhe U	2,134	206	46	522	1,235	125
Kassel U	943	346	106	112	307	72
Kiel U	2,364	471	1,131	387	155	220
Koblenz-Landau U	380	257	10	33	52	28
Köln U	3,195	1,121	1,502	477		95
Konstanz U	898	408	179	255	18	38
Leipzig U	2,613	779	1,294	366	84	90
Lübeck MedU	961		894	10	50	7
Lüneburg U	252	183		48		21
Magdeburg U	1,541	229	672	127	471	42
Mainz U	3,105	795	1,666	548	12	84
Mannheim U	712	493		27	79	113
Marburg U	2,175	526	1,140	416	14	79
München TU	4,100	95	1,690	852	1,366	97
München U	5,129	1,270	3,006	790	48	15
München UdBW	559	153			379	27
Münster U	3,699	1,043	1,695	670	51	240
Oldenburg U	773	361	64	235	55	58
Osnabrück U	683	417	119	120	16	11
Paderborn U	988	238	27	203	485	35
Passau U	347	222		19	48	58
Potsdam U	1,008	509	107	243	29	120
Regensburg U	1,788	500	894	372		22
Rostock U	1,769	298	943	209	301	18
Saarbrücken U	1,917	500	874	274	206	63
Siegen U	706	305	3	160	212	26
Stuttgart U	2,677	212	89	412	1,726	238
Trier U	673	564		72	20	17
Tübingen U	3,478	831	1,908	553	90	96
Ulm U	1,856	38	1,275	270	224	49
Weimar U	430	73			347	10
Wuppertal U	946	311	1	288	299	47
Würzburg U	2,523	489	1,315	425	39	255
269 other universities	23,070	12,146	788	941	8,445	750
In total	**157,216**	**44,798**	**51,490**	**22,990**	**30,824**	**7.114**

[1] Only universities which received a total of more than half a million euros in approvals from the DFG in the period stated (excluding the University of Witten-Herdecke [no staff data]).

Source: Federal Statistical Office (2002), Full time employment scientific and artistic staff according to organisational classification, university, fields of teaching and research and staff unit (status: 2000), special report.

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Table A3-1:
Regular expenditure 1999 and 2000 by university [1] (in millions of euros)

University	Regular expenditure (= total)	Administrative income		Third party funding income		Regular core funds	
		Mio. €	% of total	Mio. €	% of total	Mio. €	% of total
Aachen TH	1,354.2	458.4	33.8	248.1	18.3	647.8	47.8
Augsburg U	124.6	3.0	2.4	19.2	15.4	102.3	82.1
Bamberg U	73.9	0.3	0.4	5.3	7.2	68.3	92.4
Bayreuth U	173.2	2.2	1.3	42.2	24.4	128.8	74.3
Berlin FU	1,150.6	412.7	35.9	125.5	10.9	612.4	53.2
Berlin HdK	92.7	2.1	2.3	3.2	3.4	87.4	94.3
Berlin HU	1,949.3	1,090.5	55.9	154.8	7.9	704.0	36.1
Berlin TU	611.5	14.7	2.4	124.8	20.4	472.0	77.2
Bielefeld U	259.9	2.8	1.1	42.6	16.4	214.5	82.5
Bochum U	535.9	3.5	0.7	96.3	18.0	436.2	81.4
Bonn U	1,279.3	639.8	50.0	108.1	8.5	531.4	41.5
Braunschweig TU	308.3	27.1	8.8	72.4	23.5	208.8	67.7
Bremen U	340.9	15.7	4.6	91.1	26.7	234.2	68.7
Chemnitz TU	175.8	1.2	0.7	34.6	19.7	140.0	79.6
Clausthal TU	117.3	10.7	9.1	31.8	27.1	74.8	63.8
Cottbus TU	123.1	2.0	1.6	21.5	17.5	99.6	80.9
Darmstadt TU	398.0	40.9	10.3	86.8	21.8	270.2	67.9
Dortmund U	322.5	3.1	1.0	56.2	17.4	263.2	81.6
Dresden TU	991.4	389.2	39.3	142.9	14.4	459.3	46.3
Duisburg U	185.3	1.9	1.0	31.5	17.0	151.9	82.0
Düsseldorf U	871.1	432.6	49.7	68.3	7.8	370.2	42.5
Eichstätt Kath. U	61.4	0.2	0.2	6.7	10.9	54.6	88.9
Erfurt U	27.6	0.1	0.5	1.0	3.8	26.4	95.7
Erlangen-Nürnberg U	1,066.9	451.6	42.3	151.6	14.2	463.7	43.5
Essen U	849.9	458.5	53.9	59.5	7.0	331.8	39.0
Frankfurt/Main U	1,005.5	464.9	46.2	99.7	9.9	440.8	43.8
Frankfurt/Oder U	44.1	0.3	0.7	8.2	18.5	35.6	80.8
Freiberg TU	138.8	1.8	1.3	38.8	28.0	98.2	70.8
Freiburg U	1,104.3	614.6	55.7	119.1	10.8	370.7	33.6
Gießen U	873.9	439.4	50.3	60.8	7.0	373.7	42.8
Göttingen U	1,101.4	453.0	41.1	96.7	8.8	551.8	50.1
Greifswald U	411.0	232.1	56.5	21.7	5.3	157.2	38.2
Hagen FernU	139.3	27.2	19.6	12.8	9.2	99.3	71.3
Halle-Wittenberg U	772.1	373.8	48.4	54.5	7.1	343.8	44.5
Hamburg U	1,286.5	597.4	46.4	115.4	9.0	573.7	44.6
Hamburg UdBW	118.0	0.2	0.1	9.2	7.8	108.6	92.1
Hamburg-Harburg TU	129.9	2.2	1.7	25.0	19.2	102.8	79.1
Hannover MedHo	866.0	583.1	67.3	54.7	6.3	228.2	26.3
Hannover TiHo	94.8	13.5	14.2	14.6	15.4	66.7	70.4
Hannover U	384.9	34.3	8.9	97.8	25.4	252.8	65.7
Heidelberg U	1,289.1	655.1	50.8	128.3	9.9	505.7	39.2

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University	Regular expenditure (= total)	Administrative income		Third party funding income		Regular core funds	
		Mio. €	% of total	Mio. €	% of total	Mio. €	% of total
Hildesheim U	36.7	1.4	3.8	1.7	4.7	33.6	91.5
Hohenheim U	184.7	7.6	4.1	36.1	19.5	141.1	76.4
Ilmenau TU	127.3	8.0	6.3	19.0	14.9	100.2	78.8
Jena U	781.0	382.1	48.9	58.8	7.5	340.1	43.6
Kaiserslautern U	194.0	3.9	2.0	55.0	28.4	135.0	69.6
Karlsruhe U	429.4	6.1	1.4	129.7	30.2	293.6	68.4
Kassel U	241.4	13.1	5.4	33.4	13.8	194.9	80.7
Kiel U	933.5	484.6	51.9	82.3	8.8	366.6	39.3
Koblenz-Landau U	81.6	0.7	0.9	7.7	9.5	73.1	89.6
Köln U	1,098.7	429.4	39.1	109.8	10.0	559.5	50.9
Konstanz U	192.7	4.4	2.3	36.4	18.9	152.0	78.9
Leipzig U	902.3	409.2	45.3	60.5	6.7	432.7	48.0
Lübeck MedU	543.6	376.8	69.3	29.6	5.5	137.2	25.2
Lüneburg U	44.9	2.9	6.4	4.1	9.1	37.9	84.5
Magdeburg U	631.6	369.9	58.6	47.3	7.5	214.4	33.9
Mainz U	1,078.8	543.0	50.3	101.3	9.4	434.5	40.3
Mannheim U	134.5	2.2	1.6	15.3	11.4	117.1	87.0
Marburg U	790.2	385.3	48.8	68.4	8.7	336.5	42.6
München TU	1,197.0	359.8	30.1	269.7	22.5	567.5	47.4
München U	1,947.5	919.7	47.2	212.7	10.9	815.1	41.9
München UdBW	179.7			12.5	7.0	167.2	93.0
Münster U	1,216.4	547.4	45.0	95.2	7.8	573.8	47.2
Oldenburg U	196.5	9.7	4.9	23.5	11.9	163.3	83.1
Osnabrück U	128.5	4.6	3.6	19.1	14.8	104.8	81.6
Paderborn U	219.0	0.9	0.4	44.7	20.4	173.4	79.2
Passau U	71.7	0.7	1.0	8.0	11.1	63.0	87.9
Potsdam U	178.3	1.1	0.6	22.8	12.8	154.5	86.6
Regensburg U	596.3	264.6	44.4	58.1	9.7	273.7	45.9
Rostock U	574.6	317.3	55.2	37.6	6.5	219.7	38.2
Saarbrücken U	798.5	451.1	56.5	55.7	7.0	291.7	36.5
Siegen U	172.2	1.3	0.8	21.3	12.4	149.6	86.9
Stuttgart U	577.9	14.0	2.4	191.3	33.1	372.6	64.5
Trier U	135.7	4.0	2.9	25.5	18.8	106.2	78.3
Tübingen U	1,170.1	596.3	51.0	138.0	11.8	435.7	37.2
Ulm U	697.0	404.5	58.0	69.9	10.0	222.6	31.9
Weimar U	83.5	4.7	5.6	9.3	11.1	69.5	83.3
Witten-Herdecke U	54.0	10.9	20.2	25.3	46.9	17.7	32.8
Wuppertal U	190.6	1.1	0.6	27.1	14.2	162.4	85.2
Würzburg U	896.0	415.0	46.3	104.2	11.6	376.7	42.0
269 other universities	5,611.8	240.2	4.3	270.3	4.8	5,101.4	90.9
In total	**48,523.7**	**16,956.9**	**34.9**	**5,421.4**	**11.2**	**26,145.5**	**53.9**

[1] Only universities which received a total of more than half a million euros in approvals from the DFG in the period stated.

Source: Federal Statistical Office (2002), Regular expenditure, administrative income, third party funding income and regular core funds according to organisational classification, university, fields of teaching and research (1999 to 2000), special report.

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Table A3-2:
Third party funding income 1999 and 2000 by university[1] and DFG scientific discipline (in millions of euros)

University	Total	Humanities and Social Sciences	Biology/ Medicine	Natural Sciences	Engineering Sciences	Not classified[2]	Proportion of total "not classified"
München TU	269.7	5.8	75.1	79.3	93.2	16.4	6.1 %
Aachen TH	248.1	4.5	22.3	26.1	182.2	12.9	5.2 %
München U	212.7	29.9	138.1	37.9	1.2	5.6	2.7 %
Stuttgart U	191.3	17.2	3.5	13.2	127.0	30.3	15.9 %
Berlin HU	154.8	27.6	99.9	14.4	3.6	9.4	6.0 %
Erlangen-Nürnberg U	151.6	10.4	51.9	19.2	58.4	11.7	7.7 %
Dresden TU	142.9	13.0	20.9	13.6	88.4	7.1	5.0 %
Tübingen U	138.0	19.2	68.2	27.3	5.0	18.3	13.2 %
Karlsruhe U	129.7	7.0	1.2	20.6	78.1	22.8	17.6 %
Heidelberg U	128.3	12.3	77.3	32.2	0.9	5.6	4.4 %
Berlin FU	125.5	25.8	51.8	42.0	0.4	5.5	4.4 %
Berlin TU	124.8	7.5	6.6	25.3	69.9	15.5	12.4 %
Freiburg U	119.1	12.0	78.5	21.4	4.0	3.0	2.5 %
Hamburg U	115.4		38.4			77.0	66.7 %
Köln U	109.8	22.6	61.7	21.9	0.01	3.6	3.3 %
Bonn U	108.1	17.6	41.4	32.9	5.9	10.3	9.5 %
Würzburg U	104.2	8.4	71.0	19.7	2.0	3.0	2.9 %
Mainz U	101.3	9.5	55.8	30.5	0.2	5.2	5.1 %
Frankfurt/Main U	99.7	23.2	49.6	19.6	1.0	6.3	6.3 %
Hannover U	97.8	9.8	9.1	13.1	50.8	15.0	15.3 %
Göttingen U	96.7	11.6	51.3	22.8		11.0	11.3 %
Bochum U	96.3	16.3	24.8	21.1	26.9	7.1	7.4 %
Münster U	95.2	19.6	45.3	20.8	1.0	8.4	8.9 %
Bremen U	91.1	15.2	7.0	28.4	36.3	4.2	4.6 %
Darmstadt TU	86.8	3.6	3.9	23.5	46.8	9.0	10.3 %
Kiel U	82.3	4.6	35.3	14.3	3.4	24.6	29.9 %
Braunschweig TU	72.4	2.6	5.3	9.2	49.7	5.5	7.6 %
Ulm U	69.9	1.4	46.8	7.3	12.1	2.4	3.4 %
Marburg U	68.4	8.1	44.3	15.1	0.3	0.7	1.0 %
Düsseldorf U	68.3	4.9	50.9	10.7	0.2	1.5	2.2 %
Gießen U	60.8	8.8	41.6	8.4	0.01	2.0	3.4 %
Leipzig U	60.5	11.8	25.4	14.2	1.7	7.4	12.2 %
Essen U	59.5	4.1	32.6	8.6	11.5	2.6	4.4 %
Jena U	58.8	10.7	23.1	19.2	0.5	5.2	8.9 %
Regensburg U	58.1	7.1	36.2	9.7		5.1	8.7 %
Dortmund U	56.2	5.2	0.1	7.2	33.3	10.4	18.4 %
Saarbrücken U	55.7	14.3	19.4	7.9	8.4	5.7	10.2 %
Kaiserslautern U	55.0	4.2	3.3	14.3	25.0	8.3	15.1 %
Hannover MedHo	54.7		54.7				0.0 %
Halle-Wittenberg U	54.5	6.2	25.9	9.9	4.3	8.3	15.3 %
Magdeburg U	47.3	2.5	18.1	2.5	21.5	2.7	5.7 %
Paderborn U	44.7	3.7	3.0	5.3	28.8	3.9	8.8 %

>> Continued over

University	Total	Humanities and Social Sciences	Biology/ Medicine	Natural Sciences	Engineering Sciences	Not classified[2]	Proportion of total "not classified"
Bielefeld U	42.6	15.8	8.5	12.1	1.6	4.6	10.7 %
Bayreuth U	42.2	3.5	5.1	24.8	5.5	3.4	8.0 %
Freiberg TU	38.8	0.6		8.8	27.6	1.9	4.8 %
Rostock U	37.6	1.9	19.9	5.1	9.2	1.4	3.8 %
Konstanz U	36.4	5.6	8.4	7.5	0.7	14.1	38.9 %
Hohenheim U	36.1	2.3	27.8	0.3		5.6	15.4 %
Chemnitz TU	34.6	4.6		6.3	22.6	1.1	3.2 %
Kassel U	33.4	3.6	2.9	3.6	20.0	3.3	10.0 %
Clausthal TU	31.8	0.002		3.9	20.7	7.2	22.7 %
Duisburg U	31.5	6.1	1.7	5.8	17.1	0.8	2.4 %
Lübeck MedU	29.6		26.0		1.6	2.1	6.9 %
Wuppertal U	27.1	4.0		12.8	8.7	1.6	5.8 %
Trier U	25.5	17.2	0.01	1.1	0.3	6.8	26.8 %
Witten-Herdecke U	25.3	6.9	7.5	4.1	0.5	6.4	25.1 %
Hamburg-Harburg TU	25.0				24.3	0.7	2.8 %
Oldenburg U	23.5	4.9	1.8	12.7	1.8	2.2	9.4 %
Potsdam U	22.8	7.1	4.0	8.3	0.6	2.8	12.5 %
Greifswald U	21.7	3.9	10.7	4.2		2.9	13.4 %
Cottbus TU	21.5	0.6		1.4	19.0	0.5	2.5 %
Siegen U	21.3	4.5		6.0	6.6	4.2	19.5 %
Augsburg U	19.2	3.6	0.003	10.0	0.6	5.1	26.5 %
Osnabrück U	19.1	6.3	4.6	5.3	0.4	2.5	12.9 %
Ilmenau TU	19.0	0.6		0.5	15.3	2.6	13.5 %
Mannheim U	15.3	11.8		0.2	2.1	1.2	7.6 %
Hannover TiHo	14.6		13.7			0.9	6.1 %
Hagen FernU	12.8	6.0		0.004	3.5	3.3	25.9 %
München UdBW	12.5	0.5			11.3	0.7	5.8 %
Weimar U	9.3	0.5			8.3	0.4	4.7 %
Hamburg UdBW	9.2	1.1			8.1	0.005	0.0 %
Frankfurt/Oder U	8.2	3.7				4.5	55.2 %
Passau U	8.0	3.8		1.6	1.5	1.1	13.9 %
Koblenz-Landau U	7.7	2.1	0.1	0.1	3.0	2.4	31.3 %
Eichstätt Kath. U	6.7	3.7		0.3	0.1	2.6	38.4 %
Bamberg U	5.3	4.5		0.2		0.7	13.1 %
Lüneburg U	4.1	1.2	0.4	1.4		1.1	27.5 %
Berlin HdK	3.2	2.2			0.3	0.6	20.4 %
Hildesheim U	1.7	0.7		0.1	0.02	1.0	56.1 %
Erfurt U	1.0	0.5				0.6	53.4 %
269 other universities	270.2	64.9	10.3	8.7	82.8	103.6	38.3 %
In total	**5,421.4**	**660.8**	**1,774.3**	**947.8**	**1,409.8**	**628.7**	**11.6 %**

[1] Only universities which received a total of more than half a million euros in approvals from the DFG in the period stated.

[2] Central funds and field of teaching and research sport studies.

Source: Federal Statistical Office (2002), Regular expenditure, administrative income, third party funding income and regular core funds according to organisational classification, university, fields of teaching and research (1999 to 2000), special report.

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Table A3-3:
Third party funding income of universities in 1999 and 2000 by source and federal state (in millions of euros)

Federal state	Total	DFG		Federal government		Other public institutions		International organisations		Charitable foundations		Business and industry	
	Mio. €	Mio. €	%	Mio. €	%	Mio. €	%	Mio. €	%	Mio. €	%	Mio. €	%
Baden-Wurttemberg	903.8	315.8	34.9	170.0	18.8	22.7	2.5	72.7	8.0	57.2	6.3	265.3	29.4
Bavaria	928.1	279.8	30.2	215.3	23.2	27.0	2.9	31.1	3.3	46.4	5.0	328.5	35.4
Berlin	418.7	156.2	37.3	73.7	17.6	17.1	4.1	33.7	8.1	41.4	9.9	96.6	23.1
Brandenburg	63.8	14.7	23.0	16.4	25.7	5.2	8.2	4.8	7.5	6.4	10.0	16.3	25.5
Bremen	99.6	25.6	25.7	28.5	28.6	16.2	16.3	9.0	9.0	0.3	0.3	20.2	20.2
Hamburg	153.8	58.7	38.2	47.9	31.2	5.5	3.6	10.6	6.9	12.2	7.9	18.9	12.3
Hesse	361.5	159.8	44.2	56.2	15.5	40.1	11.1	12.6	3.5	4.6	1.3	88.3	24.4
Mecklenburg-Western Pom.	62.9	15.9	25.3	20.0	31.8	4.3	6.8	2.2	3.4	6.5	10.4	14.0	22.2
Lower Saxony	441.9	192.6	43.6	75.1	17.0	17.5	4.0	22.3	5.1	9.6	2.2	124.8	28.2
North Rhine-Westphalia	1,096.7	362.7	33.1	192.2	17.5	59.1	5.4	78.6	7.2	73.3	6.7	330.8	30.2
Rhineland-Palatinate	202.7	65.0	32.1	29.7	14.7	23.6	11.7	16.5	8.1	19.1	9.4	48.8	24.1
Saarland	57.3	20.3	35.4	7.9	13.9	3.3	5.8	6.4	11.2	5.3	9.3	14.0	24.5
Saxony	295.3	84.2	28.5	81.7	27.7	28.3	9.6	15.4	5.2	16.1	5.5	69.5	23.5
Saxony-Anhalt	109.8	32.1	29.3	20.6	18.7	22.0	20.0	5.2	4.8	6.2	5.6	23.7	21.6
Schleswig-Holstein	130.9	38.3	29.3	31.8	24.3	4.1	3.1	7.5	5.8	9.3	7.1	39.9	30.5
Thuringia	94.4	29.4	31.2	21.4	22.7	6.2	6.6	5.8	6.1	8.5	9.0	23.1	24.5
In total	**5,421.3**	**1,851.3**	**34.1**	**1,088.4**	**20.1**	**302.1**	**5.6**	**334.5**	**6.2**	**322.3**	**5.9**	**1,522.6**	**28.1**

Source: Federal Statistical Office (2003), Third party funding income of universities by source and federal state (1999 to 2000), special report.

Table A3-4:
Third party funding income of universities in 1999 and 2000 in relation to the number of professors/scientists and academics in total by university [1)]

University		Professors		Scientists and academics in total	
	Mio. €	n	k € per prof.	n	k € per sci.
Stuttgart U	191.3	243	787.1	2,677	71.5
München TU	269.7	394	684.5	4,100	65.8
Aachen TH	248.1	388	639.3	3,930	63.1
Hannover MedHo	54.7	86	636.1	1,436	38.1
Karlsruhe U	129.7	267	485.9	2,134	60.8
Clausthal TU	31.8	76	418.5	441	72.1
Lübeck MedU	29.6	75	395.2	961	30.8
Ulm U	69.9	178	392.9	1,856	37.7
Kaiserslautern U	55.0	144	382.1	953	57.7
Freiberg TU	38.8	112	346.5	633	61.3
Hohenheim U	36.1	105	343.6	788	45.8
Tübingen U	138.0	406	340.0	3,478	39.7
Erlangen-Nürnberg U	151.6	468	324.0	3,340	45.4
Berlin TU	124.8	392	318.4	2,402	52.0
Freiburg U	119.1	375	317.5	3,222	36.9
Darmstadt TU	86.8	277	313.5	1,743	49.8
Braunschweig TU	72.4	231	313.4	1,527	47.4
Heidelberg U	128.3	410	312.8	3,396	37.8
Würzburg U	104.2	340	306.5	2,523	41.3
München U	212.7	710	299.6	5,129	41.5
Düsseldorf U	68.3	238	286.9	2,115	32.3
Hannover U	97.8	344	284.4	2,207	44.3
Berlin HU	154.8	562	275.4	4,484	34.5
Bremen U	91.1	343	265.5	1,713	53.2
Dresden TU	142.9	539	265.2	3,669	39.0
Konstanz U	36.4	145	251.0	898	40.5
Hamburg-Harburg TU	25.0	101	247.2	524	47.6
Magdeburg U	47.3	192	246.4	1,541	30.7
Bochum U	96.3	401	240.1	2,354	40.9
Bayreuth U	42.2	177	238.5	934	45.2
Mainz U	101.3	429	236.1	3,105	32.6
Göttingen U	96.7	427	226.4	2,975	32.5
Bonn U	108.1	480	225.3	3,133	34.5
Regensburg U	58.1	260	223.3	1,788	32.5
Chemnitz TU	34.6	159	217.8	898	38.6
Frankfurt/Main U	99.7	473	210.8	2,636	37.8
Saarbrücken U	55.7	265	210.2	1,917	29.1
Berlin FU	125.5	607	206.8	3,169	39.6
Kiel U	82.3	401	205.2	2,364	34.8
Ilmenau TU	19.0	93	204.2	625	30.4
Köln U	109.8	565	194.3	3,195	34.4
Hannover TiHo	14.6	77	189.8	312	46.8
Marburg U	68.4	364	187.9	2,175	31.5
Dortmund U	56.2	304	184.8	1,523	36.9
Bielefeld U	42.6	237	179.9	1,394	30.6
Münster U	95.2	559	170.4	3,699	25.7
Hagen FernU	12.8	75	170.3	418	30.6

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University		Professors		Scientists and academics in total	
	Mio. €	n	k € per prof.	n	k € per sci.
Essen U	59.5	352	169.1	1,886	31.6
Trier U	25.5	151	168.6	673	37.8
Jena U	58.8	351	167.4	2,517	23.4
Cottbus TU	21.5	129	166.7	599	35.9
Gießen U	60.8	370	164.2	2,239	27.1
Paderborn U	44.7	283	158.1	988	45.3
Hamburg U	115.4	773	149.3	3,533	32.7
Duisburg U	31.5	212	148.6	891	35.3
Leipzig U	60.5	433	139.6	2,613	23.1
Halle-Wittenberg U	54.5	397	137.3	2,488	21.9
Mannheim U	15.3	114	134.2	712	21.5
Augsburg U	19.2	144	133.5	650	29.6
Oldenburg U	23.5	181	129.6	773	30.4
Frankfurt/Oder U	8.2	64	127.5	216	37.8
Rostock U	37.6	297	126.6	1,769	21.3
Kassel U	33.4	273	122.4	943	35.4
Potsdam U	22.8	200	114.0	1,008	22.6
Weimar U	9.3	82	113.1	430	21.6
Osnabrück U	19.1	176	108.4	683	27.9
Greifswald U	21.7	221	98.2	1,189	18.2
Hamburg UdBW	9.2	95	97.0	328	28.1
Wuppertal U	27.1	285	94.9	946	28.6
Siegen U	21.3	231	92.2	706	30.2
Passau U	8.0	102	78.1	347	22.9
München UdBW	12.5	171	73.1	559	22.4
Lüneburg U	4.1	63	65.1	252	16.3
Koblenz-Landau U	7.7	127	61.0	380	20.4
Eichstätt Kath. U	6.7	117	56.9	315	21.1
Bamberg U	5.3	127	41.8	392	13.6
Hildesheim U	1.7	45	38.2	234	7.3
Erfurt U	1.0	31	33.6	87	12.0
Berlin HdK	3.2	197	16.2	366	8.7

[1] Only universities which received a total of more than half a million euros in approvals from the DFG in the period stated (excluding the University of Witten-Herdecke [no staff data]).

Sources:
Federal Statistical Office (2002), Full time employment scientific and artistic staff according to organisational classification, university, fields of teaching and research and staff unit (status: 2000), special report.

Federal Statistical Office (2002), Regular expenditure, administrative income, third party funding income and regular core funds according to organisational classification, university, fields of teaching and research (1999 to 2000), special report.

Table A3-5:
DFG approvals 1999 to 2001 by university [1] and scientific discipline (in millions of euros)

University	Total	Humanities and Social Sciences	Biology/ Medicine	Natural Sciences	Engineering Sciences
Aachen TH	119.2	3.2	13.3	15.4	87.4
München U	116.9	22.9	70.0	21.7	2.3
München TU	116.3	1.9	42.3	29.0	43.1
Tübingen U	100.2	26.9	43.2	24.5	5.6
Erlangen-Nürnberg U	95.4	6.4	35.2	17.8	36.0
Heidelberg U	94.2	14.8	52.7	25.8	0.9
Stuttgart U	93.2	4.7	5.6	16.0	66.9
Würzburg U	90.3	9.6	62.5	16.5	1.8
Berlin HU	90.1	21.4	49.3	16.3	3.2
Karlsruhe U	87.0	1.7	2.6	33.8	48.8
Freiburg U	85.2	15.5	47.1	18.3	4.3
Bonn U	81.6	17.5	33.8	27.4	2.8
Berlin FU	76.6	20.5	32.7	22.3	1.2
Hamburg U	74.1	16.9	32.5	20.6	4.1
Göttingen U	74.0	11.8	42.1	17.7	2.3
Köln U	73.8	18.1	39.0	14.9	1.7
Bochum U	72.9	11.3	21.5	22.2	17.9
Frankfurt/Main U	69.4	24.3	30.9	12.8	1.5
Münster U	69.0	13.7	30.1	24.1	1.0
Berlin TU	67.5	5.3	6.0	23.5	32.7
Hannover U	65.3	2.3	5.6	15.7	41.7
Mainz U	61.2	8.3	31.7	20.4	0.7
Marburg U	58.0	10.1	34.5	13.3	0.2
Dresden TU	57.2	6.4	5.5	14.2	31.1
Darmstadt TU	53.5	2.8	4.7	11.5	34.5
Gießen U	45.3	9.7	29.4	5.9	0.4
Düsseldorf U	43.7	6.3	30.0	6.6	0.8
Bremen U	43.7	6.0	2.8	16.6	18.2
Konstanz U	43.2	18.0	14.0	9.8	1.3
Dortmund U	42.6	4.7	0.5	8.5	28.8
Bielefeld U	42.3	13.6	10.6	11.2	6.8
Jena U	41.5	11.0	14.5	13.7	2.4
Braunschweig TU	41.0	0.8	6.2	5.9	28.1
Leipzig U	40.6	10.0	11.9	15.2	3.5
Saarbrücken U	38.5	8.7	13.8	6.7	9.3
Kiel U	38.4	4.8	18.2	13.3	2.1
Ulm U	37.8	0.8	24.6	8.1	4.3
Halle-Wittenberg U	34.6	4.8	15.6	10.0	4.3
Regensburg U	34.4	5.0	20.1	8.7	0.7
Kaiserslautern U	30.5	0.2	4.2	9.7	16.4
Essen U	28.9	1.5	13.9	9.1	4.4
Bayreuth U	28.1	4.9	9.5	11.2	2.4
Hannover MedHo	28.0	0.1	27.8	0.1	0.1
Magdeburg U	26.4	2.5	10.6	3.1	10.3
Freiberg TU	26.1	0.3	0.3	6.3	19.3
Chemnitz TU	25.8	2.9		6.7	16.1
Duisburg U	21.0	3.6		6.5	11.0
Hamburg-Harburg TU	17.9	0.04	0.9	0.9	16.0
Paderborn U	17.5	1.4	0.1	2.8	13.2
Potsdam U	16.2	8.1	2.1	5.5	0.5
Clausthal TU	15.8	0.1		3.4	12.3
Trier U	14.7	12.0	0.6	1.8	0.3
Oldenburg U	14.6	2.5	3.8	5.1	3.2
Rostock U	14.0	1.2	4.5	4.0	4.4
Osnabrück U	13.8	5.0	5.3	3.5	
Mannheim U	13.3	10.9	0.7	0.5	1.1

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University	Total	Humanities and Social Sciences	Biology/ Medicine	Natural Sciences	Engineering Sciences
Augsburg U	12.9	5.6		5.6	1.7
Hohenheim U	12.8	0.3	12.2	0.2	0.1
Greifswald U	11.2	2.7	4.0	4.3	0.2
Siegen U	10.8	3.7	0.2	2.6	4.3
Lübeck MedU	10.6	0.5	9.4	0.5	0.2
Wuppertal U	10.0	2.5	0.2	2.8	4.4
Kassel U	9.4	1.2	0.9	1.6	5.6
Ilmenau TU	7.7	0.4	0.1	0.6	6.7
Hannover TiHo	5.9		5.9		
Weimar U	4.7	0.04			4.6
Cottbus TU	4.3	0.5	0.5	1.0	2.4
München UdBW	4.1	0.9		0.4	2.8
Bamberg U	3.4	3.1			0.3
Passau U	2.9	1.4			1.5
Hamburg UdBW	2.0	0.6			1.4
Frankfurt/Oder U	2.0	2.0			
Koblenz-Landau U	1.7	1.2	0.01	0.03	0.4
Hagen FernU	1.6	0.4		0.2	1.0
Witten-Herdecke U	1.6	0.1	1.4		
Berlin HdK	1.1	0.7			0.5
Lüneburg U	0.9	0.9			
Eichstätt Kath. U	0.7	0.5			0.2
Erfurt U	0.7	0.7			
Hildesheim U	0.5	0.5			
62 other universities	9.8	5.1	1.0	0.9	2.7
In total	**3,095.4**	**495.0**	**1,106.7**	**736.8**	**756.9**

[1] Only universities which received a total of more than half a million euros in approvals from the DFG in the period stated.

Table A3-6:
DFG approvals 1999 to 2001 by university[1] and research area: Humanities and Social Sciences (in millions of euros)

University	Total	Social sciences	History and fine arts studies	Linguistic and literary studies	Psychology, education, philosophy, theology
Tübingen U	26.9	2.0	10.4	7.6	6.9
Frankfurt/Main U	24.3	7.6	11.9	2.8	2.0
München U	22.9	6.3	4.9	6.6	5.1
Berlin HU	21.4	8.6	4.8	4.2	3.8
Berlin FU	20.5	5.1	7.1	5.4	2.9
Köln U	18.1	3.6	8.6	3.8	2.1
Konstanz U	18.0	3.7	2.5	7.9	3.8
Bonn U	17.5	6.2	3.2	2.9	5.2
Hamburg U	16.9	3.2	5.5	6.4	1.7
Freiburg U	15.5	2.2	7.3	3.9	2.1
Heidelberg U	14.8	3.4	3.7	2.0	5.7
Münster U	13.7	1.6	6.6	2.0	3.6
Bielefeld U	13.6	4.6	1.4	4.0	3.6
Trier U	12.0	1.9	4.8	1.3	4.0
Göttingen U	11.8	2.8	4.3	1.9	2.8
Bochum U	11.3	1.9	2.9	2.7	3.8

>> Continued over

University	Total	Social sciences	History and fine arts studies	Linguistic and literary studies	Psychology, education, philosophy, theology
Jena U	11.0	2.4	2.8	3.2	2.7
Mannheim U	10.9	7.7	0.7	1.1	1.4
Marburg U	10.1	1.5	2.7	1.2	4.7
Leipzig U	10.0	1.0	3.3	3.3	2.4
Gießen U	9.7	0.8	4.1	2.9	1.8
Würzburg U	9.6	1.5	2.7	1.9	3.5
Saarbrücken U	8.7	0.4	0.5	5.1	2.7
Mainz U	8.3	0.8	4.2	1.8	1.5
Potsdam U	8.1	1.1	0.5	3.1	3.4
Erlangen-Nürnberg U	6.4	2.2	0.3	1.9	2.0
Dresden TU	6.4	3.0	1.4	0.5	1.6
Düsseldorf U	6.3	0.4	0.5	2.8	2.6
Bremen U	6.0	4.4	0.2	0.6	0.8
Augsburg U	5.6	2.0	0.9	1.5	1.2
Berlin TU	5.3	1.8	1.9	1.0	0.6
Regensburg U	5.0	1.0	1.6	1.3	1.0
Osnabrück U	5.0	1.8	0.3	1.3	1.6
Bayreuth U	4.9	1.5	2.4	0.5	0.5
Kiel U	4.8	1.6	1.3	1.0	0.8
Halle-Wittenberg U	4.8	1.0	1.4	1.4	1.0
Dortmund U	4.7	2.5	0.1	1.0	1.1
Stuttgart U	4.7	1.3	0.02	3.0	0.3
Siegen U	3.7	0.4	0.5	2.4	0.5
Duisburg U	3.6	1.5	0.5	1.1	0.4
Aachen TH	3.2	1.4	0.3	1.0	0.5
Bamberg U	3.1	0.3	1.2	0.5	1.2
Chemnitz TU	2.9	0.8	0.1	0.5	1.5
Darmstadt TU	2.8	1.4	0.5	0.03	0.8
Greifswald U	2.7	0.3	1.1	0.4	0.9
Wuppertal U	2.5	0.8	0.1	0.5	1.1
Oldenburg U	2.5	0.4	0.3	0.6	1.2
Magdeburg U	2.5	0.5		0.7	1.3
Hannover U	2.3	1.4	0.3	0.2	0.4
Frankfurt/Oder U	2.0	1.0	0.2	0.8	
München TU	1.9	1.1	0.5	0.1	0.2
Karlsruhe U	1.7	1.1	0.3	0.1	0.1
Essen U	1.5	0.3	0.3	0.5	0.4
Passau U	1.4	0.2	0.2	1.0	0.03
Paderborn U	1.4	0.1		0.9	0.5
Koblenz-Landau U	1.2	0.3	0.05	0.2	0.7
Kassel U	1.2	0.8	0.2	0.002	0.3
Rostock U	1.2	0.4	0.4	0.3	0.1
Lüneburg U	0.9	0.1			0.8
München UdBW	0.9	0.4	0.1		0.4
Braunschweig TU	0.8	0.1	0.2		0.6
Ulm U	0.8	0.2	0.1	0.02	0.5
Erfurt U	0.7		0.5	0.1	0.2
Berlin HdK	0.7		0.7		
Hamburg UdBW	0.6	0.2	0.3		0.1
Eichstätt Kath. U	0.5	0.2	0.01	0.2	0.2
Cottbus TU	0.5	0.3	0.2		
Hildesheim U	0.5	0.1		0.4	0.004
Lübeck MedU	0.5		0.2		0.3
Hagen FernU	0.4	0.2	0.1		0.2
Ilmenau TU	0.4	0.4			
Freiberg TU	0.3	0.2	0.1		
Hohenheim U	0.3	0.2			0.04
Kaiserslautern U	0.2	0.2			
Clausthal TU	0.1	0.1			
Witten-Herdecke U	0.1	0.1			
Hannover MedHo	0.1				0.1
Weimar U	0.04		0.04		
Hamburg-Harburg TU	0.04	0.04			
38 other universities	5.1	0.5	1.6	1.1	1.9
In total	**495.0**	**124.5**	**134.8**	**120.3**	**115.4**

[1] Only universities which received a total of more than half a million euros in approvals from the DFG in the period stated.

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Table A3-7:
DFG approvals 1999 to 2001 by university[1] and research area: Biology/Medicine (in millions of euros)

University	Total	Medicine	Biology	Veterinary medicine	Agriculture and forestry science
München U	70.0	35.4	32.2	0.9	1.5
Würzburg U	62.5	36.2	25.8		0.4
Heidelberg U	52.7	27.5	24.9		0.3
Berlin HU	49.3	35.2	13.7	0.1	0.3
Freiburg U	47.1	26.6	17.6		2.9
Tübingen U	43.2	25.3	17.9		
München TU	42.3	19.0	18.1	0.1	5.1
Göttingen U	42.1	16.6	17.5	0.1	7.9
Köln U	39.0	18.3	20.6		0.1
Erlangen-Nürnberg U	35.2	27.8	7.4		
Marburg U	34.5	17.5	17.0		0.02
Bonn U	33.8	16.8	14.2		2.9
Berlin FU	32.7	15.6	15.6	0.2	1.2
Hamburg U	32.5	15.1	16.6		0.9
Mainz U	31.7	25.1	6.5		0.1
Frankfurt/Main U	30.9	13.7	17.1		0.1
Münster U	30.1	16.5	13.5		0.1
Düsseldorf U	30.0	18.7	11.4		
Gießen U	29.4	12.2	6.6	3.3	7.2
Hannover MedHo	27.8	22.9	4.3	0.5	
Ulm U	24.6	19.4	5.1		0.1
Bochum U	21.5	5.6	15.6		0.3
Regensburg U	20.1	10.5	9.5		
Kiel U	18.2	8.7	4.2		5.3
Halle-Wittenberg U	15.6	3.3	9.8		2.4
Jena U	14.5	6.4	8.0	0.003	0.1
Konstanz U	14.0	3.7	10.1		0.3
Essen U	13.9	10.0	3.9		
Saarbrücken U	13.8	7.7	6.2		
Aachen TH	13.3	8.2	4.6		0.4
Hohenheim U	12.2	0.3	2.0	0.1	9.7
Leipzig U	11.9	5.3	5.2	1.4	
Bielefeld U	10.6	0.4	9.6		0.6
Magdeburg U	10.6	9.7	0.9		
Bayreuth U	9.5	0.1	7.1		2.4
Lübeck MedU	9.4	8.1	1.3		
Braunschweig TU	6.2	0.5	4.8		0.9
Berlin TU	6.0	0.4	4.2		1.4
Hannover TiHo	5.9	0.9	1.0	3.7	0.3
Stuttgart U	5.6	0.7	4.9		0.1
Hannover U	5.6	0.2	1.6		3.7
Dresden TU	5.5	3.9	1.0		0.6
Osnabrück U	5.3	0.1	5.2		
Darmstadt TU	4.7	0.02	4.5		0.1
Rostock U	4.5	2.9	1.3		0.3
Kaiserslautern U	4.2	1.4	2.7		0.1
Greifswald U	4.0	1.8	2.2		
Oldenburg U	3.8	0.8	3.0		0.1
Bremen U	2.8	0.7	1.9		0.2
Karlsruhe U	2.6	0.8	1.8		
Potsdam U	2.1	0.2	1.7		0.2
Witten-Herdecke U	1.4	0.1	1.3		
Hamburg-Harburg TU	0.9	0.2	0.6		0.1
Kassel U	0.9		0.2		0.7
Mannheim U	0.7	0.7			
Trier U	0.6	0.1	0.2		0.3
Dortmund U	0.5	0.5			
Cottbus TU	0.5		0.1		0.4
Freiberg TU	0.3		0.2		0.1
Wuppertal U	0.2		0.2		
Siegen U	0.2		0.2		
Ilmenau TU	0.1	0.1			
Paderborn U	0.1	0.004			0.1
Koblenz-Landau U	0.01		0.01		
8 other universities	1.0	0.3	0.5		0.2
In total	**1,106.7**	**566.7**	**467.1**	**10.4**	**62.5**

[1] Only universities which received a total of more than half a million euros in approvals from the DFG in the period stated.

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Table A3-8:
DFG approvals 1999 to 2001 by university[1] and research area: Natural Sciences (in millions of euros)

University	Total	Geosciences	Chemistry	Physics	Mathematics
Karlsruhe U	33.8	10.0	9.3	14.1	0.5
München TU	29.0	3.0	11.4	11.2	3.5
Bonn U	27.4	5.6	6.5	8.7	6.7
Heidelberg U	25.8	2.7	8.5	6.8	7.7
Tübingen U	24.5	11.1	5.3	5.9	2.2
Münster U	24.1	6.2	8.0	5.1	4.8
Berlin TU	23.5	4.4	6.3	6.3	6.6
Berlin FU	22.3	4.8	7.5	7.5	2.5
Bochum U	22.2	6.4	5.8	8.8	1.2
München U	21.7	4.5	4.9	11.0	1.4
Hamburg U	20.6	2.9	3.4	13.4	0.9
Mainz U	20.4	2.8	6.3	10.8	0.5
Freiburg U	18.3	1.9	7.2	7.3	1.8
Erlangen-Nürnberg U	17.8	1.9	6.1	8.9	0.9
Göttingen U	17.7	5.0	6.3	5.4	1.0
Bremen U	16.6	9.6	1.3	4.4	1.3
Würzburg U	16.5	2.0	6.8	7.1	0.6
Berlin HU	16.3	1.2	3.9	7.4	3.7
Stuttgart U	16.0	2.2	3.8	7.1	2.9
Hannover U	15.7	2.7	4.1	8.6	0.4
Aachen TH	15.4	2.7	6.7	3.6	2.5
Leipzig U	15.2	1.6	4.8	8.2	0.6
Köln U	14.9	4.5	2.5	6.9	0.9
Dresden TU	14.2	3.4	4.3	5.8	0.7
Jena U	13.7	1.2	4.2	6.8	1.6
Kiel U	13.3	5.5	3.1	3.2	1.4
Marburg U	13.3	0.5	7.1	5.4	0.2
Frankfurt/Main U	12.8	3.7	4.0	4.5	0.6
Darmstadt TU	11.5	2.1	3.6	4.7	1.1
Bayreuth U	11.2	1.7	4.4	4.1	1.1
Bielefeld U	11.2		2.8	3.0	5.5
Halle-Wittenberg U	10.0	0.5	5.0	4.3	0.2
Konstanz U	9.8	0.6	1.9	6.8	0.5
Kaiserslautern U	9.7	0.4	1.5	6.4	1.4
Essen U	9.1	1.2	2.5	4.0	1.4
Regensburg U	8.7		2.7	5.7	0.2
Dortmund U	8.5	0.1	2.8	3.2	2.4
Ulm U	8.1	0.2	4.7	3.1	0.3
Chemnitz TU	6.7		1.8	3.2	1.8
Saarbrücken U	6.7	0.2	3.0	2.8	0.7
Düsseldorf U	6.6		2.5	3.8	0.4
Duisburg U	6.5	1.0	1.0	3.6	0.9
Freiberg TU	6.3	3.7	1.7	0.3	0.6
Braunschweig TU	5.9	1.1	2.2	2.5	0.2
Gießen U	5.9	0.8	2.4	2.5	0.2
Augsburg U	5.6		0.2	4.1	1.4
Potsdam U	5.5	1.9	0.9	2.2	0.4
Oldenburg U	5.1	1.0	1.3	2.7	0.1
Greifswald U	4.3	0.6	1.0	2.4	0.4
Rostock U	4.0	0.3	1.0	2.6	
Osnabrück U	3.5	0.2	0.5	2.7	0.1
Clausthal TU	3.4	1.2	1.8	0.3	0.2
Magdeburg U	3.1		0.2	1.7	1.2
Paderborn U	2.8		0.8	1.5	0.5
Wuppertal U	2.8		0.8	1.6	0.4
Siegen U	2.6		1.6	1.0	0.05
Trier U	1.8	0.6	0.1	0.4	0.7
Kassel U	1.6	0.4	0.4	0.8	0.1
Cottbus TU	1.0	0.7		0.1	0.1
Hamburg-Harburg TU	0.9	0.6		0.3	
Ilmenau TU	0.6		0.1	0.4	0.1
Mannheim U	0.5				0.5
Lübeck MedU	0.5		0.4		0.1
München UdBW	0.4	0.4		0.1	
Hohenheim U	0.2		0.2		
Hagen FernU	0.2	0.05		0.1	0.001
Hannover MedHo	0.1		0.1		
Koblenz-Landau U	0.03	0.03			
8 other universities	0.9	0.1	0.4	0.4	0.1
In total	**736.8**	**135.5**	**217.1**	**299.4**	**84.7**

[1] Only universities which received a total of more than half a million euros in approvals from the DFG in the period stated.

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Table A3-9:
DFG approvals 1999 to 2001 by university[1] and research area: Engineering Sciences (in millions of euros)

University	Total	General engineering sciences and mechanical engineering	Architecture, urban development, civil engineering	Mining and metallurgy	Electrical engineering, computer science
Aachen TH	87.4	62.4	4.0	10.8	10.1
Stuttgart U	66.9	52.9	4.4	1.1	8.5
Karlsruhe U	48.8	27.3	6.5	0.2	14.8
München TU	43.1	23.8	2.3	0.4	16.6
Hannover U	41.7	36.1	1.9	0.9	2.8
Erlangen-Nürnberg U	36.0	25.1		2.3	8.5
Darmstadt TU	34.5	23.4	2.3	1.0	7.8
Berlin TU	32.7	24.7	1.3	0.6	6.2
Dresden TU	31.1	16.5	3.8	1.3	9.5
Dortmund U	28.8	18.3	0.4	0.4	9.7
Braunschweig TU	28.1	16.8	5.6	1.1	4.6
Freiberg TU	19.3	16.9	0.1	2.2	
Bremen U	18.2	13.8	0.1	0.2	4.1
Bochum U	17.9	10.0	3.0	2.1	2.8
Kaiserslautern U	16.4	7.5	1.3	0.8	6.7
Chemnitz TU	16.1	8.9		0.4	6.9
Hamburg-Harburg TU	16.0	10.5	1.3	0.5	3.7
Paderborn U	13.2	3.9		0.4	8.9
Clausthal TU	12.3	9.1		3.1	0.1
Duisburg U	11.0	8.4		0.1	2.5
Magdeburg U	10.3	6.5	0.2	0.3	3.4
Saarbrücken U	9.3	4.4		0.3	4.6
Bielefeld U	6.8	1.2		0.1	5.6
Ilmenau TU	6.7	3.6	0.1	0.1	2.9
Kassel U	5.6	2.8	1.6	0.3	0.9
Tübingen U	5.6	1.2			4.4
Weimar U	4.6	0.5	4.1		0.04
Wuppertal U	4.4	0.9	0.8		2.7
Essen U	4.4	2.6	1.1	0.1	0.5
Rostock U	4.4	2.2			2.1
Freiburg U	4.3	1.2	0.1		3.1
Halle-Wittenberg U	4.3	3.7			0.6
Siegen U	4.3	2.6	0.1	0.9	0.6
Ulm U	4.3	0.7			3.5
Hamburg U	4.1	1.3	0.1	0.3	2.5
Leipzig U	3.5	0.2	1.4		1.9
Berlin HU	3.2	0.9			2.3
Oldenburg U	3.2	0.9	0.2	0.1	2.0
Bonn U	2.8	0.2	0.2	0.1	2.3
München UdBW	2.8	2.2			0.6
Bayreuth U	2.4	2.1			0.3
Jena U	2.4	1.7		0.2	0.4
Cottbus TU	2.4	0.9	0.8	0.04	0.7
Göttingen U	2.3	1.4		0.7	0.2
München U	2.3				2.3
Kiel U	2.1	0.2		0.3	1.6
Würzburg U	1.8	0.7			1.1
Köln U	1.7	0.3	0.1	0.02	1.4
Augsburg U	1.7				1.7
Passau U	1.5				1.5
Frankfurt/Main U	1.5	0.2			1.3
Hamburg UdBW	1.4	1.4			0.1
Konstanz U	1.3	0.1			1.3
Berlin FU	1.2	0.2			0.9
Mannheim U	1.1				1.1
Münster U	1.0	0.3		0.6	0.1
Hagen FernU	1.0				1.0
Heidelberg U	0.9	0.3	0.1		0.6
Düsseldorf U	0.8	0.4		0.1	0.4
Mainz U	0.7	0.4		0.1	0.2
Regensburg U	0.7	0.5		0.1	0.1
Potsdam U	0.5	0.04			0.4
Berlin HdK	0.5	0.2	0.2		
Koblenz-Landau U	0.4	0.2			0.3
Gießen U	0.4				0.4
Trier U	0.3				0.3
Bamberg U	0.3	0.1			0.1
Lübeck MedU	0.2				0.2
Greifswald U	0.2	0.2			0.04
Eichstätt Kath. U	0.2		0.01		0.2
Marburg U	0.2	0.001	0.003		0.1
Hannover MedHo	0.1				0.1
Hohenheim U	0.1		0.1		
20 other universities	2.8	1.5	0.2	0.3	0.7
In total	**756.9**	**469.4**	**49.9**	**35.2**	**202.4**

[1] Only universities which received a total of more than half a million euros in approvals from the DFG in the period stated.

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Table A3-10:
DFG approvals 1999 to 2001 by university[1] and programme group[2] (in millions of euros)

University	Total	Individual Grants Programme	Coordinated Programme	Direct Promotion of Young Researchers	Prizes
Aachen TH	119.2	38.2	78.3	1.2	1.5
München U	116.9	40.0	67.6	5.7	3.6
München TU	116.3	39.0	72.1	4.9	0.4
Tübingen U	100.2	42.2	51.5	3.9	2.6
Erlangen-Nürnberg U	95.4	34.6	56.2	2.6	2.1
Heidelberg U	94.2	32.7	50.4	5.9	5.2
Stuttgart U	93.2	28.7	62.3	1.4	0.8
Würzburg U	90.3	34.3	49.0	4.7	2.4
Berlin HU	90.1	39.0	46.5	3.9	0.8
Karlsruhe U	87.0	28.3	54.8	2.4	1.5
Freiburg U	85.2	37.1	40.9	4.2	3.1
Bonn U	81.6	29.2	49.5	2.3	0.6
Berlin FU	76.6	33.4	38.2	4.3	0.8
Hamburg U	74.1	32.3	38.2	3.7	
Göttingen U	74.0	30.9	39.7	3.4	
Köln U	73.8	26.8	41.4	3.8	1.8
Bochum U	72.9	29.9	40.9	2.0	
Frankfurt/Main U	69.4	32.8	32.9	3.4	0.2
Münster U	69.0	28.3	35.8	4.1	0.8
Berlin TU	67.5	25.9	39.6	1.1	0.9
Hannover U	65.3	27.5	37.0	0.5	0.2
Mainz U	61.2	23.9	34.7	2.3	0.4
Marburg U	58.0	27.2	27.9	2.8	0.1
Dresden TU	57.2	20.8	35.4	0.6	0.3
Darmstadt TU	53.5	19.5	33.5	0.2	0.2
Gießen U	45.3	16.6	27.0	1.1	0.6
Düsseldorf U	43.7	19.8	21.1	2.3	0.7
Bremen U	43.7	11.5	29.3	1.3	1.6
Konstanz U	43.2	13.4	27.2	1.6	1.0
Dortmund U	42.6	14.6	27.4	0.7	
Bielefeld U	42.3	15.7	23.0	1.1	2.5
Jena U	41.5	20.5	19.4	1.5	0.2
Braunschweig TU	41.0	18.6	22.0	0.4	0.1
Leipzig U	40.6	22.3	16.4	1.6	0.2
Saarbrücken U	38.5	14.5	22.1	1.2	0.8
Kiel U	38.4	21.1	15.5	1.0	0.8
Ulm U	37.8	15.2	20.1	2.2	0.2
Halle-Wittenberg U	34.6	18.3	14.7	1.4	0.1
Regensburg U	34.4	18.9	13.0	2.3	0.2
Kaiserslautern U	30.5	16.4	13.5	0.3	0.2
Essen U	28.9	13.7	13.4	1.5	0.3
Bayreuth U	28.1	12.3	14.8	0.9	0.1
Hannover MedHo	28.0	13.9	12.8	1.4	
Magdeburg U	26.4	11.1	12.6	0.9	1.8
Freiberg TU	26.1	8.0	16.3	0.1	1.6
Chemnitz TU	25.8	5.7	19.9	0.2	
Duisburg U	21.0	8.1	12.9	0.04	
Hamburg-Harburg TU	17.9	7.1	10.7	0.1	
Paderborn U	17.5	6.2	11.1	0.2	
Potsdam U	16.2	9.6	6.3	0.3	
Clausthal TU	15.8	7.1	8.5	0.2	
Trier U	14.7	4.3	9.8	0.6	
Oldenburg U	14.6	7.6	6.9	0.1	
Rostock U	14.0	8.0	5.6	0.4	

>> Continued over

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University	Total	Individual Grants Programme	Coordinated Programme	Direct Promotion of Young Researchers	Prizes
Osnabrück U	13.8	4.7	8.7	0.4	0.02
Mannheim U	13.3	5.5	7.4	0.4	
Augsburg U	12.9	4.1	7.7	0.4	0.8
Hohenheim U	12.8	6.7	5.9	0.3	
Greifswald U	11.2	7.1	3.9	0.1	0.1
Siegen U	10.8	5.6	5.1	0.05	
Lübeck MedU	10.6	5.7	4.6	0.3	
Wuppertal U	10.0	6.9	2.9	0.2	
Kassel U	9.4	5.9	3.2	0.3	
Ilmenau TU	7.7	3.7	4.0	0.02	
Hannover TiHo	5.9	3.4	2.2	0.2	
Weimar U	4.7	1.5	3.2	0.1	
Cottbus TU	4.3	2.1	2.1	0.2	
München UdBW	4.1	2.3	1.8	0.03	
Bamberg U	3.4	1.8	1.6	0.1	
Passau U	2.9	2.7	0.2	0.03	
Hamburg UdBW	2.0	1.1	0.9		
Frankfurt/Oder U	2.0	0.6	1.3	0.04	
Koblenz-Landau U	1.7	0.9	0.8		
Hagen FernU	1.6	1.1	0.4	0.04	
Witten-Herdecke U	1.6	1.3	0.2	0.04	
Berlin HdK	1.1	0.3	0.8		
Lüneburg U	0.9	0.8	0.1		
Eichstätt Kath. U	0.7	0.4	0.3	0.1	
Erfurt U	0.7	0.2	0.5	0.03	
Hildesheim U	0.5	0.2	0.3		
62 other universities	9.8	6.5	3.2	0.1	
In total	**3,095.4**	**1,245.2**	**1,701.0**	**105.4**	**43.8**

[1] Only universities which received a total of more than half a million euros in approvals from the DFG in the period stated.

[2] For details on the classification of programmes to programme groups cf. Table 3-1.

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Table A3-11:
DFG approvals 1999 to 2001 by university[1] and programme group[2]: Humanities and Social Sciences (in millions of euros)

University	Total	Individual Grants Programme	Coordinated Programme	Direct Promotion of Young Researchers	Prizes
Tübingen U	26.9	10.0	16.2	0.8	
Frankfurt/Main U	24.3	8.8	15.0	0.4	0.02
München U	22.9	9.5	12.3	1.2	
Berlin HU	21.4	8.4	11.8	1.2	
Berlin FU	20.5	10.5	8.0	1.2	0.8
Köln U	18.1	6.8	10.6	0.5	0.1
Konstanz U	18.0	4.3	12.6	0.4	0.8
Bonn U	17.5	7.4	9.0	0.7	0.4
Hamburg U	16.9	7.0	9.1	0.7	
Freiburg U	15.5	5.8	7.9	0.6	1.2
Heidelberg U	14.8	6.0	5.6	1.3	1.9
Münster U	13.7	5.0	7.8	0.9	
Bielefeld U	13.6	5.8	6.7	0.4	0.8
Trier U	12.0	3.4	8.0	0.6	
Göttingen U	11.8	6.4	4.5	1.0	
Bochum U	11.3	5.6	4.9	0.7	
Jena U	11.0	5.3	5.1	0.4	0.2
Mannheim U	10.9	4.1	6.5	0.4	
Marburg U	10.1	7.3	2.1	0.6	
Leipzig U	10.0	3.3	6.3	0.4	
Gießen U	9.7	2.6	6.8	0.3	
Würzburg U	9.6	5.9	1.9	0.9	0.8
Saarbrücken U	8.7	2.5	5.3	0.1	0.8
Mainz U	8.3	3.3	4.6	0.4	
Potsdam U	8.1	5.0	3.0	0.1	
Erlangen-Nürnberg U	6.4	4.6	1.6	0.3	
Dresden TU	6.4	1.9	4.4	0.1	
Düsseldorf U	6.3	3.1	2.6	0.6	
Bremen U	6.0	2.1	3.8	0.1	
Augsburg U	5.6	2.4	2.3	0.1	0.8
Berlin TU	5.3	3.1	2.0	0.2	
Regensburg U	5.0	3.1	1.8	0.1	
Osnabrück U	5.0	2.5	2.4	0.1	
Bayreuth U	4.9	2.4	2.3	0.2	
Kiel U	4.8	2.1	2.6	0.1	
Halle-Wittenberg U	4.8	2.7	1.9	0.2	
Dortmund U	4.7	1.5	3.1	0.1	
Stuttgart U	4.7	1.5	3.1	0.1	
Siegen U	3.7	1.3	2.4		
Duisburg U	3.6	2.7	0.9		
Aachen TH	3.2	1.4	1.6	0.1	
Bamberg U	3.1	1.6	1.4	0.1	
Chemnitz TU	2.9	0.8	2.1	0.03	
Darmstadt TU	2.8	1.3	1.5	0.04	
Greifswald U	2.7	2.3	0.4		
Wuppertal U	2.5	1.5	0.9	0.1	
Oldenburg U	2.5	1.5	0.9	0.1	
Magdeburg U	2.5	1.4	0.9	0.1	
Hannover U	2.3	1.6	0.6	0.04	
Frankfurt/Oder U	2.0	0.6	1.3	0.04	
München TU	1.9	0.6	1.2	0.1	
Karlsruhe U	1.7	1.1	0.5	0.02	
Essen U	1.5	1.0	0.4	0.1	
Passau U	1.4	1.2	0.1	0.03	
Paderborn U	1.4	0.5	0.7	0.1	
Koblenz-Landau U	1.2	0.7	0.5		
Kassel U	1.2	0.9	0.3	0.04	
Rostock U	1.2	1.1		0.04	
Lüneburg U	0.9	0.8	0.1		
München UdBW	0.9	0.4	0.5		
Braunschweig TU	0.8	0.7	0.1		
Ulm U	0.8	0.5	0.3	0.02	
Erfurt U	0.7	0.2	0.5	0.03	
Berlin HdK	0.7	0.2	0.5		
Hamburg UdBW	0.6	0.5	0.1		
Eichstätt Kath. U	0.5	0.4	0.1	0.1	
Cottbus TU	0.5	0.2	0.3		
Hildesheim U	0.5	0.2	0.3		
Lübeck MedU	0.5	0.4	0.1		
Hagen FernU	0.4	0.2	0.1		
Ilmenau TU	0.4	0.1	0.3		
Freiberg TU	0.3	0.2	0.1		
Hohenheim U	0.3	0.1	0.1		
Kaiserslautern U	0.2	0.01	0.2	0.01	
Clausthal TU	0.1	0.1			
Witten-Herdecke U	0.1	0.003	0.1		
Hannover MedHo	0.1		0.1		
Weimar U	0.04	0.01		0.03	
Hamburg-Harburg TU	0.04	0.04			
38 other universities	5.1	3.5	1.5	0.1	
In total	**495.0**	**217.2**	**249.4**	**19.9**	**8.5**

[1] Only universities which received a total of more than half a million euros in approvals from the DFG in the period stated.

[2] For details on the classificat[illegible]able 3-1.

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Table A3-12:
DFG approvals 1999 to 2001 by university[1] and programme group[2]: Biology/Medicine (in millions of euros)

University	Total	Individual Grants Programme	Coordinated Programme	Direct Promotion of Young Researchers	Prizes
München U	70.0	24.7	40.3	3.2	1.8
Würzburg U	62.5	21.9	36.7	2.3	1.6
Heidelberg U	52.7	18.7	28.1	2.9	3.1
Berlin HU	49.3	24.5	23.6	1.2	
Freiburg U	47.1	23.6	20.8	2.7	
Tübingen U	43.2	21.0	20.4	1.6	0.3
München TU	42.3	19.5	20.1	2.4	0.2
Göttingen U	42.1	18.1	22.8	1.2	
Köln U	39.0	15.6	19.9	1.9	1.5
Erlangen-Nürnberg U	35.2	10.0	23.8	1.2	0.3
Marburg U	34.5	14.1	18.8	1.5	0.1
Bonn U	33.8	12.3	20.4	1.0	0.1
Berlin FU	32.7	14.4	16.7	1.6	
Hamburg U	32.5	17.3	14.1	1.1	
Mainz U	31.7	13.7	16.9	0.9	0.2
Frankfurt/Main U	30.9	18.1	10.8	2.0	
Münster U	30.1	14.8	14.3	1.0	
Düsseldorf U	30.0	12.9	15.7	1.1	0.3
Gießen U	29.4	10.9	17.4	0.7	0.3
Hannover MedHo	27.8	13.6	12.7	1.4	
Ulm U	24.6	10.7	12.1	1.8	
Bochum U	21.5	9.6	11.6	0.3	
Regensburg U	20.1	11.4	7.0	1.5	0.2
Kiel U	18.2	11.3	6.3	0.5	
Halle-Wittenberg U	15.6	9.6	5.0	1.0	
Jena U	14.5	9.0	5.1	0.4	
Konstanz U	14.0	6.2	7.6	0.3	
Essen U	13.9	8.4	4.3	1.0	0.3
Saarbrücken U	13.8	6.4	6.9	0.6	
Aachen TH	13.3	7.1	5.8	0.4	
Hohenheim U	12.2	6.2	5.7	0.3	
Leipzig U	11.9	9.2	2.1	0.6	
Bielefeld U	10.6	6.0	4.3	0.3	
Magdeburg U	10.6	4.4	3.9	0.7	1.5
Bayreuth U	9.5	4.6	4.3	0.5	
Lübeck MedU	9.4	4.9	4.2	0.3	
Braunschweig TU	6.2	3.3	2.6	0.3	
Berlin TU	6.0	2.0	3.9	0.05	
Hannover TiHo	5.9	3.4	2.2	0.2	
Stuttgart U	5.6	2.7	2.8	0.1	
Hannover U	5.6	3.4	2.0	0.2	
Dresden TU	5.5	4.4	0.5	0.2	0.3
Osnabrück U	5.3	1.0	4.1	0.2	
Darmstadt TU	4.7	1.4	3.3	0.04	
Rostock U	4.5	3.6	0.9	0.1	
Kaiserslautern U	4.2	3.2	0.9	0.1	
Greifswald U	4.0	3.4	0.5	0.1	
Oldenburg U	3.8	2.4	1.4		
Bremen U	2.8	0.5	1.9	0.4	0.1
Karlsruhe U	2.6	1.8	0.8		
Potsdam U	2.1	1.1	1.0	0.02	
Witten-Herdecke U	1.4	1.3	0.1	0.04	
Hamburg-Harburg TU	0.9	0.3	0.6		
Kassel U	0.9	0.7	0.1	0.1	
Mannheim U	0.7	0.3	0.3	0.04	
Trier U	0.6	0.1	0.5		
Dortmund U	0.5	0.01	0.5		
Cottbus TU	0.5	0.2	0.3		
Freiberg TU	0.3	0.1	0.2		
Wuppertal U	0.2	0.2			
Siegen U	0.2		0.2		
Ilmenau TU	0.1	0.1			
Paderborn U	0.1	0.1			
Koblenz-Landau U	0.01	0.01			
8 other universities	1.0	0.9	0.1		
In total	**1,106.7**	**506.7**	**542.3**	**45.4**	**12.3**

[1] Only universities which received a total of more than half a million euros in approvals from the DFG in the period stated.
[2] For details on the classification of programmes to programme groups cf. Table 3-1.

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Table A3-13:
DFG approvals 1999 to 2001 by university[1] and programme group[2]: Natural Sciences (in millions of euros)

University	Total	Individual Grants Programme	Coordinated Programme	Direct Promotion of Young Researchers	Prizes
Karlsruhe U	33.8	9.6	20.5	2.2	1.5
München TU	29.0	7.4	19.2	2.2	0.2
Bonn U	27.4	8.0	18.8	0.6	
Heidelberg U	25.8	8.0	15.9	1.6	0.2
Tübingen U	24.5	8.9	11.8	1.6	2.3
Münster U	24.1	7.6	13.7	2.1	0.8
Berlin TU	23.5	7.3	14.6	0.6	0.9
Berlin FU	22.3	8.2	12.7	1.5	
Bochum U	22.2	7.4	13.8	0.9	
München U	21.7	5.4	13.6	0.9	1.7
Hamburg U	20.6	6.3	12.4	1.9	
Mainz U	20.4	6.8	12.5	1.0	0.2
Freiburg U	18.3	4.6	10.9	0.9	1.9
Erlangen-Nürnberg U	17.8	7.7	9.1	1.0	
Göttingen U	17.7	5.8	10.7	1.2	
Bremen U	16.6	4.2	11.6	0.7	0.1
Würzburg U	16.5	5.6	9.4	1.5	
Berlin HU	16.3	4.9	9.1	1.5	0.8
Stuttgart U	16.0	5.8	8.4	1.1	0.8
Hannover U	15.7	6.5	8.9	0.2	0.2
Aachen TH	15.4	4.5	10.5	0.4	
Leipzig U	15.2	7.7	6.6	0.7	0.2
Köln U	14.9	4.1	9.4	1.4	0.1
Dresden TU	14.2	5.7	8.4	0.1	
Jena U	13.7	5.3	7.9	0.5	
Kiel U	13.3	6.4	5.8	0.4	0.8
Marburg U	13.3	5.7	6.9	0.7	
Frankfurt/Main U	12.8	5.5	6.2	0.9	0.2
Darmstadt TU	11.5	5.1	6.2	0.1	
Bayreuth U	11.2	4.2	6.7	0.3	0.1
Bielefeld U	11.2	2.5	8.1	0.4	0.2
Halle-Wittenberg U	10.0	3.8	6.0	0.2	
Konstanz U	9.8	2.7	5.9	0.9	0.2
Kaiserslautern U	9.7	4.4	5.1	0.2	
Essen U	9.1	1.4	7.3	0.4	
Regensburg U	8.7	4.3	3.6	0.8	0.03
Dortmund U	8.5	2.9	5.2	0.4	
Ulm U	8.1	2.4	5.2	0.5	0.2
Chemnitz TU	6.7	1.2	5.3	0.1	
Saarbrücken U	6.7	2.3	4.2	0.2	
Düsseldorf U	6.6	3.1	2.6	0.6	0.4
Duisburg U	6.5	2.0	4.5	0.04	
Freiberg TU	6.3	1.9	2.8	0.1	1.5
Braunschweig TU	5.9	3.8	2.0	0.04	0.1
Gießen U	5.9	3.1	2.4	0.1	0.3
Augsburg U	5.6	1.2	4.2	0.2	
Potsdam U	5.5	3.2	2.2	0.1	
Oldenburg U	5.1	2.0	3.1	0.01	
Greifswald U	4.3	1.4	2.7	0.1	0.1
Rostock U	4.0	1.6	2.0	0.3	
Osnabrück U	3.5	1.1	2.2	0.2	0.02
Clausthal TU	3.4	1.9	1.4	0.1	
Magdeburg U	3.1	0.7	2.0	0.1	0.3
Paderborn U	2.8	1.4	1.4	0.04	
Wuppertal U	2.8	1.7	1.0	0.1	
Siegen U	2.6	1.7	0.9		
Trier U	1.8	0.5	1.3		
Kassel U	1.6	1.2	0.4	0.1	
Cottbus TU	1.0	0.2	0.7		
Hamburg-Harburg TU	0.9	0.4	0.6		
Ilmenau TU	0.6	0.4	0.1		
Mannheim U	0.5	0.3	0.3		
Lübeck MedU	0.5	0.2	0.3		
München UdBW	0.4	0.3	0.2		
Hohenheim U	0.2	0.2			
Hagen FernU	0.2	0.2			
Hannover (MedHo)	0.1	0.1			
Koblenz-Landau U	0.03	0.03			
8 other universities	0.9	0.4	0.6	0.005	
In total	**736.8**	**253.9**	**430.2**	**36.7**	**16.1**

[1] Only universities which received a total of more than half a million euros in approvals from the DFG in the period stated.
[2] For details on the classification of programmes to programme groups cf. Table 3-1.

Contents

Table A3-14:
DFG approvals 1999 to 2001 by university[1] and programme group[2]: Engineering Sciences (in millions of euros)

University	Total	Individual Grants Programme	Coordinated Programme	Direct Promotion of Young Researchers	Prizes
Aachen TH	87.4	25.2	60.4	0.3	1.5
Stuttgart U	66.9	18.7	48.0	0.1	
Karlsruhe U	48.8	15.8	33.0	0.1	
München TU	43.1	11.5	31.5	0.1	
Hannover U	41.7	16.1	25.5	0.2	
Erlangen-Nürnberg U	36.0	12.4	21.7	0.2	1.7
Darmstadt TU	34.5	11.7	22.5	0.03	0.2
Berlin TU	32.7	13.5	19.1	0.2	
Dresden TU	31.1	8.8	22.2	0.2	
Dortmund U	28.8	10.1	18.5	0.2	
Braunschweig TU	28.1	10.8	17.3	0.03	
Freiberg TU	19.3	5.9	13.3		0.1
Bremen U	18.2	4.8	11.9		1.5
Bochum U	17.9	7.3	10.5	0.1	
Kaiserslautern U	16.4	8.8	7.3		0.2
Chemnitz TU	16.1	3.7	12.5		
Hamburg-Harburg TU	16.0	6.4	9.5	0.1	
Paderborn U	13.2	4.2	9.0		
Clausthal TU	12.3	5.0	7.1	0.1	
Duisburg U	11.0	3.4	7.6		
Magdeburg U	10.3	4.6	5.8		
Saarbrücken U	9.3	3.3	5.8	0.2	
Bielefeld U	6.8	1.5	3.8		1.5
Ilmenau TU	6.7	3.1	3.6	0.02	
Kassel U	5.6	3.1	2.5	0.1	
Tübingen U	5.6	2.4	3.2		
Weimar U	4.6	1.4	3.2	0.04	
Wuppertal U	4.4	3.5	0.9		
Essen U	4.4	2.9	1.4	0.1	
Rostock U	4.4	1.7	2.7		
Freiburg U	4.3	3.0	1.4		
Halle-Wittenberg U	4.3	2.3	1.9		0.1
Siegen U	4.3	2.6	1.6	0.05	
Ulm U	4.3	1.7	2.6		
Hamburg U	4.1	1.5	2.6	0.005	
Leipzig U	3.5	2.1	1.4		
Berlin HU	3.2	1.1	2.1		
Oldenburg U	3.2	1.7	1.4	0.03	
Bonn U	2.8	1.5	1.2	0.05	
München UdBW	2.8	1.7	1.1	0.03	
Bayreuth U	2.4	0.9	1.5		
Jena U	2.4	0.8	1.4	0.1	
Cottbus TU	2.4	1.5	0.7	0.2	
Göttingen U	2.3	0.6	1.6	0.05	
München U	2.3	0.5	1.4	0.4	
Kiel U	2.1	1.3	0.8	0.1	
Würzburg U	1.8	0.9	1.0		
Köln U	1.7	0.2	1.5	0.02	
Augsburg U	1.7	0.5	1.1		
Passau U	1.5	1.4	0.1		
Frankfurt/Main U	1.5	0.5	0.9	0.1	
Hamburg UdBW	1.4	0.6	0.8		
Konstanz U	1.3	0.2	1.2		
Berlin FU	1.2	0.3	0.9		
Mannheim U	1.1	0.8	0.4		
Münster U	1.0	0.9		0.1	
Hagen FernU	1.0	0.7	0.3	0.04	
Heidelberg U	0.9	0.1	0.9		
Düsseldorf U	0.8	0.7	0.2		
Mainz U	0.7	0.1	0.7		
Regensburg U	0.7	0.1	0.6		
Potsdam U	0.5	0.3	0.2		
Berlin HdK	0.5	0.1	0.3		
Koblenz-Landau U	0.4	0.1	0.3		
Gießen U	0.4		0.4		
Trier U	0.3	0.3			
Bamberg U	0.3	0.1	0.1		
Lübeck MedU	0.2	0.2			
Greifswald U	0.2		0.2		
Eichstätt Kath. U	0.2	0.01	0.2		
Marburg U	0.2	0.2			
Hannover MedHo	0.1	0.1			
Hohenheim U	0.1	0.1			
20 other universities	2.7	1.7	1.0		
In total	**756.9**	**267.5**	**479.1**	**3.3**	**7.0**

[1] Only universities which received a total of more than half a million euros in approvals from the DFG in the period stated.

[2] For details on the classification of programmes to programme groups cf. Table 3-1.

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Table A3-15:

DFG approvals 1999 to 2001 in relation to the number of professors/scientists and academics in total per university [1].

University	Professors			Scientists and academics in total	
	Mio. €	n	k € per prof.	n	k € per sci.
Stuttgart U	93.2	243	383.4	2,677	34.8
Hannover MedHo	28.0	86	326.1	1,436	19.5
Karlsruhe U	87.0	267	325.8	2,134	40.8
Aachen TH	119.2	388	307.3	3,930	30.3
Konstanz U	43.2	145	297.8	898	48.1
München TU	116.3	394	295.3	4,100	28.4
Würzburg U	90.3	340	265.7	2,523	35.8
Tübingen U	100.2	406	246.7	3,478	28.8
Freiberg TU	26.1	112	233.0	633	41.2
Heidelberg U	94.2	410	229.8	3,396	27.7
Freiburg U	85.2	375	227.3	3,222	26.5
Ulm U	37.8	178	212.2	1,856	20.4
Kaiserslautern U	30.5	144	211.7	953	32.0
Clausthal TU	15.8	76	207.7	441	35.8
Erlangen-Nürnberg U	95.4	468	203.9	3,340	28.6
Darmstadt TU	53.5	277	193.0	1,743	30.7
Hannover U	65.3	344	189.8	2,207	29.6
Düsseldorf U	43.7	238	183.8	2,115	20.7
Bochum U	72.9	401	181.7	2,354	31.0
Bielefeld U	42.3	237	178.3	1,394	30.3
Braunschweig TU	41.0	231	177.6	1,527	26.9
Hamburg-Harburg TU	17.9	101	176.9	524	34.1
Göttingen U	74.0	427	173.2	2,975	24.9
Berlin TU	67.5	392	172.2	2,402	28.1
Bonn U	81.6	480	170.0	3,133	26.1
München U	116.9	710	164.6	5,129	22.8
Chemnitz TU	25.8	159	162.2	898	28.7
Berlin HU	90.1	562	160.3	4,484	20.1
Marburg U	58.0	364	159.3	2,175	26.7
Bayreuth U	28.1	177	158.5	934	30.0
Frankfurt/Main U	69.4	473	146.7	2,636	26.3
Saarbrücken U	38.5	265	145.2	1,917	20.1
Mainz U	61.2	429	142.7	3,105	19.7
Lübeck MedU	10.6	75	141.0	961	11.0
Dortmund U	42.6	304	140.1	1,523	28.0
Magdeburg U	26.4	192	137.6	1,541	17.1
Regensburg U	34.4	260	132.3	1,788	19.2
Köln U	73.8	565	130.6	3,195	23.1
Bremen U	43.7	343	127.3	1,713	25.5
Berlin FU	76.6	607	126.2	3,169	24.2
Münster U	69.0	559	123.4	3,699	18.6
Gießen U	45.3	370	122.4	2,239	20.2
Hohenheim U	12.8	105	121.8	788	16.2
Jena U	41.5	351	118.3	2,517	16.5
Mannheim U	13.3	114	116.4	712	18.6
Dresden TU	57.2	539	106.1	3,669	15.6
Duisburg U	21.0	212	99.3	891	23.6
Trier U	14.7	151	97.1	673	21.8
Hamburg U	74.1	773	95.9	3,533	21.0
Kiel U	38.4	401	95.8	2,364	16.2
Leipzig U	40.6	433	93.7	2,613	15.5
Augsburg U	12.9	144	89.9	650	19.9
Halle-Wittenberg U	34.6	397	87.1	2,488	13.9
Ilmenau TU	7.7	93	83.3	625	12.4
Essen U	28.9	352	82.1	1,886	15.3
Potsdam U	16.2	200	81.0	1,008	16.1
Oldenburg U	14.6	181	80.6	773	18.9
Osnabrück U	13.8	176	78.4	683	20.2
Hannover TiHo	5.9	77	76.3	312	18.8
Paderborn U	17.5	283	61.8	988	17.7
Weimar U	4.7	82	57.2	430	10.9
Greifswald U	11.2	221	50.7	1,189	9.4
Rostock U	14.0	297	47.2	1,769	7.9
Siegen U	10.8	231	46.9	706	15.3
Wuppertal U	10.0	285	35.1	946	10.6
Kassel U	9.4	273	34.4	943	10.0
Cottbus TU	4.3	129	33.5	599	7.2
Frankfurt/Oder U	2.0	64	30.7	216	9.1
Passau U	2.9	102	28.3	347	8.3
Bamberg U	3.4	127	26.7	392	8.6
München UdBW	4.1	171	24.2	559	7.4
Erfurt U	0.7	31	22.9	87	8.2
Hagen FernU	1.6	75	20.8	418	3.7
Hamburg UdBW	2.0	95	20.8	328	6.0
Lüneburg U	0.9	63	14.9	252	3.7
Koblenz-Landau U	1.7	127	13.6	380	4.5
Hildesheim U	0.5	45	11.4	234	2.2
Eichstätt Kath. U	0.7	117	6.1	315	2.3
Berlin HdK	1.1	197	5.8	366	3.1

[1] Only universities which received a total of more than half a million euros in approvals from the DFG in the period stated (excluding the University of Witten-Herdecke [no staff data]).

Source: Federal Statistical Office (2002), Full time employment scientific and artistic staff according to organisational classification, university, field[illegible]s: 2000), special report.

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Table A3-16:
DFG approvals 1999 to 2001 in relation to the number of professors/scientists and academics in total per university[1]: Humanities and Social Sciences

University		Professors		Scientists and academics in total	
	Mio. €	n	k € per prof.	n	k € per sci.
Konstanz U	18.0	88	205.0	408	44.2
München TU	1.9	14	137.4	95	20.2
Tübingen U	26.9	201	134.0	831	32.4
Stuttgart U	4.7	38	122.7	212	22.0
Mannheim U	10.9	93	117.2	493	22.1
Freiburg U	15.5	135	114.7	604	25.6
Bielefeld U	13.6	133	102.4	576	23.7
Heidelberg U	14.8	151	98.1	629	23.5
Frankfurt/Main U	24.3	249	97.4	886	27.4
Trier U	12.0	126	95.1	564	21.3
Bonn U	17.5	187	93.7	684	25.6
Berlin HU	21.4	238	89.8	1,140	18.7
Düsseldorf U	6.3	78	80.4	345	18.2
Saarbrücken U	8.7	113	76.9	500	17.4
Würzburg U	9.6	125	76.5	489	19.6
München U	22.9	306	74.9	1,270	18.0
Jena U	11.0	149	73.6	652	16.8
Potsdam U	8.1	111	73.4	509	16.0
Berlin FU	20.5	285	71.8	1,066	19.2
Göttingen U	11.8	166	71.4	675	17.6
Gießen U	9.7	139	69.6	509	19.0
Köln U	18.1	278	65.2	1,121	16.2
Bayreuth U	4.9	82	60.3	312	15.8
Marburg U	10.1	172	58.7	526	19.2
Bochum U	11.3	197	57.2	752	15.0
Berlin TU	5.3	99	53.5	372	14.2
Münster U	13.7	257	53.3	1,043	13.1
Augsburg U	5.6	106	53.3	425	13.3
Cottbus TU	0.5	10	51.5	50	10.3
Leipzig U	10.0	204	48.8	779	12.8
Darmstadt TU	2.8	58	48.1	201	13.9
Hamburg U	16.9	361	46.7	1,016	16.6
Aachen TH	3.2	68	46.4	306	10.3
Chemnitz TU	2.9	65	45.1	262	11.2
Magdeburg U	2.5	56	43.9	229	10.7
Karlsruhe U	1.7	40	41.8	206	8.1
Dresden TU	6.4	155	41.2	609	10.5
Mainz U	8.3	210	39.8	795	10.5
Dortmund U	4.7	119	39.8	372	12.7
Osnabrück U	5.0	126	39.4	417	11.9
Regensburg U	5.0	132	37.7	500	10.0
Duisburg U	3.6	99	35.9	323	11.0
Erlangen-Nürnberg U	6.4	185	34.7	707	9.1
Frankfurt/Oder U	2.0	59	33.3	189	10.4
Siegen U	3.7	113	33.0	305	12.2
Kiel U	4.8	146	32.9	471	10.2
Bremen U	6.0	189	31.7	645	9.3
Halle U	4.8	165	29.0	628	7.6
Greifswald U	2.7	97	27.6	332	8.1
Bamberg U	3.1	126	24.8	369	8.5
Oldenburg U	2.5	101	24.5	361	6.8
Erfurt U	0.7	31	22.9	87	8.2
Wuppertal U	2.5	121	20.8	311	8.1
Lüneburg U	0.9	54	17.3	183	5.1
Freiberg TU	0.3	17	16.6	56	5.0
Hannover U	2.3	136	16.6	477	4.7
Ilmenau TU	0.4	22	16.6	83	4.4
Passau U	1.4	85	16.5	222	6.3
Paderborn U	1.4	86	16.3	238	5.9
Koblenz-Landau U	1.2	91	13.7	257	4.9
München UdBW	0.9	68	13.7	153	6.1
Rostock U	1.2	86	13.6	298	3.9
Hildesheim U	0.5	39	13.2	196	2.6
Kaiserslautern U	0.2	15	12.8	69	2.8
Braunschweig TU	0.8	65	12.7	221	3.7
Essen U	1.5	148	9.8	380	3.8
Kassel U	1.2	134	9.1	346	3.5
Hohenheim U	0.3	28	8.9	164	1.5
Hamburg UdBW	0.6	65	8.7	178	3.2
Hagen FernU	0.4	46	8.4	223	1.7
Eichstätt Kath. U	0.5	108	4.9	291	1.8
Berlin HdK	0.7	184	3.6	336	2.0
Weimar U	0.04	28	1.5	73	0.6

[1] Only universities which received a total of more than half a million euros in approvals from the DFG in the period stated and at which ten or more professors were working full time in subjects belonging to the humanities and social sciences in 2000 (excluding the University of Witten-Herdecke [no staff data]).

Source: Federal Statistical Office (2002), Full time employment scientific and artistic staff according to organisational classification, university, fields of teaching and research and staff unit (status: 2000), special report.

Table A3-17:
DFG approvals 1999 to 2001 in relation to the number of professors/scientists and academics in total per university[1]: Biology/Medicine

University		Professors		Scientists and academics in total	
	Mio. €	n	k € per prof.	n	k € per sci.
Bayreuth U	9.5	14	677.3	100	94.8
Konstanz U	14.0	22	638.2	179	78.4
Bielefeld U	10.6	19	555.9	146	72.3
Stuttgart U	5.6	11	511.7	89	63.2
Würzburg U	62.5	133	469.7	1,315	47.5
Tübingen U	43.2	105	411.1	1,908	22.6
Bochum U	21.5	55	391.3	377	57.1
Kaiserslautern U	4.2	11	385.5	89	47.6
Braunschweig TU	6.2	17	364.7	117	53.0
Hannover MedHo	27.8	83	334.8	1,390	20.0
Heidelberg U	52.7	160	329.5	2,033	25.9
Marburg U	34.5	107	322.4	1,140	30.3
Osnabrück U	5.3	17	311.2	119	44.5
Freiburg U	47.1	154	305.9	1,952	24.1
Regensburg U	20.1	71	282.5	894	22.4
Darmstadt TU	4.7	17	275.1	80	58.5
Erlangen-Nürnberg U	35.2	130	271.0	1,268	27.8
München TU	42.3	156	270.9	1,690	25.0
Düsseldorf U	30.0	111	270.5	1,445	20.8
Frankfurt/Main U	30.9	115	268.6	1,169	26.4
Ulm U	24.6	95	258.7	1,275	19.3
Mainz U	31.7	123	258.1	1,666	19.1
München U	70.0	274	255.6	3,006	23.3
Karlsruhe U	2.6	11	239.9	46	57.4
Oldenburg U	3.8	16	238.7	64	59.7
Göttingen U	42.1	181	232.4	1,746	24.1
Bonn U	33.8	150	225.5	1,437	23.5
Berlin HU	49.3	230	214.2	2,796	17.6
Saarbrücken U	13.8	67	206.4	874	15.8
Köln U	39.0	196	198.8	1,502	25.9
Magdeburg U	10.6	54	195.6	672	15.7
Essen U	13.9	74	188.3	913	15.3
Berlin FU	32.7	177	184.6	1,270	25.7
Berlin TU	6.0	33	181.3	170	35.2
Hohenheim U	12.2	69	176.5	505	24.1
Münster U	30.1	175	172.0	1,695	17.8
Aachen TH	13.3	78	170.1	1,200	11.1
Gießen U	29.4	174	168.9	1,417	20.7
Hamburg U	32.5	211	154.2	1,552	21.0
Lübeck MedU	9.4	61	154.1	894	10.5
Hannover U	5.6	37	150.4	194	28.7
Kiel U	18.2	137	133.0	1,131	16.1
Jena U	14.5	110	131.8	1,254	11.6
Bremen U	2.8	24	117.7	123	23.0
Halle-Wittenberg U	15.6	134	116.1	1,182	13.2
Leipzig U	11.9	134	88.9	1,294	9.2
Potsdam U	2.1	25	84.2	107	19.7
Hannover TiHo	5.9	76	77.3	297	19.8
Greifswald U	4.0	79	50.6	639	6.3
Dresden TU	5.5	110	49.8	1,160	4.7
Rostock U	4.5	97	46.8	943	4.8
Kassel U	0.9	28	32.6	106	8.6
Paderborn U	0.1	13	8.3	27	4.0

[1] Only universities which received a total of more than half a million euros in approvals from the DFG in the period stated and at which ten or more professors were working full time in subjects belonging to biology/medicine in 2000 (excluding the University of Witten-Herdecke [no staff data]).

Source: Federal Statistical Office (2002), Full time employment scientific and artistic staff according to organisational classification, university, fields of teaching and research and staff unit (status: 2000), special report.

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Table A3-18:
DFG approvals 1999 to 2001 in relation to the number of professors/scientists and academics in total per university[1]: Natural Sciences

University		Professors		Scientists and academics in total	
	Mio. €	n	k € per prof.	n	k € per sci.
Karlsruhe U	33.8	77	439.3	522	64.8
München TU	29.0	88	329.6	852	34.0
Konstanz U	9.8	31	314.8	255	38.3
Berlin TU	23.5	76	309.1	455	51.6
Bochum U	22.2	74	299.7	509	43.6
Freiburg U	18.3	61	299.7	404	45.2
Stuttgart U	16.0	55	291.4	412	38.9
Heidelberg U	25.8	89	289.4	527	48.9
Tübingen U	24.5	85	288.3	553	44.3
Bonn U	27.4	105	261.4	581	47.2
Mainz U	20.4	81	251.8	548	37.2
Göttingen U	17.7	75	236.6	495	35.9
Berlin HU	16.3	70	232.3	384	42.3
Würzburg U	16.5	73	225.8	425	38.8
Bremen U	16.6	74	224.5	367	45.3
Münster U	24.1	108	223.3	670	36.0
Hannover U	15.7	71	221.7	386	40.8
Kaiserslautern U	9.7	44	220.5	269	36.1
Kiel U	13.3	62	214.1	387	34.3
Leipzig U	15.2	71	213.6	366	41.4
Bielefeld U	11.2	55	204.3	306	36.7
Berlin FU	22.3	110	202.7	617	36.1
Erlangen-Nürnberg U	17.8	91	195.7	506	35.2
Jena U	13.7	72	190.4	500	27.4
Ulm U	8.1	43	189.5	270	30.2
Dresden TU	14.2	78	181.8	399	35.5
Chemnitz TU	6.7	37	181.5	207	32.4
Köln U	14.9	84	177.9	477	31.3
München U	21.7	122	177.7	790	27.4
Essen U	9.1	52	174.9	267	34.1
Freiberg TU	6.3	36	174.5	191	32.9
Augsburg U	5.6	33	170.7	173	32.6
Bayreuth U	11.2	66	170.3	412	27.3
Marburg U	13.3	78	169.9	416	31.9
Regensburg U	8.7	54	160.3	372	23.3
Darmstadt TU	11.5	72	160.1	395	29.2
Aachen TH	15.4	97	158.7	570	27.0
Saarbrücken U	6.7	44	152.4	274	24.5
Gießen U	5.9	41	142.9	205	28.6
Frankfurt/Main U	12.8	90	141.7	441	28.9
Düsseldorf U	6.6	47	140.4	287	23.0
Halle-Wittenberg U	10.0	73	136.4	423	23.5
Hamburg U	20.6	154	133.6	755	27.3
Duisburg U	6.5	49	132.8	214	30.4
Magdeburg U	3.1	23	132.8	127	24.1
Osnabrück U	3.5	28	126.5	120	29.5
Dortmund U	8.5	68	124.7	319	26.6
Potsdam U	5.5	47	116.6	243	22.6
Oldenburg U	5.1	45	113.9	235	21.8
Clausthal TU	3.4	30	112.3	154	21.9
Braunschweig TU	5.9	57	104.3	342	17.4
Greifswald U	4.3	42	102.5	198	21.7
Trier U	1.8	19	94.5	72	24.9
Rostock U	4.0	49	80.8	209	18.9
Siegen U	2.6	42	62.3	160	16.4
Kassel U	1.6	27	61.0	112	14.7
Mannheim U	0.5	10	53.8	27	19.9
Paderborn U	2.8	60	46.7	203	13.8
Cottbus TU	1.0	21	45.4	82	11.6
Wuppertal U	2.8	64	43.6	288	9.7
Ilmenau TU	0.6	16	36.0	75	7.7
Hagen FernU	0.2	10	16.9	32	5.3
Koblenz-Landau U	0.03	15	2.3	33	1.0

[1] Only universities which received a total of more than half a million euros in approvals from the DFG in the period stated and at which ten or more professors were working full time in subjects belonging to the natural sciences in 2000 (excluding the University of Witten-Herdecke [no staff data]).

Source: Federal Statistical Office (2002), Full time employment scientific and artistic staff according to organisational classification, university, fields of teaching and research and staff unit (status: 2000), special report.

Table A3-19:
DFG approvals 1999 to 2001 in relation to the number of professors/scientists and academics in total per university[1]: Engineering Sciences

University		Professors		Scientists and academics in total	
	Mio. €	n	k € per prof.	n	k € per sci.
Aachen TH	87.4	144	607.1	1,759	49.7
Erlangen-Nürnberg U	36.0	60	599.6	619	58.1
Stuttgart U	66.9	131	510.3	1,726	38.7
Tübingen U	5.6	11	507.2	90	62.0
Bremen U	18.2	39	467.6	403	45.3
Hannover U	41.7	93	448.6	1,003	41.6
Karlsruhe U	48.8	131	372.9	1,235	39.6
Freiberg TU	19.3	56	344.3	358	53.9
München TU	43.1	127	339.7	1,366	31.6
Braunschweig TU	28.1	91	308.4	816	34.4
Clausthal TU	12.3	41	299.4	263	46.7
Chemnitz TU	16.1	54	298.9	388	41.6
Bochum U	17.9	60	298.3	508	35.2
Darmstadt TU	34.5	118	292.0	878	39.2
Dortmund U	28.8	105	274.8	762	37.9
Berlin HU	3.2	13	246.5	69	46.4
Saarbrücken U	9.3	38	243.5	206	44.9
Kaiserslautern U	16.4	74	221.0	483	33.9
Bayreuth U	2.4	11	217.4	70	34.2
Oldenburg U	3.2	15	210.9	55	57.5
Halle-Wittenberg U	4.3	21	204.4	135	31.8
Leipzig U	3.5	18	196.6	84	42.1
Freiburg U	4.3	23	189.0	162	26.8
Berlin TU	32.7	175	187.1	1,177	27.8
Magdeburg U	10.3	56	184.8	471	22.0
Duisburg U	11.0	62	177.1	317	34.6
Hamburg U	4.1	24	172.5	103	40.2
Jena U	2.4	14	168.7	61	38.7
Dresden TU	31.1	196	158.8	1,419	21.9
Hamburg-Harburg TU	16.0	101	158.2	486	32.9
Ulm U	4.3	30	142.0	224	19.0
Frankfurt/Main U	1.5	11	133.0	40	36.6
Ilmenau TU	6.7	55	121.5	436	15.3
Paderborn U	13.2	119	110.8	485	27.2
Bonn U	2.8	26	108.7	144	19.6
Mannheim U	1.1	11	103.9	79	14.5
Weimar U	4.6	54	86.1	347	13.4
Kiel U	2.1	28	75.3	155	13.6
Kassel U	5.6	81	69.2	307	18.3
Rostock U	4.4	63	69.2	301	14.5
Essen U	4.4	74	59.6	281	15.7
Siegen U	4.3	73	58.6	212	20.2
Hagen FernU	1.0	19	53.0	112	9.0
Hamburg UdBW	1.4	28	50.3	136	10.4
Wuppertal U	4.4	97	45.8	299	14.9
Berlin HdK	0.5	13	36.0	19	24.6
Koblenz-Landau U	0.4	12	35.9	52	8.3
München UdBW	2.8	103	26.9	379	7.3
Cottbus TU	2.4	98	24.0	453	5.2

[1] Only universities which received a total of more than half a million euros in approvals from the DFG in the period stated and at which ten or more professors were working full time in subjects belonging to the engineering sciences in 2000 (excluding the University of Witten-Herdecke [no staff data]).

Source: Federal Statistical Office (2002), Full time employment scientific and artistic staff according to organisational classification, university, fields of teaching and research and staff unit (status: 2000), special report.

Contents

Table A3-20:
DFG approvals 1999 to 2001 by non-university institution[1] and scientific discipline (in millions of euros)

Institution	Headquarters	Total	Humanities and Social Sciences	Biology/ Medicine	Natural Sciences	Engineering Sciences
Deutsches Krebsforschungszentrum (DKFZ)	Heidelberg	11.9		11.7	0.2	
MPI für Biochemie	Planegg	11.5		11.5		
Max-Delbrück-Centrum für molekulare Medizin (MDC)	Berlin	11.2		10.9	0.1	0.2
MPI für biophysikalische Chemie	Göttingen	9.0		8.3	0.6	0.02
Forschungszentrum Jülich (FZJ)	Jülich	8.7	0.6	2.7	3.0	2.4
GSF – Forschungszentrum für Umwelt und Gesundheit	Oberschleißheim[2]	7.9		7.5	0.3	0.1
Deutsches Zentrum für Luft- und Raumfahrt (DLR)	Köln[2]	7.5	0.1		0.7	6.6
GEOMAR – Forschungszentrum für marine Geosciences	Kiel	7.5			7.5	
Alfred-Wegener-Institut für Polar- und Meeresforschung (AWI)	Bremerhaven[2]	7.1		0.5	6.6	
Bundesanstalt für Materialforschung und -prüfung	Berlin	6.7		0.2	0.9	5.5
Institut für Festkörper- und Werkstoffforschung Dresden	Dresden	6.2			3.8	2.4
Institut für Meereskunde a.d. Uni Kiel	Kiel	5.8		0.7	5.1	
Europäisches Laboratorium für Molekularbiologie (EMBL)	Heidelberg	5.6		5.6		
Forschungszentrum Karlsruhe (FZK)	Karlsruhe	5.4		1.9	0.6	2.9
GeoForschungsZentrum Potsdam (GFZ)	Potsdam	5.3	0.2		5.1	
GWZ – Zentrum für Geschichte und Kultur Ostmitteleuropas	Leipzig	5.0	5.0			
GWZ – Zentrum für Literaturwissenschaft	Berlin	4.6	4.6			
Institut für Pflanzengenetik und Kulturpflanzenforschung	Gatersleben	4.5		4.5		
Forschungszentrum Borstel Zentrum für Medizin und Biowissenschaften	Borstel	4.4		4.4		
MPI für molekulare Physiologie	Dortmund	4.3		4.0	0.2	0.1
GWZ – Zentrum Moderner Orient	Berlin	3.7	3.7			
Forschungsinstitut für Molekulare Pharmakologie	Berlin	3.7		3.6	0.1	
Institut für Kunststoffverarbeitung in Industrie und Handwerk a.d. RWTH	Aachen	3.4				3.4
GWZ – Zentrum für Allgemeine Sprachwissenschaft	Berlin	3.4	3.4			
Physikalisch-Technische Bundesanstalt	Braunschweig[2]	3.4			1.8	1.6
Stiftung Institut für Werkstofftechnik Bremen	Bremen	3.3				3.3
Institut für Polymerforschung Dresden	Dresden	3.2			1.9	1.3
Institut für Verbundwerkstoffe	Kaiserslautern	3.1				3.1
GWZ – Zentrum für Zeithistorische Forschung (ZZF)	Potsdam	3.1	3.1			
Institut für Pflanzenbiochemie	Halle	3.0		3.0	0.001	
Fritz-Haber-Institut der MPG	Berlin	3.0		0.05	2.9	
Max-Born-Institut für Nichtlineare Optik und Kurzzeitspektroskopie	Berlin	2.9		0.3	2.6	0.1
Heinrich-Pette-Institut für Experim. Virologie u. Immunologie a.d. Uni Hamburg	Hamburg	2.9		2.9		
Gesellschaft für Biotechnologische Forschung (GBF)	Braunschweig	2.9		2.4		0.4
MPI für molekulare Genetik	Berlin	2.9		2.9		
MPI für Hirnforschung	Frankfurt/Main	2.8		2.8		
MPI für Festkörperforschung	Stuttgart	2.8			2.4	0.4
Zentralinstitut für Seelische Gesundheit	Mannheim	2.8	0.4	2.4		
MPI für Kohlenforschung	Mülheim/Ruhr	2.7			2.7	0.03
Bernhard-Nocht-Institut für Tropenmedizin	Hamburg	2.7		2.7		
MPI für Polymerforschung	Mainz	2.6		0.5	1.8	0.4
MPI für Neurobiologie	Planegg	2.6		2.6	0.03	

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Institution	Headquarters	Total	Humanities and Social Sciences	Biology/ Medicine	Natural Sciences	Engineering Sciences
Laser Zentrum Hannover	Hannover	2.6			0.4	2.2
MPI für Psychiatrie	München	2.6	0.4	2.2		
MPI für Metallforschung	Stuttgart	2.4			0.8	1.6
GWZ – Zentrum für Europäische Aufklärung (FEA)	Potsdam	2.4	2.4			
Deutsches Institut für Wirtschaftsforschung (DIW)	Berlin	2.3	2.3			
MPI für Kolloid- und Grenzflächenforschung	Golm	2.3		0.4	1.7	0.2
MPI für Entwicklungsbiologie	Tübingen	2.3		2.1		0.2
Forschungszentrum Rossendorf	Dresden	2.2		0.003	1.7	0.5
MPI für Eisenforschung	Düsseldorf	2.2			0.1	2.1
Bremer Institut für Angewandte Strahltechnik BIAS	Bremen	2.2				2.2
Hahn-Meitner-Institut (HMI)	Berlin	2.2		0.3	0.9	0.9
MPI für Biophysik	Frankfurt/Main	2.1		2.1		
Leibniz-Institut für Neurobiologie	Magdeburg	2.1		2.1		
MPI für medizinische Forschung	Heidelberg	2.1		2.1		
Deutsches Archäologisches Institut (DAI)	Berlin[2)]	2.1	2.1			
MPI für Züchtungsforschung	Köln	1.9		1.9		
Heinrich-Hertz-Institut für Nachrichtentechnik	Berlin	1.9			0.2	1.7
Deutsches Diabetes-Forschungsinstitut a.d. Uni Düsseldorf	Düsseldorf	1.9		1.9		
MPI für molekulare Pflanzenphysiologie	Golm	1.8		1.8	0.04	
MPI für Immunbiologie	Freiburg	1.7		1.7		
Georg-Speyer-Haus, Chemotherapeutisches Forschungsinstitut	Frankfurt/Main	1.7		1.7		
MPI für physiologische und klinische Forschung (Kerckhoff-Inst.)	Bad Nauheim	1.7		1.7		
MPI für Mikrostrukturphysik	Halle	1.6			1.1	0.6
Konrad-Zuse-Zentrum für Informationstechnik	Berlin	1.6		0.5	0.8	0.3
FhI für Keramische Technologien (IKTS)	Dresden	1.6				1.6
Leibniz-Institut für Gewässerökologie und Binnenfischerei	Berlin[2)]	1.6		0.3	1.2	
FhI für Silicatforschung (ISC)	Würzburg	1.6			0.3	1.3
MPI für Infektionsbiologie	Berlin	1.6		1.6		
Deutsches Rheumaforschungszentrum Berlin (DRFZ)	Berlin	1.6		1.6		
Weierstraß-Institut für Angewandte Analysis und Stochastik (WIAS)	Berlin	1.5			1.3	0.2
FhI für Werkstoffmechanik (IWM)	Freiburg[2)]	1.5			0.1	1.4
Astrophysikalisches Institut Potsdam (AIP)	Potsdam	1.5			1.5	
MPI für Mathematik in den Naturwissenschaften	Leipzig	1.4			1.4	
Institut für Molekulare Biotechnologie	Jena	1.4		1.4	0.04	
MPI für Kernphysik	Heidelberg	1.4			1.4	
Klinik für Tumorbiologie a.d. Uni Freiburg	Freiburg	1.4		1.1	0.3	
Bayerische Akademie der Wissenschaften	München	1.4	0.8		0.6	
Robert-Koch-Institut	Berlin	1.4		1.4		
Deutsches Herzzentrum Berlin (DHZB)	Berlin	1.4		1.1		0.2
BfA für Viruskrankheiten der Tiere	Insel Riems[2)]	1.3		1.3		
MPI für terrestrische Mikrobiologie	Marburg	1.3		1.3		
Institut für physikalische Hochtechnologie	Jena	1.3		0.2	0.5	0.6
MPI für Quantenoptik	Garching	1.3			1.3	
FhI für Werkzeugmaschinen und Umformtechnik (IWW)	Chemnitz	1.2				1.2
Max-Planck-Arbeitsgruppen für strukturelle Molekularbiologie am DESY	Hamburg	1.2		1.2		
GKSS – Forschungszentrum	Geesthacht	1.2			0.05	1.2
Institut für Oberflächenmodifizierung	Leipzig	1.2			0.5	0.7

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Institution	Headquarters	Total	Humanities and Social Sciences	Biology/ Medicine	Natural Sciences	Engineering Sciences
Forschungsinst. für die Biologie landw. Nutztiere	Dummerstorf	1.2		1.2		
MPI für experimentelle Medizin	Göttingen	1.2		1.2		
FhI für Integrierte Schaltungen (IIS)	Erlangen[2)]	1.2				1.2
FhI für Lasertechnik (ILT)	Aachen	1.2				1.2
Forschungsinstitut und Naturmuseum Senckenberg (SNG)	Frankfurt/Main[2)]	1.2		0.3	0.9	
MPI für Strömungsforschung	Göttingen	1.1			1.1	
Institut für Arbeitsphysiologie a.d. Uni Dortmund	Dortmund	1.1	0.5	0.7		
Berlin-Brandenburgische Akademie der Wissenschaften	Berlin	1.1	1.1			
Institut für Spektrochemie und angewandte Spektroskopie (ISAS)	Dortmund[2)]	1.1			0.9	0.2
FhI für Autonome intelligente Systeme (AiS)	Sankt Augustin	1.1	0.1			1.0
Deutsches Primatenzentrum	Göttingen	1.1	0.1	1.0		
Institut für Hormon- und Fortpflanzungsforschung a.d. Uni Hamburg	Hamburg	1.1		1.1		
Dortmunder Initiative zur rechnerintegrierten Fertigung (RIF)	Dortmund	1.1				1.1
MPI für Molekulare Zellbiologie und Genetik	Dresden[2)]	1.0		1.0		
Hans-Knöll-Institut für Naturstoff-Forschung	Jena	1.0		0.7	0.2	0.1
Deutsches Institut für Ernährungsforschung	Bergholz-Rehbrücke	1.0		1.0		
Institut für Angewandte Chemie Berlin Adlershof	Berlin	1.0			1.0	
Landessternwarte Heidelberg	Heidelberg	1.0			1.0	
DECHEMA – Gesellschaft für Chemische Technik und Biotechnologie	Frankfurt/Main	1.0			0.3	0.7
MPI für Chemische Ökologie	Jena	1.0		0.9	0.1	
Deutsche Schillergesellschaft	Marbach	1.0	1.0			
Biologische Bundesanstalt für Land- und Forstwirtschaft (BBA)	Braunschweig[2)]	1.0		1.0		
Helmholtz-Institut für Biomedizinische Technik a.d. RWTH	Aachen	1.0		0.2		0.7
Landesdenkmalamt Baden-Württemberg	Stuttgart	1.0	1.0			
Zentrum für Europäische Wirtschaftsforschung	Mannheim	1.0	1.0			
IPH – Institut für Integrierte Produktion Hannover	Hannover	1.0				1.0
Germanisches Nationalmuseum	Nürnberg	1.0	1.0			
Heidelberger Akademie der Wissenschaften	Heidelberg	1.0	0.1		0.9	
ACCESS a.d. RWTH Aachen	Aachen	0.9				0.9
Bundesanstalt für Geowissenschaften und Rohstoffe	Hannover	0.9	0.1		0.9	
Stiftung Preussischer Kulturbesitz	Berlin	0.9	0.9			
Bundesforschungsanstalt für Landwirtschaft (FAL)	Braunschweig	0.9		0.8		0.1
Institut für Techno- und Wirtschaftsmathematik (ITMW)	Kaiserslautern	0.9			0.4	0.5
MPI für Chemie	Mainz	0.9			0.9	
FhI für Fertigungstechnik und Angewandte Materialforschung (IFAM)	Bremen[2)]	0.9			0.03	0.9
Wissenschaftszentrum Berlin für Sozialforschung (WZB)	Berlin	0.9	0.9			
Paul-Drude-Institut für Festkörperelektronik	Berlin	0.9			0.7	0.1
Institut für Ostseeforschung (IOW)	Rostock	0.8			0.8	
UFZ – Umweltforschungszentrum Leipzig-Halle	Leipzig[2)]	0.8		0.3	0.5	
Institut für Troposphärenforschung	Leipzig	0.8			0.8	
MPI für marine Mikrobiologie	Bremen	0.8		0.4	0.3	0.02
Kiepenheuer-Institut für Sonnenphysik	Freiburg	0.8			0.8	
Medizinisches Institut für Umwelthygiene (MIUH) a.d. Uni Düsseldorf	Düsseldorf	0.8		0.8		
Potsdam-Institut für Klimafolgenforschung	Potsdam	0.8	0.1		0.4	0.2
MPI für Informatik	Saarbrücken	0.8				0.8
Zoologisches Forschungsinstitut und Museum Alexander Koenig	Bonn	0.7		0.7		
Deutsches Kunststoff-Institut	Darmstadt	0.7			0.4	0.4

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Institution	Headquarters	Total	Humanities and Social Sciences	Biology/ Medicine	Natural Sciences	Engineering Sciences
MPI für neuropsychologische Forschung	Leipzig	0.7	0.6	0.1		
MPI für extraterrestrische Physik	Garching	0.7			0.7	
MPI für Meteorologie	Hamburg	0.7		0.3	0.4	
Zentrum für Agrarlandschafts- und Landnutzungsforschung (ZALF)	Müncheberg	0.7		0.6	0.1	
Deutsches Forschungszentrum für Künstliche Intelligenz (DFKI)	Saarbrücken	0.7				0.7
Deutsches Übersee-Institut	Hamburg	0.7	0.7			
Institut für Organische Katalyseforschung a.d. Uni Rostock	Rostock	0.7			0.7	
FhI für Produktionstechnologie	Aachen	0.7				0.7
Institut für deutsche Sprache (IDS)	Mannheim	0.7	0.7			
MPI für psychologische Forschung	München	0.7	0.7			
Forschungszentrum Informatik a.d. Uni Karlsruhe	Karlsruhe	0.7		0.1		0.5
Ferdinand-Braun-Institut für Höchstfrequenztechnik	Berlin	0.6			0.1	0.6
FhI für Atmosphärische Umweltforschung (IFU)	Garmisch-Partenkirchen	0.6		0.6		
MPI für Bildungsforschung	Berlin	0.6	0.6			
FhI für Informations- und Datenverarbeitung (IITB)	Karlsruhe	0.6	0.2			0.4
FhI für zerstörungsfreie Prüfverfahren (IZPF)	Saarbrücken[2)]	0.6		0.1	0.1	0.4
Stiftung Weimarer Klassik Goethe- und Schiller-Archiv	Weimar	0.6	0.6			
Herzog August Bibliothek	Wolfenbüttel	0.6	0.6			
Paul-Ehrlich Institut	Langen	0.6		0.5	0.1	
Institut für Textil- und Verfahrenstechnik	Denkendorf	0.6				0.6
Franckesche Stiftungen	Halle	0.6	0.6			
MPI für Radioastronomie	Bonn	0.6			0.4	0.1
Institut für Sozialforschung a.d. Uni Frankfurt	Frankfurt	0.6	0.6			
FhI für Angewandte Polymerforschung	Teltow	0.5			0.3	0.2
Institut für Atmosphärenphysik a.d. Uni Rostock	Kühlungsborn	0.5			0.5	
Akademie der Wissenschaften und der Literatur	Mainz	0.5	0.5			
Europäisches Centrum für Mechatronik	Aachen	0.5				0.5
WITEGA – Angewandte Werkstoff-Forschung gGmbH Adlershof	Berlin	0.5			0.1	0.4
MPI für Physik komplexer Systeme	Dresden	0.5			0.5	0.04
MPI für Limnologie	Plön	0.5		0.5	0.1	
Institut für Diabetesforschung	München	0.5		0.5		
MPI für Strahlenchemie	Mülheim/Ruhr	0.5		0.5	0.1	
277 other institutions		45.8	18.0	9.5	9.1	9.1
In total		**399.3**	**60.9**	**162.2**	**95.7**	**80.6**

[1)] Only institutions which received a total of more than half a million euros in approvals from the DFG in the period stated.
[2)] And elsewhere.

Table A3-21:
DFG approvals 1999 to 2001 by non-university institution [1] and programme group [2] (in millions of euros)

Institution	Headquarters	Total	Individual Grants Programme	Coordinated Programme	Direct Promotion of Young Researchers	Prizes
Deutsches Krebsforschungszentrum (DKFZ)	Heidelberg	11.9	4.5	6.7	0.7	
MPI für Biochemie	Planegg	11.5	1.9	7.4	1.8	0.4
Max-Delbrück-Centrum für molekulare Medizin (MDC)	Berlin	11.2	4.4	6.1	0.6	0.1
MPI für biophysikalische Chemie	Göttingen	9.0	2.2	3.5	1.7	1.5
Forschungszentrum Jülich (FZJ)	Jülich	8.7	2.6	5.9	0.2	0.03
GSF – Forschungszentrum für Umwelt und Gesundheit	Oberschleißheim[3]	7.9	2.4	4.9	0.6	
Deutsches Zentrum für Luft- und Raumfahrt (DLR)	Köln[3]	7.5	2.3	5.1	0.1	
GEOMAR – Forschungszentrum für marine Geowissenschaften	Kiel	7.5	4.2	3.1	0.2	
Alfred-Wegener-Institut für Polar- und Meeresforschung (AWI)	Bremerhaven[3]	7.1	2.2	4.6	0.2	
Bundesanstalt für Materialforschung und -prüfung	Berlin	6.7	4.2	2.4		
Institut für Festkörper- und Werkstoffforschung Dresden	Dresden	6.2	2.9	3.3		
Institut für Meereskunde a.d. Universität Kiel	Kiel	5.8	1.1	4.5	0.2	
Europäisches Laboratorium für Molekularbiologie (EMBL)	Heidelberg	5.6	1.4	2.4	0.3	1.5
Forschungszentrum Karlsruhe (FZK)	Karlsruhe	5.4	2.3	2.6	0.6	
GeoForschungsZentrum Potsdam (GFZ)	Potsdam	5.3	2.7	2.3	0.2	
GWZ – Zentrum für Geschichte und Kultur Ostmitteleuropas	Leipzig	5.0	0.03	4.9		
GWZ – Zentrum für Literaturwissenschaft	Berlin	4.6	0.1	4.4		
Institut für Pflanzengenetik und Kulturpflanzenforschung	Gatersleben	4.5	2.3	1.9	0.4	
Forschungszentrum Borstel Zentrum für Medizin und Biowissenschaften	Borstel	4.4	1.7	2.5	0.04	0.1
MPI für molekulare Physiologie	Dortmund	4.3	1.2	1.5	0.1	1.5
GWZ – Zentrum Moderner Orient	Berlin	3.7	0.01	3.7		
Forschungsinstitut für Molekulare Pharmakologie	Berlin	3.7	1.1	2.5	0.1	
Institut für Kunststoffverarbeitung in Industrie und Handwerk a.d. RWTH	Aachen	3.4	1.3	2.1	0.04	
GWZ – Zentrum für Allgemeine Sprachwissenschaft	Berlin	3.4		3.4		
Physikalisch-Technische Bundesanstalt	Braunschweig[3]	3.4	1.2	2.1		
Stiftung Institut für Werkstofftechnik Bremen	Bremen	3.3	1.6	1.7		
Institut für Polymerforschung Dresden	Dresden	3.2	1.5	1.6	0.05	
Institut für Verbundwerkstoffe	Kaiserslautern	3.1	1.9	1.2		
GWZ – Zentrum für Zeithistorische Forschung (ZZF)	Potsdam	3.1	0.04	3.0		
Institut für Pflanzenbiochemie	Halle	3.0	1.5	1.4	0.1	
Fritz-Haber-Institut der MPG	Berlin	3.0	0.4	2.3	0.3	
Max-Born-Institut für Nichtlineare Optik und Kurzzeitspektroskopie	Berlin	2.9	1.1	1.7	0.1	
Heinrich-Pette-Institut für Experim. Virologie und Immunologie a.d. Uni Hamburg	Hamburg	2.9	2.2	0.5	0.2	
Gesellschaft für Biotechnologische Forschung (GBF)	Braunschweig	2.9	1.2	1.7		
MPI für molekulare Genetik	Berlin	2.9	1.4	1.5	0.03	
MPI für Hirnforschung	Frankfurt/Main	2.8	1.1	1.7	0.1	
MPI für Festkörperforschung	Stuttgart	2.8	1.3	1.2		0.2
Zentralinstitut für Seelische Gesundheit	Mannheim	2.8	2.0	0.8	0.02	
MPI für Kohlenforschung	Mülheim/Ruhr	2.7	0.5	0.5	0.02	1.7
Bernhard-Nocht-Institut für Tropenmedizin	Hamburg	2.7	1.6	0.8	0.3	
MPI für Polymerforschung	Mainz	2.6	0.1	1.5	1.0	
MPI für Neurobiologie	Planegg	2.6	0.2	2.4	0.03	

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Institution	Headquarters	Total	Individual Grants Programme	Coordinated Programme	Direct Promotion of Young Researchers	Prizes
Laser Zentrum Hannover	Hannover	2.6	1.0	1.6		
MPI für Psychiatrie	München	2.6	1.1	1.3	0.1	0.1
MPI für Metallforschung	Stuttgart	2.4	1.1	1.2	0.1	
GWZ – Zentrum für Europäische Aufklärung (FEA)	Potsdam	2.4	0.6	1.8		
Deutsches Institut für Wirtschaftsforschung (DIW)	Berlin	2.3	2.3			
MPI für Kolloid- und Grenzflächenforschung	Golm	2.3	0.9	1.1	0.2	
MPI für Entwicklungsbiologie	Tübingen	2.3	1.0	1.2	0.1	
Forschungszentrum Rossendorf	Dresden	2.2	2.0	0.1	0.1	
MPI für Eisenforschung	Düsseldorf	2.2	1.7	0.4	0.1	
Bremer Institut für Angewandte Strahltechnik BIAS	Bremen	2.2	1.4	0.8		
Hahn-Meitner-Institut (HMI)	Berlin	2.2	0.7	1.5	0.03	
MPI für Biophysik	Frankfurt/Main	2.1	0.5	1.5	0.2	
Leibniz-Institut für Neurobiologie	Magdeburg	2.1	0.9	1.2	0.04	
MPI für medizinische Forschung	Heidelberg	2.1	0.2	1.8	0.1	
Deutsches Archäologisches Institut (DAI)	Berlin[3)]	2.1	1.8	0.2	0.1	
MPI für Züchtungsforschung	Köln	1.9	0.8	1.0	0.1	
Heinrich-Hertz-Institut für Nachrichtentechnik	Berlin	1.9	1.3	0.6		
Deutsches Diabetes-Forschungsinstitut a.d. Universität Düsseldorf	Düsseldorf	1.9	1.2	0.7		
MPI für molekulare Pflanzenphysiologie	Golm	1.8	0.8	1.0	0.04	
MPI für Immunbiologie	Freiburg	1.7	0.5	1.3		
Georg-Speyer-Haus, Chemotherapeutisches Forschungsinstitut	Frankfurt/Main	1.7	1.0	0.7		
MPI für physiologische und klinische Forschung (Kerckhoff-Inst.)	Bad Nauheim	1.7	0.5	1.0	0.2	
MPI für Mikrostrukturphysik	Halle	1.6	0.6	1.1		
Konrad-Zuse-Zentrum für Informationstechnik	Berlin	1.6	0.3	1.3		
FhI für Keramische Technologien (IKTS)	Dresden	1.6	0.7	0.9		
Leibniz-Institut für Gewässerökologie und Binnenfischerei	Berlin[3)]	1.6	1.5	0.02	0.1	
FhI für Silicatforschung (ISC)	Würzburg	1.6	0.7	0.9		
MPI für Infektionsbiologie	Berlin	1.6	0.4	1.2		
Deutsches Rheumaforschungszentrum Berlin (DRFZ)	Berlin	1.6	0.9	0.6	0.01	
Weierstraß-Institut für Angewandte Analysis und Stochastik (WIAS)	Berlin	1.5	0.6	1.0		
FhI für Werkstoffmechanik (IWM)	Freiburg[3)]	1.5	0.8	0.7		
Astrophysikalisches Institut Potsdam (AIP)	Potsdam	1.5	1.2	0.2		
MPI für Mathematik in den Naturwissenschaften	Leipzig	1.4		0.4	0.2	0.8
Institut für Molekulare Biotechnologie	Jena	1.4	0.9	0.5		
MPI für Kernphysik	Heidelberg	1.4	0.1	0.8	0.4	0.1
Klinik für Tumorbiologie a.d. Universität Freiburg	Freiburg	1.4	0.5	0.9		
Bayerische Akademie der Wissenschaften	München	1.4	1.3	0.1	0.04	
Robert-Koch-Institut	Berlin	1.4	0.9	0.4	0.03	
Deutsches Herzzentrum Berlin (DHZB)	Berlin	1.4	1.1	0.2	0.1	
BfA für Viruskrankheiten der Tiere	Insel Riems[3)]	1.3	1.0	0.3		
MPI für terrestrische Mikrobiologie	Marburg	1.3	0.4	0.9	0.1	
Institut für physikalische Hochtechnologie	Jena	1.3	0.7	0.5	0.05	
MPI für Quantenoptik	Garching	1.3	0.05	1.2	0.04	
FhI für Werkzeugmaschinen und Umformtechnik (IWW)	Chemnitz	1.2	0.2	1.0		
Max-Planck-Arbeitsgruppen für strukturelle Molekularbiologie am DESY	Hamburg	1.2		1.2		
GKSS – Forschungszentrum	Geesthacht	1.2	0.3	0.9		
Institut für Oberflächenmodifizierung	Leipzig	1.2	0.7	0.6		

>> Continued over

Institution	Headquarters	Total	Individual Grants Programme	Coordinated Programme	Direct Promotion of Young Researchers	Prizes
Forschungsinst. für die Biologie landw. Nutztiere	Dummerstorf	1.2	1.1		0.1	
MPI für experimentelle Medizin	Göttingen	1.2	0.05	0.7		0.4
FhI für Integrierte Schaltungen (IIS)	Erlangen[3)]	1.2		1.2		
FhI für Lasertechnik (ILT)	Aachen	1.2		1.2		
Forschungsinstitut und Naturmuseum Senckenberg (SNG)	Frankfurt/Main[3)]	1.2	0.6	0.5	0.04	
MPI für Strömungsforschung	Göttingen	1.1	0.6	0.6		
Institut für Arbeitsphysiologie a.d. Uni Dortmund	Dortmund	1.1	0.6	0.3	0.3	
Berlin-Brandenburgische Akademie der Wissenschaften	Berlin	1.1	1.1		0.01	
Institut für Spektrochemie und angewandte Spektroskopie (ISAS)	Dortmund[3)]	1.1	1.1	0.03		
FhI für Autonome intelligente Systeme (AiS)	Sankt Augustin	1.1	0.5	0.5	0.05	
Deutsches Primatenzentrum	Göttingen	1.1	0.8	0.2	0.01	
Institut für Hormon- und Fortpflanzungsforschung a.d. Universität Hamburg	Hamburg	1.1	0.8	0.3		
Dortmunder Initiative zur rechnerintegrierten Fertigung (RIF)	Dortmund	1.1	0.5	0.5		
MPI für Molekulare Zellbiologie und Genetik	Dresden[3)]	1.0		1.0		
Hans-Knöll-Institut für Naturstoff-Forschung	Jena	1.0	0.9	0.1		
Deutsches Institut für Ernährungsforschung	Bergholz-Rehbrücke	1.0	0.8	0.1	0.1	
Institut für Angewandte Chemie Berlin Adlershof	Berlin	1.0	0.5	0.5		
Landessternwarte Heidelberg	Heidelberg	1.0	0.3	0.8		
DECHEMA – Gesellschaft für Chemische Technik und Biotechnologie	Frankfurt/Main	1.0	0.8	0.2		
MPI für Chemische Ökologie	Jena	1.0	0.2	0.2	0.7	
Deutsche Schillergesellschaft	Marbach	1.0	1.0			
Biologische Bundesanstalt für Land- und Forstwirtschaft (BBA)	Braunschweig[3)]	1.0	0.8	0.1		
Helmholtz-Institut für Biomedizinische Technik a.d. RWTH	Aachen	1.0	0.5	0.4		
Landesdenkmalamt Baden-Württemberg	Stuttgart	1.0	0.9	0.1		
Zentrum für Europäische Wirtschaftsforschung	Mannheim	1.0	0.2	0.7		
IPH – Institut für Integrierte Produktion Hannover	Hannover	1.0	0.7	0.3		
Germanisches Nationalmuseum	Nürnberg	1.0	1.0			
Heidelberger Akademie der Wissenschaften	Heidelberg	1.0	0.5	0.4	0.1	
ACCESS a.d. RWTH Aachen	Aachen	0.9	0.3	0.6		
Bundesanstalt für Geowissenschaften und Rohstoffe	Hannover	0.9	0.2	0.7		
Stiftung Preussischer Kulturbesitz	Berlin	0.9	0.9			
Bundesforschungsanstalt für Landwirtschaft (FAL)	Braunschweig	0.9	0.6	0.3		
Institut für Techno- und Wirtschaftsmathematik (ITMW)	Kaiserslautern	0.9	0.7	0.2		
MPI für Chemie	Mainz	0.9	0.2	0.6	0.2	
FhI für Fertigungstechnik und Angewandte Materialforschung (IFAM)	Bremen[3)]	0.9	0.2	0.7		
Wissenschaftszentrum Berlin für Sozialforschung (WZB)	Berlin	0.9	0.4	0.3	0.2	
Paul-Drude-Institut für Festkörperelektronik	Berlin	0.9	0.3	0.5		
Institut für Ostseeforschung (IOW)	Rostock	0.8	0.5	0.2	0.1	
UFZ-Umweltforschungszentrum Leipzig-Halle	Leipzig[3)]	0.8	0.5	0.3		
Institut für Troposphärenforschung	Leipzig	0.8	0.8		0.04	
MPI für marine Mikrobiologie	Bremen	0.8	0.4	0.3	0.1	
Kiepenheuer-Institut für Sonnenphysik	Freiburg	0.8	0.7	0.05		
Medizinisches Institut für Umwelthygiene (MIUH) a.d. Uni Düsseldorf	Düsseldorf	0.8	0.4	0.4	0.04	
Potsdam-Institut für Klimafolgenforschung	Potsdam	0.8	0.7	0.04		
MPI für Informatik	Saarbrücken	0.8	0.2	0.6		0.02
Zoologisches Forschungsinstitut und Museum Alexander Koenig	Bonn	0.7	0.7		0.05	
Deutsches Kunststoff-Institut	Darmstadt	0.7	0.4	0.4		

>> Continued over

Institution	Headquarters	Total	Individual Grants Programme	Coordinated Programme	Direct Promotion of Young Researchers	Prizes
MPI für neuropsychologische Forschung	Leipzig	0.7	0.3	0.4	0.05	
MPI für extraterrestrische Physik	Garching	0.7		0.5	0.2	
MPI für Meteorologie	Hamburg	0.7		0.4	0.3	
Zentrum für Agrarlandschafts- und Landnutzungsforschung (ZALF)	Müncheberg	0.7	0.5	0.2	0.02	
Deutsches Forschungszentrum für Künstliche Intelligenz (DFKI) Saarbrücken	Saarbrücken	0.7	0.4	0.3		
Deutsches Übersee-Institut	Hamburg	0.7	0.7			
Institut für Organische Katalyseforschung a.d. Universität Rostock	Rostock	0.7	0.4	0.2	0.1	
FhI für Produktionstechnologie	Aachen	0.7	0.2	0.5		
Institut für deutsche Sprache (IDS)	Mannheim	0.7	0.4	0.3		
MPI für psychologische Forschung	München	0.7	0.2	0.5		
Forschungszentrum Informatik a.d. Universität Karlsruhe	Karlsruhe	0.7	0.1	0.5		
Ferdinand-Braun-Institut für Höchstfrequenztechnik	Berlin	0.6	0.3	0.3		
FhI für Atmosphärische Umweltforschung (IFU)	Garmisch-Partenkirchen	0.6	0.4	0.2		
MPI für Bildungsforschung	Berlin	0.6	0.3	0.2	0.1	
FhI für Informations- und Datenverarbeitung (IITB)	Karlsruhe	0.6	0.2	0.4		
FhI für zerstörungsfreie Prüfverfahren (IZPF)	Saarbrücken[3]	0.6	0.4	0.2		
Stiftung Weimarer Klassik Goethe- und Schiller-Archiv	Weimar	0.6	0.4	0.2		
Herzog August Bibliothek	Wolfenbüttel	0.6	0.6			
Paul-Ehrlich Institut	Langen	0.6	0.6			
Institut für Textil- und Verfahrenstechnik	Denkendorf	0.6	0.6			
Franckesche Stiftungen	Halle	0.6	0.6			
MPI für Radioastronomie	Bonn	0.6		0.6		
Institut für Sozialforschung a.d. Universität Frankfurt	Frankfurt/Main	0.6	0.4	0.1		
FhI für Angewandte Polymerforschung	Teltow	0.5	0.3	0.3		
Institut für Atmosphärenphysik a.d. Universität Rostock	Kühlungsborn	0.5	0.5			
Akademie der Wissenschaften und der Literatur	Mainz	0.5	0.5			
Europäisches Centrum für Mechatronik	Aachen	0.5	0.4	0.2		
WITEGA – Angewandte Werkstoff-Forschung gGmbH Adlershof	Berlin	0.5	0.5			
MPI für Physik komplexer Systeme	Dresden	0.5	0.04	0.3	0.1	0.1
MPI für Limnologie	Plön	0.5	0.4		0.2	
Institut für Diabetesforschung	München	0.5	0.5			
MPI für Strahlenchemie	Mülheim/Ruhr	0.5	0.1	0.4	0.1	
277 other institutions		45.8	28.3	15.9	1.6	0.02
In total		**399.3**	**174.7**	**199.1**	**16.9**	**8.7**

[1] Only institutions which received a total of more than half a million euros in approvals from the DFG in the period stated.

[2] For details on the classification of programmes to programme groups cf. Table 3-1.

[3] And elsewhere.

Table A4-1:

Participation in Collaborative Research Centres 1999 to 2001 by institution[1)] (in brackets: of which as host university) and scientific discipline

Institution	Total	Humanities and Social Sciences	Biology/ Medicine	Natural Sciences	Engineering Sciences
München TU	31 (16)	2	16 (5)	7 (5)	6 (6)
München U	28 (20)	3 (3)	20 (15)	5 (2)	
Berlin HU	23 (8)	2 (1)	14 (5)	7 (2)	
Aachen TH	19 (16)	1	1 (1)	2 (1)	15 (14)
Berlin FU	19 (10)	2 (1)	10 (6)	7 (3)	
Heidelberg U	19 (10)	3	10 (7)	4 (3)	2
Berlin TU	16 (8)		6 (2)	7 (3)	3 (3)
Stuttgart U	15 (12)	1 (1)	1 (1)	2	11 (10)
Würzburg U	14 (12)		12 (10)	2 (2)	
Tübingen U	14 (10)	3 (2)	8 (6)	2 (2)	1
Bonn U	14 (9)	3 (2)	5 (3)	6 (4)	
MPI für Biochemie, Planegg	14		12	2	
Karlsruhe TU	13 (10)	1		3 (3)	9 (7)
Göttingen U	12 (12)	1 (1)	7 (7)	4 (4)	
Köln U	12 (10)	3 (2)	5 (4)	4 (4)	
Bochum U	12 (9)	1	3 (3)	6 (4)	2 (2)
Mainz U	12 (9)	1 (1)	8 (6)	3 (2)	
Erlangen-Nürnberg U	11 (11)		6 (6)	2 (2)	3 (3)
Münster U	11 (10)	3 (3)	4 (4)	4 (3)	
Frankfurt/Main U	11 (8)	3 (3)	6 (4)	1 (1)	1
Hannover U	11 (5)		1	1 (1)	9 (4)
GSF – For.-zentr. f. Umwelt u. Gesundh., Oberschleißheim[2)]	11	1	10		
Freiburg U	10 (8)	1 (1)	7 (5)	2 (2)	
Hamburg U	10 (7)	2 (2)	4 (3)	2 (2)	2
Darmstadt TU	10 (5)		4 (1)	2	4 (4)
Max-Delbrück-Centrum f. molek. Med. (MDC), Berlin	10		10		
Düsseldorf U	9 (6)	1 (1)	6 (5)	2	
Marburg U	9 (6)	1	6 (4)	2 (2)	
Halle-Wittenberg U	9 (3)	3 (1)	4 (1)	2 (1)	
Forschungszentrum Jülich (FZJ)	9		1	3	5
Deutsches Zentrum für Luft- und Raumfahrt (DLR), Köln[2)]	9			2	7
Braunschweig TU	7 (5)		2 (1)		5 (4)
Dresden TU	7 (5)	1 (1)		2 (1)	4 (3)
MPI für Psychiatrie, München	7	1	6		
Potsdam U	7	2	2	3	
Bremen U	6 (6)	1 (1)	1 (1)	1 (1)	3 (3)
Jena U	6 (5)	3 (2)	1 (1)	2 (2)	
Ulm U	6 (5)		4 (3)	1 (1)	1 (1)
Hannover MedHo	6 (4)		6 (4)		
Deutsches Krebsforschungszentr. (DKFZ), Heidelberg	6		5		1
Europ. Laboratorium f. Molekularbiol. (EMBL), Heidelberg	6		6		
Konstanz U	5 (5)	3 (3)		2 (2)	
Chemnitz TU	5 (4)			1 (1)	4 (3)
Gießen U	5 (4)	1 (1)	4 (3)		
Kiel U	5 (4)		3 (2)	2 (2)	
Saarbrücken U	5 (4)	1 (1)	2 (2)	2 (1)	
Clausthal TU	5 (3)			1	4 (3)
Dortmund TU	5 (3)	1 (1)	1		3 (2)
Magdeburg U	5 (2)		4 (2)	1	
Augsburg U	5 (1)	1		4 (1)	
Forschungsinstitut f. Molekulare Pharmakologie, Berlin	5		5		
Fritz-Haber-Institut der MPG, Berlin	5			5	
Inst. f. Kunststoffverarb. in Industrie u. Handwerk, Aachen	5				5
MPI für Entwicklungsbiologie, Tübingen	5		5		
MPI für Neurobiologie, Planegg	5		5		
Bielefeld U	4 (4)	2 (2)	1 (1)	1 (1)	
Bayreuth U	4 (2)	1 (1)	2	1 (1)	
Essen U	4 (2)			3 (2)	1
Hohenheim U	4 (2)		4 (2)		
Leipzig U	4 (2)	2 (1)	1	1 (1)	
Ges. f. Biotechnolog. Forschung (GBF), Braunschweig	4		4		
MPI für biophysikalische Chemie, Göttingen	4		3	1	
MPI für Immunbiologie, Freiburg	4		4		
Physikalisch-Technische Bundesanstalt, Braunschweig[2)]	4			1	3
Hamburg-Harburg TU	3 (3)				3(3)
Duisburg U	3 (2)			1	2 (2)
Regensburg U	3 (1)	1	1 (1)	1	
A.-Wegener-Inst. f. Polar- u. Meeresfor. (AWI), Bremerhaven[2)]	3			3	
For.-zentr. Borstel Zentrum f. Medizin u. Biowiss., Borstel	3		3		
GKSS – Forschungszentrum, Geesthacht	3				3
Max-Born-Inst. f. Nichtlineare Optik u. Kurzzeitspektr., Berlin	3		1	2	

>> Continued over

Institution	Total	Humanities and Social Sciences	Biology/ Medicine	Natural Sciences	Engineering Sciences
MPI für medizinische Forschung, Heidelberg	3		3		
MPI für molekulare Genetik, Berlin	3		3		
MPI für Züchtungsforschung, Köln	3		3		
München UdBW	3	1	1		1
Wuppertal U	3	2		1	
Osnabrück U	2 (2)		1 (1)	1 (1)	
Trier U	2 (2)	1 (1)		1 (1)	
Freiberg TU	2 (1)		1		1 (1)
Kaiserslautern U	2 (1)		1		1 (1)
Lübeck MedU	2 (1)		2 (1)		
Mannheim U	2 (1)	1 (1)			1
Siegen U	2 (1)	2 (1)			
Cottbus TU	1 (1)		1 (1)		
Greifswald U	1 (1)			1 (1)	
Paderborn U	1 (1)				1 (1)
Weimar U	1 (1)				1 (1)
111 other institutions	138	7	54	45	32
In total	**789 (342)**	**77 (42)**	**363 (141)**	**189 (78)**	**160 (81)**

[1] Only institutions which took part in at least three Collaborative Research Centres in the period stated (including Transregional Collaborative Research Centres and Cultural Studies Research Centres) or acted as host university in at least one instance.

[2] And elsewhere.

Table A4-2:
Participation in Transfer Units 1999 to 2001 by university (in brackets: of which as host university) and scientific discipline

Institution	Total	Humanities and Social Sciences	Biology/ Medicine	Natural Sciences	Engineering Sciences
Hannover U	4 (4)				4 (4)
Stuttgart U	4 (4)	1 (1)			3 (3)
Aachen TH	3 (3)				3 (3)
Berlin TU	3 (3)		1 (1)		2 (2)
Bochum U[1]	2 (1)		1 (1)		1
Köln U	2 (2)		2 (2)		
München TU	2 (2)				2 (2)
Saarbrücken U	2 (2)			1 (1)	1 (1)
Tübingen U	2 (2)			2 (2)	
Berlin HU	1 (1)		1 (1)		
Dortmund U[1]	1 (1)				1 (1)
Erlangen-Nürnberg U	1 (1)				1 (1)
Hannover MedHo[2]	1 (1)		1 (1)		
Karlsruhe TU	1 (1)				1 (1)
Lübeck MedU	1 (1)		1 (1)		
Osnabrück U	1 (1)			1 (1)	
Heidelberg U[2]	1		1		
Magdeburg U[2]	1		1		
München U[2]	1		1		
In total	**34 (30)**	**1 (1)**	**10 (7)**	**4 (4)**	**19 (18)**

[1] Joint participation in TFB 62.

[2] Joint participation in TFB 74.

Table A4-3:
Participation in Priority Programmes 1999 to 2001 by institution[1] and scientific discipline

Institution	Total	Humanities and Social Sciences	Biology/ Medicine	Natural Sciences	Engineering Sciences
München TU	63	1	8	21	33
München U	62	11	21	28	2
Aachen TH	60	2	7	18	33
Karlsruhe U	56	2	3	23	28
Darmstadt TU	53	5	3	17	28
Tübingen U	53	11	14	16	12
Hannover U	48	4	6	19	19
Stuttgart U	48	3	3	14	28
Berlin HU	47	13	13	16	5
Erlangen-Nürnberg U	46	2	8	16	20
Freiburg	45	5	17	17	6
Berlin TU	44	4	2	15	23
Hamburg U	44	5	12	22	5
Heidelberg U	44	10	16	16	2
Bochum U	43	6	7	17	13
Göttingen U	43	5	14	17	7
Köln U	43	7	16	16	4
Bonn U	42	5	11	19	7
Bremen U	42	5	3	13	21
Dortmund U	42	6		10	26
Münster U	42	9	13	20	
Würzburg U	39	4	17	13	5
Braunschweig TU	38	1	5	12	20
Berlin FU	35	8	8	15	4
Chemnitz TU	35	3		19	13
Dresden TU	35	2	3	11	19
Kaiserslautern U	33	1	3	11	18
Marburg U	33	5	15	13	
Frankfurt/M. U	31	7	6	16	2
Mainz U	31	2	7	18	4
Bayreuth U	29	3	7	11	8
Kiel U	29	1	6	17	5
Konstanz U	29	7	8	8	6
Saarbrücken U	28	3	3	11	11
Magdeburg	27	6	1	6	14
Ulm U	27	3	5	11	8
Halle-Wittenberg U	25	3	6	7	9
Leipzig U	25	3	5	12	5
Bielefeld U	24	7	1	10	6
Jena U	24	3	4	12	5
Duisburg U	22	5		6	11
Düsseldorf U	22	3	12	5	2
Gießen U	21	4	7	9	1
Paderborn U	21	1		5	15
Regensburg U	21	3	6	8	4
Essen U	20	3	7	5	5
Oldenburg U	20	2	1	10	7
Freiberg TU	19	1		6	12
Rostock U	19		3	9	7
Potsdam U	18	5	4	8	1
Hamburg-Harburg TU	17			2	15
Forschungszentrum Jülich (FZJ)	14		1	8	5
Siegen U	14	3	1	4	6
Clausthal TU	12			4	8
Greifswald U	12	2		8	2
Kassel U	12	3		5	4
Max-Delbrück-Centrum (MDC), Berlin	12		10		2
Augsburg U	11	2		5	4
Deutsches Zentrum f. Luft- u. Raumfahrt (DLR), Köln[2]	11	1		2	8
Forschungszentrum Karlsruhe (FZK)	11		2	3	6
Osnabrück U	11	5	3	3	
Hahn-Meitner-Institut Berlin (HMI)	10		2	4	4
Ilmenau TU	10	1		1	8
MPI f.biophysikalische Chemie, Göttingen	10		8	2	
BA f. Materialforschung u. -prüfung, Berlin	9			3	6
GSF – Forschungszentrum f. Umwelt u. Gesundheit, Oberschleißheim	9		6	2	1

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Contents

Institution	Total	Humanities and Social Sciences	Biology/ Medicine	Natural Sciences	Engineering Sciences
Wuppertal U	9	1		4	4
Deutsches Krebsforschungs-zentrum (DKFZ), Heidelberg	8		8		
Hohenheim U	8	1	7		
Mannheim U	8	3	1	1	3
Cottbus TU	7	2		1	4
Hamburg UdBW	7	1			6
Institut f. Festkörper- u. Werkstoffforschung Dresden	7			3	4
Lübeck MedU	7	1	5	1	
MPI f. Festkörperforschung, Stuttgart	7			5	2
MPI f. Polymerforschung, Mainz	7			3	4
Fhl f. Werkstoffmechanik (IWM), Freiburg[2)]	6				6
Gesellschaft f. Biotechnologische Forschung (GBF), Braunschweig	6		4		2
MPI f. Biochemie, Planegg	6		6		
MPI f. Kolloid- und Grenzflächen-forschung, Golm	6			3	3
MPI f. Metallforschung, Stuttgart	6			3	3
MPI f. Neurobiologie, Planegg	6		6		
Weierstraß-Institut f. Angewand. Analysis u. Stochastik (WIAS), Berlin	6			5	1
Bamberg U	5	4			1
Europäisches Laboratorium f. Mole-kularbiologie (EMBL), Heidelberg	5		5		
GEOMAR – Forschungszentrum f. marine Geowissenschaften, Kiel	5			5	
Hannover MedHo	5	1	4		
Institut f. Pflanzengenetik u. Kultur-pflanzenforschung, Gatersleben	5		5		
Koblenz-Landau U	5	3			2
Laser Zentrum Hannover	5				5
MPI f. Kohlenforschung, Mülheim/Ruhr	5			3	2
MPI f. marine Mikrobiologie, Bremen	5		1	3	1
MPI f. Mikrostrukturphysik, Halle	5			4	1
MPI f. Molekulare Zellbiologie u. Genetik, Dresden[2)]	5		5		
Trier U	5	5			
191 other institutions	329	48	76	102	103
In total	**2,481**	**307**	**513**	**876**	**785**

[1)] Only institutions which took part in five or more Priority Programmes in total.

[2)] And elsewhere.

Contents

Table A4-4:
Participation in Research Units 1999 to 2001 by institution[1] and scientific discipline

Institution	Total	Humanities and Social Sciences	Biology/ Medicine	Natural Sciences	Engineering Sciences
Berlin HU	17	8	6	2	1
München U	14	8	5	1	
Berlin FU	11	4	7		
Heidelberg U	10	2	5	3	
Stuttgart U	10	1		2	7
Darmstadt TU	9		1	3	5
Dortmund U	9	1	6		2
München TU	9	2		1	6
Tübingen U	9	2	4	3	
Bonn U	8	1	7		
Konstanz U	8	3	2	2	1
Regensburg U	8	3	2	3	
Dresden TU	7		1	2	4
Würzburg U	7	3	3	1	
Aachen TH	6		4	1	1
Berlin TU	6		1	2	3
Bielefeld U	6	1	2	3	
Essen U	6		2	2	2
Hannover U	6		2	1	3
Karlsruhe U	6			2	4
Leipzig U	6	4		1	1
Bochum U	5	2	2	1	
Magdeburg U	5			1	4
Braunschweig TU	4		2		2
Erlangen-Nürnberg U	4	1	1		2
Frankfurt/Main U	4	1	2	1	
Halle-Wittenberg U	4	2	1	1	
Hamburg U	4	1	3		
Jena U	4	1	1	1	1
Mannheim U	4	2	1	1	
Münster U	4	1	2	1	
Bayreuth U	3		2	1	
Deutsches Krebsforschungs-zentrum, Heidelberg	3	3			
Freiburg U	3		2	1	
Gießen U	3		1	1	1
Göttingen U	3	1	2		
Hohenheim U	3		2	1	
Kiel U	3		3		
Marburg U	3		1	2	
MPI neuropsychol. Forschung, Leipzig	3	1	1	1	
Potsdam U	3	2	1		
92 other institutions	109	14	39	23	33
In total	**359**	**75**	**129**	**72**	**83**

[1] Only institutions which took part in three or more Research Units in total.

Contents

Table A4-5:
Participation in Research Training Groups 1999 to 2001 by university and scientific discipline

University	Total	Humanities and Social Sciences	Biology/ Medicine	Natural Sciences	Engineering Sciences
Berlin HU	18	6	9	2	1
Heidelberg U	18	5	7	6	
Tübingen U	18	9	5	4	
Göttingen U	17	2	12	2	1
Hamburg U	16	6	4	6	
Bonn U	15	6	3	6	
München U	13	6	5	1	1
Dresden TU	12	2		5	5
Erlangen-Nürnberg U	12	3	5	2	2
Frankfurt/Main U	12	7	2	3	
Bochum U	11	4	3	2	2
Freiburg U	11	6	2	3	
Karlsruhe U	11			6	5
Würzburg U	11	1	8	2	
Aachen TH	10			5	5
Bielefeld U	10	6	2	1	1
Gießen U	10	3	5	2	
Mainz U	10	4	1	5	
Berlin FU	9	6	1	2	
Dortmund U	9	3		5	1
Leipzig U	9	1	3	4	1
Münster U	9	2	1	6	
Saarbrücken U	9	4	1	1	3
Köln U	8	2	3	3	
Berlin TU	7	2		3	2
Darmstadt TU	7	1	1	2	3
Halle-Wittenberg U	7	1	1	5	
Hannover U	7			5	2
Marburg U	7	2	3	2	
Osnabrück U	7	3	2	2	
Bayreuth U	6	1	2	3	
Essen U	6	1		4	1
Jena U	6	4	1	1	
Kiel U	6	4		2	
Regensburg U	6	3		3	
Stuttgart U	6	2		1	3
Freiberg TU	5			3	2
Kaiserslautern U	5		1	4	
Rostock U	5		2	1	2
Düsseldorf U	4		3	1	
Hannover MedHo	4		4		
Kassel U	4	2			2
Konstanz U	4	1	2	1	
Trier U	4	3		1	
Hannover TiHo	3		3		
Mannheim U	3	3			
München TU	3		1	1	1
Paderborn U	3	1		1	1
Siegen U	3	1		2	
Ulm U	3		2	1	
Wuppertal U	3	2		1	
Augsburg U	2	1		1	
Bamberg U	2	2			
Braunschweig TU	2				2
Bremen U	2			2	
Chemnitz TU	2			1	1
Greifswald U	2	1	1		
Hamburg-Harburg TU	2		1		1
Magdeburg U	2		1		1
Oldenburg U	2	1	1		
Potsdam U	2	2			
Berlin HdK	1	1			
Clausthal TU	1			1	
Duisburg U	1			1	
Frankfurt/Oder U	1	1			
Hildesheim U	1	1			
Hohenheim U	1		1		
München HS Phil.	1	1			
Ilmenau TU	1				1
Karlsruhe HS Gestalt.	1	1			
Lübeck MedU	1		1		
In total	**436**	**131**	**114**	**138**	**53**

The following 16 Research Training Groups received partial approvals and were therefore counted more than once: **Humanities and social sciences:** GRK 66 (Berlin FU u. Berlin HU); GRK 121 (Bielefeld U u. Kassel U); GRK 142 (Freiburg U u. Dresden TU); GRK 229 (Heidelberg U u. Saarbrücken U); GRK 260 (Bamberg U u. Berlin TU); GRK 275 (Berlin HU u. Potsdam U); GRK 399 (Jena U u. Leipzig U); GRK 423 (Berlin FU u. Berlin HU); GRK 540 (Bielefeld U u. Dortmund U); GRK 563 (Frankfurt/Main U u. Kassel U); GRK 568 (Marburg U u. Wuppertal U); GRK 762 (Heidelberg U u. Mainz U); **Biology/medicine:** GRK 533 (Gießen U u. Marburg U); GRK 705 (Hannover MedHo u. Hannover TiHo); **Natural sciences:** GRK 56 (Frankfurt/Main U u. Giessen U); GRK 271 (Berlin HU u. Dresden TU).

Contents

Table A4-6:
Institutions with the highest number of partner institutions in DFG coordinated programmes 1999 to 2001 by scientific discipline: Humanities and Social Sciences

Total		Social sciences		History and fine arts studies		Linguistic and literary studies		Psychology, education, philosophy, theology	
Institution	**n**	**Institution**	**n**	**Institution**	**n**	**Institution**	**n**	**Institution**	**n**
Berlin HU	97	Berlin HU	60	München U	44	Berlin HU	19	München U	49
München U	88	Heidelberg U	56	Berlin HU	39	Hamburg U	19	Berlin HU	47
Heidelberg U	82	Bremen U	53	Tübingen U	37	Leipzig U	16	Freiburg U	43
Tübingen U	79	Potsdam U	52	Münster U	33	Bielefeld U	15	Münster U	43
Bielefeld U	71	Berlin FU	51	Trier U	33	Bonn U	14	Würzburg U	41
Berlin FU	69	Dortmund U	47	Heidelberg U	32	Frankfurt/M. U	13	Magdeburg U	40
Dortmund U	69	Bielefeld U	46	Göttingen U	30	Stuttgart U	13	Tübingen U	35
Frankfurt/M. U	69	Frankfurt/M. U	45	Bamberg U	29	Heidelberg U	12	Bielefeld U	33
Potsdam U	67	Hannover U	45	Duisburg U	28	Koblenz-Landau U	12	Bochum U	33
Köln U	64	Tübingen U	44	Frankfurt/M. U	28	Magdeburg U	12	Oldenburg U	32
Konstanz U	63	Trier U	43	Konstanz U	28	Münster U	12	Essen U	30
Bremen U	62	Duisburg U	42	Halle-Wittenbg. U	27	Osnabrück U	12	Heidelberg U	28
Duisburg U	62	Darmstadt TU	41	Jena U	27	Saarbrücken U	12	Dortmund U	27
Bochum U	61	Köln U	41	Hamburg U	26	Tübingen U	11	Erfurt PH	27
Münster U	61	ZEW[1)]	41	Mainz U	26	Bochum U	10	Koblenz-Landau U	27
Marburg U	60	Berlin TU	39	DAI[2)]	25	Konstanz U	10	Hannover H. MuT	26
Magdeburg U	58	Erlangen-Nbg. U	34	Gießen U	25	Berlin FU	9	Köln U	26
Darmstadt TU	57	Kassel U	34	Köln U	25	Bremen U	7	Saarbrücken U	26
Trier U	57	Marburg U	34	Chemnitz TU	24	Erfurt U	7	Konstanz U	25
Bonn U	55	München TU	34	Berlin FU	21	Göttingen U	7	Marburg U	25
		München U	34	Darmstadt TU	21				
		Siegen U	34						
Basis:									
FOR:	21	FOR:	2	FOR:	3	FOR:	10	FOR:	6
GRK:	12	GRK:	4	GRK:	1	GRK:	2	GRK:	5
SFB:	19	SFB:	8	SFB:	6	SFB:	5	SFB:	
SPP:	20	SPP:	7	SPP:	5	SPP:	2	SPP:	6
In total	**72**	**In total**	**21**	**In total**	**15**	**In total**	**19**	**In total**	**17**

[1)] Zentrum für Europäische Wirtschaftsforschung; Mannheim; [2)]Deutsches Archäologisches Institut, Berlin and elsewhere.

This calculation is based on joint participation in the total number of coordinated programmes stated (FOR = Research Units [including Clinical Research Units], GRK = Research Training Groups, SFB = Collaborative Research Centres [including Transfer Units], SPP = Priority Programmes) (cf. Table 4-2).

Table A4-7:
Institutions with the highest number of partner institutions in DFG coordinated programmes 1999 to 2001 by scientific discipline: Biology/Medicine

Total		Medicine		Biology		Veterinary medicine		Agriculture and forestry science	
Institution	**n**	**Institution**	**n**	**Institution**	**n**	**Institution**	**n**	**Institution**	**n**
Freiburg U	99	Heidelberg U	64	München U	82	Hannover MedHo	1	Gießen U	36
München U	95	Würzburg U	62	Freiburg U	77	Hannover TiHo	1	Hohenheim U	36
Hamburg U	92	Freiburg U	60	Marburg U	64			München TU	30
Heidelberg U	89	Köln U	58	Heidelberg U	62			Aachen TH	29
Göttingen U	86	Berlin HU	57	Tübingen U	60			Bayreuth U	29
Köln U	84	Göttingen U	57	Würzburg U	60			Göttingen U	29
Würzburg U	84	München U	57	Berlin HU	59			Halle-Wittenb. U	29
Berlin HU	83	Tübingen U	57	Bayreuth U	58			Hamburg U	29
München TU	82	Marburg U	54	Berlin FU	58			Hannover U	29
Tübingen U	82	Hamburg U	52	Hamburg U	57			Kiel U	29
Marburg U	81	Düsseldorf U	50	München TU	56			GSF[4)]	23
Bochum U	79	Bonn U	49	Münster U	54			Bochum U	22
Berlin FU	77	Erlangen-Nbg. U	49	Köln U	53			Darmstadt TU	22
Bonn U	74	Münster U	48	MPI BiophCh[5)]	53			FAL[6)]	22
Münster U	73	Essen U	44	MDC[1)]	51			IGZ[7)]	22
Düsseldorf U	70	MDC[1)]	42	Göttingen U	49			Jena U	22
Aachen TH	66	MPI Neurobiologie[2)]	42	Hohenheim U	49			Köln U	22
Bayreuth U	66	Frankfurt/M. U	42	Düsseldorf U	46			Konstanz U	22
Frankfurt/M. U	66	Bochum U	41	Regensburg U	46			MPI Biogeoch[8)]	22
MDC[1)]	66	DKFZ[3)]	40	Bonn U	45			Potsdam U	22
		GSF[4)]	40					Rostock U	22
								UFZ[9)]	22
								ZALF[10)]	22
Basis:									
FOR:	31	FOR:	18	FOR:	11	FOR:		FOR:	2
GRK:	2	GRK:	1	GRK:		GRK:	1	GRK:	
SFB:	99	SFB:	46	SFB:	51	SFB:		SFB:	2
SPP:	36	SPP:	16	SPP:	17	SPP:		SPP:	3
In total	**168**	**In total**	**81**	**In total**	**79**	**In total**	**1**	**In total**	**7**

[1)] Max-Delbrück-Centrum, Berlin; [2)] MPI für Neurobiologie, Planegg; [3)] Deutsches Krebsforschungszentrum, Heidelberg; [4)] GSF-Forschungszentrum für Umwelt und Gesundheit, Oberschleißheim and elsewhere; [5)] MPI für biophysikalische Chemie, Göttingen; [6)] Bundesforschungsanstalt für Landwirtschaft, Braunschweig; [7)] Institut für Gemüse- und Zierpflanzenbau, Erfurt; [8)] MPI für Biogeochemie, Jena; [9)] Umweltforschungszentrum, Leipzig; [10)] Zentrum für Agrarlandschafts- und Landnutzungsforschung, Müncheberg.

This calculation is based on joint participation in the total number of coordinated programmes stated (FOR = Research Units [including Clinical Research Units], GRK = Research Training Groups, SFB = Collaborative Research Centres [including Transfer Units], SPP = Priority Programmes) (cf. Table 4-2).

Contents

Table A4-8:
Institutions with the highest number of partner institutions in DFG coordinated programmes 1999 to 2001 by scientific discipline: Natural Sciences

Total		Geosciences		Chemistry		Physics		Mathematics	
Institution	**n**	**Institution**	**n**	**Institution**	**n**	**Institution**	**n**	**Institution**	**n**
Hamburg U	128	Karlsruhe U	71	Darmstadt TU	78	München U	73	Bonn U	61
München U	121	Bochum U	69	Hannover U	75	Hamburg U	72	WIAS[2)]	57
Karlsruhe U	117	München U	69	Chemnitz TU	74	Chemnitz TU	68	Heidelberg U	56
Freiburg U	112	Göttingen U	67	Karlsruhe U	70	Würzburg U	68	Berlin TU	51
München TU	112	Hamburg U	67	München U	67	Bonn U	65	Berlin HU	47
Bonn U	110	Aachen TH	66	Freiburg U	66	München TU	65	Freiburg U	45
Aachen TH	109	Frankfurt/M. U	66	Saarbrücken U	66	Braunschweig TU	64	Kaiserslautern U	44
Kiel U	108	Köln U	64	Ulm U	65	Jena U	64	München TU	43
Berlin FU	106	Münster U	63	Aachen TH	64	Karlsruhe U	64	Saarbrücken U	43
Heidelberg U	106	Bremen U	59	Hamburg U	64	Dortmund U	62	Erlangen-Nbg. U	42
Hannover U	104	München TU	59	Gießen U	62	Stuttgart U	61	Köln U	42
Göttingen U	103	Tübingen U	59	Dresden TU	60	Berlin TU	59	Chemnitz TU	40
Berlin TU	102	Kiel U	57	München TU	60	Mainz U	59	Tübingen U	40
Bochum U	102	Freiberg TU	56	Münster U	59	Dresden TU	58	Duisburg U	38
Chemnitz TU	102	Heidelberg U	55	Marburg U	58	Kaiserslautern U	58	Mainz U	37
Frankfurt/M. U	101	Berlin FU	54	Leipzig U	56	Darmstadt TU	57	Stuttgart U	37
Jena U	101	Hannover U	54	Bielefeld U	55	FZJ[1)]	57	Kiel U	35
Münster U	100	Mainz U	54	Erlangen-Nbg. U	55	Konstanz U	57	Bochum U	33
Darmstadt TU	98	Bonn U	52	Bochum U	54	Ulm U	57	Bremen U	33
Mainz U	98	Halle-Wittenberg U	52	Kiel U	53	Kiel U	56	Frankfurt/M. U	33
Tübingen U	98	Leipzig U	52	Mainz U	53				
Basis:									
FOR:	19	FOR:	2	FOR:	4	FOR:	9	FOR:	4
GRK:	2	GRK:		GRK:		GRK:	2	GRK:	
SFB:	55	SFB:	7	SFB:	16	SFB:	28	SFB:	4
SPP:	46	SPP:	11	SPP:	13	SPP:	15	SPP:	7
In total	**122**	**In total**	**20**	**In total**	**33**	**In total**	**54**	**In total**	**15**

[1)] Forschungszentrum Jülich; [2)] Weierstrass-Institut für Angewandte Analysis und Stochastik, Berlin.

This calculation is based on joint participation in the total number of coordinated programmes stated (FOR = Research Units [including Clinical Research Units], GRK = Research Training Groups, SFB = Collaborative Research Centres [including Transfer Units], SPP = Priority Programmes) (cf. Table 4-2).

Table A4-9:
Institutions with the highest number of partner institutions in DFG coordinated programmes 1999 to 2001 by scientific discipline: Engineering Sciences

Total		General engineering sciences and mechanical engineering		Architecture, urban development, civil engineering		Mining and metallurgy		Electrical engineering, computer science	
Institution	**n**	**Institution**	**n**	**Institution**	**n**	**Institution**	**n**	**Institution**	**n**
Aachen TH	126	München TU	99	Darmstadt TU	16	Braunschweig TU	21	München TU	71
München TU	126	Aachen TH	98	Hannover U	13	Stuttgart U	21	Dortmund U	68
Stuttgart U	121	Darmstadt TU	97	Dresden TU	12	Aachen TH	20	Stuttgart U	68
Karlsruhe U	120	Karlsruhe U	92	Stuttgart U	12	ACCESS[7)]	20	Karlsruhe U	65
Darmstadt TU	118	Stuttgart U	84	Weimar U	12	BA Materialf.[2)]	20	Aachen TH	64
Dortmund U	116	Berlin TU	81	Karlsruhe U	11	Berlin TU	20	Bremen U	60
Berlin TU	113	Bremen U	80	Berlin TU	10	Bremen U	20	Kaiserslautern U	59
Bremen U	111	Dresden TU	77	Bochum U	10	Dortmund U	20	Darmstadt TU	57
Braunschweig TU	102	Freiberg TU	77	Bonn U	10	Erlangen-Nbg. U	20	Paderborn U	57
Erlangen-Nbg. U	101	Magdeburg U	77	Cottbus TU	10	FHI EMI[8)]	20	Berlin TU	55
Kaiserslautern U	98	Erlangen-Nbg. U	76	München TU	10	FHI FAM[9)]	20	Braunschweig TU	50
Dresden TU	94	Braunschweig TU	75	Wuppertal U	10	FHI WM[10)]	20	Chemnitz TU	50
Magdeburg U	92	Dortmund U	75	BA Materialf.[2)]	6	Freiberg TU	20	Dresden TU	49
Saarbrücken U	90	Clausthal TU	71	Dortmund U	6	FWBI[11)]	20	Erlangen-Nbg. U	49
Paderborn U	88	Hannover U	70	FHI ZPF[3)]	6	Hannover U	20	Freiburg U	49
Hannover U	86	Saarbrücken U	68	Kassel U	6	IVW[12)]	20	Konstanz U	48
Freiberg TU	83	Bayreuth U	67	MFPA[4)]	6	Kaiserslautern U	20	Duisburg U	45
Hamburg-Harb. TU	83	DLR[1)]	66	Braunschweig TU	4	Kassel U	20	Augsburg U	44
Chemnitz TU	82	Hamburg-Harb. TU	64	Kaiserslautern U	3	LZH[13)]	20	Bonn U	44
Bochum U	81	Kaiserslautern U	64	PTB[5)]	2	Paderborn U	20	Hamburg-Harb. TU	44
				ZSW BW[6)]	2	SWM[14)]	20		
Basis:									
FOR:	22	FOR:	11	FOR:	4	FOR:	1	FOR:	6
GRK:		GRK:		GRK:		GRK:		GRK:	
SFB:	55	SFB:	48	SFB:	2	SFB:		SFB:	5
SPP:	50	SPP:	29	SPP:	1	SPP:	1	SPP:	19
In total	**127**	**In total**	**88**	**In total**	**7**	**In total**	**2**	**In total**	**30**

[1)] Deutsches Zentrum für Luft- und Raumfahrt, Köln and elsewhere; [2)] Bundesanstalt für Materialforschung, Berlin; [3)] Fraunhofer-Institut für zerstörungsfreie Prüfverfahren, Saarbrücken; [4)] Materialforschungs- und -prüfanstalt an der Bauhaus-Universität Weimar; [5)] Physikalisch-Technische Bundesanstalt, Braunschweig and elsewhere; [6)] Zentrum für Sonnenenergie- und Wasserstoff-Forschung, Stuttgart; [7)] ACCESS a.d. RWTH Aachen; [8)] Fraunhofer-Institut für Kurzzeitdynamik, Ernst-Mach-Institut, Freiburg and elsewhere; [9)] Fraunhofer-Institut für Fertigungstechnik und Angewandte Materialforschung, Bremen; [10)] Fraunhofer-Institut für Werkstoffmechanik, Freiburg; [11)] Friedrich-Wilhelm-Bessel-Institut Forschungsgesellschaft, Bremen; [12)] Institut für Verbundwerkstoffe, Kaiserslautern; [13)] Laser Zentrum Hannover; [14)] Struktur- und Werkstoffmechanikforschung Dresden GmbH a. d. TU.

This calculation is based on joint participation in the total number of coordinated programmes stated (FOR = Research Units [including Clinical Research Units], GRK = Research Training Groups, SFB = Collaborative Research Centres [including Transfer Units], SPP = Priority Programmes) (cf. Table 4-2).

Contents

Table A5-1:
DFG reviewers 1999 to 2001 by institution[1)] and scientific discipline

Institution	Total	Humanities and Social Sciences	Biology/ Medicine	Natural Sciences	Engineering Sciences
München U	309	110	148	47	4
Freiburg U	243	81	115	40	7
München TU	242	7	101	54	80
Tübingen U	242	91	97	51	3
Bonn U	233	78	97	52	6
Heidelberg U	221	60	110	47	4
Berlin HU	218	84	101	30	3
Berlin FU	215	84	77	50	4
Göttingen U	215	59	105	43	8
Hamburg U	215	83	74	49	9
Erlangen-Nürnberg U	211	50	78	45	38
Bochum U	209	56	67	43	43
Münster U	209	54	95	51	9
Köln U	203	90	76	34	3
Aachen TH	201	13	43	49	96
Würzburg U	174	31	103	37	3
Frankfurt/Main U	169	67	63	33	6
Mainz U	158	43	73	41	1
Marburg U	148	44	81	23	
Berlin TU	143	24	9	49	61
Dresden TU	139	19	29	36	55
Karlsruhe U	138	7	14	49	68
Kiel U	135	38	58	30	9
Stuttgart U	127	12	13	41	61
Gießen U	125	25	82	15	3
Darmstadt TU	121	11	11	29	70
Düsseldorf U	117	23	76	16	2
Regensburg U	105	36	50	19	
Braunschweig TU	104	11	19	24	50
Jena U	104	36	34	28	6
Hannover U	103	11	15	30	47
Saarbrücken U	101	27	38	16	20
Halle-Wittenberg U	100	25	46	18	11
Essen U	99	9	54	22	14
Ulm U	93	3	60	19	11
Bielefeld U	92	40	22	26	4
Leipzig U	91	37	28	19	7
Dortmund U	86	19	2	22	43
Konstanz U	86	36	27	22	1
Bayreuth U	73	17	27	21	8
Bremen U	73	16	12	27	18
Magdeburg U	63	11	25	7	20
Kaiserslautern U	62	2	13	15	32
Hannover MedHo	60		59		1
Duisburg U	56	16		19	21
Rostock U	56	12	16	17	11
Mannheim U	55	42	5	5	3
Kassel U	49	16	5	5	23

>> Continued over

Institution	Total	Humanities and Social Sciences	Biology/ Medicine	Natural Sciences	Engineering Sciences
Trier U	45	38	3	2	2
Paderborn U	43	13		9	21
Potsdam U	43	26	10	7	
Hamburg-Harburg TU	42	3	3	4	32
Hohenheim U	42	4	37	1	
Lübeck MedU	41	2	36	1	2
Dt. Krebsforschungszentrum (DKFZ), Heidelberg	41		39	2	
Wuppertal U	40	10	1	14	15
Clausthal TU	39			8	31
Osnabrück U	38	16	10	10	2
Siegen U	38	13	2	8	15
Augsburg U	37	18	1	17	1
Forschungszentrum Jülich (FZJ)	36		6	18	12
Chemnitz TU	35	5	1	14	15
Oldenburg U	35	14	6	7	8
Greifswald U	31	11	12	8	
Freiberg TU	30	2		8	20
Bamberg U	29	27			2
Max-Delbrück-Centrum für molekulare Medizin (MDC), Berlin	27		26	1	
Deutsches Zentrum für Luft- und Raumfahrt (DLR), Köln[2)]	24		1	2	21
Hannover TiHo	23		23		
GSF – For.zentrum f. Umwelt und Gesundheit, Oberschleißheim[2)]	22		19	2	1
MPI für Biochemie, Planegg	22		19	3	
MPI für biophysikalische Chemie, Göttingen	21		18	3	
München UdBW	20	5	2	3	10
Cottbus TU	17	1	3	2	11
Ilmenau TU	15	2	2	1	10
Passau U	15	10		2	3
Forschungszentrum Karlsruhe (FZK)	14		3	5	6
Physikalisch-Technische Bundesanstalt, Braunschweig[2)]	14	1	4	3	6
Erfurt U	13	13			
Weimar U	13	3			10
Institut f. Pflanzengenetik u. Kulturpflanzenf., Gatersleben	13	1	12		
Bundesanstalt für Materialforschung und -prüfung, Berlin	13			2	11
Forschungszentrum Borstel Zentrum f. Medizin u. Biowissen., Borstel	12		12		
Institut für Meereskunde a.d. Universität Kiel	12		1	11	
Wissenschaftszentrum Berlin für Sozialforschung (WZB)	12	12			
Deutsches Archäologisches Institut (DAI), Berlin[2)]	12	11			1
Eichstätt Kath. U	10	7		2	1
Hamburg UdBW	10	3			7
Alfred-Wegener-Institut f. Polar- u. Meeresf. (AWI), Bremerhaven[2)]	10		1	9	
Gesellschaft f. Biotechnologische Forschung (GBF), Braunschweig	10		8		2
MPI für Eisenforschung, Düsseldorf	10			1	9
MPI für Festkörperforschung, Stuttgart	10			9	1
MPI für Metallforschung, Stuttgart	10			3	7
311 other institutions	1,885	465	1,721	1,239	274
In total	**9,765**	**2,502**	**3,450**	**2,147**	**1,576**

[1)] Institutions with ten or more DFG reviewers.

[2)] And elsewhere.

Contents

Table A5-2:
Institutions with the highest number of DFG reviewers 1999 to 2001 by research area: Humanities and Social Sciences

Total			Social sciences			History and fine arts studies			Linguistic and literary studies			Psychology, education, philosophy, theology		
Institution	n	cum. %	Institution	n	cum. %	Institution	n	cum. %	Institution	n	cum. %	Institution	n	cum. %
München U	110	4,4	Bonn U	32	5.2	Köln U	34	4.9	München U	27	5.2	München U	31	4.6
Tübingen U	91	8.0	Berlin HU	29	10.0	Berlin FU	29	9.1	Hamburg U	22	9.5	Tübingen U	24	8.1
Köln U	90	11.6	Köln U	28	14.6	Hamburg U	29	13.2	Berlin FU	21	13.6	Münster U	23	11.5
Berlin FU	84	15.0	München U	27	19.0	Tübingen U	27	17.1	Tübingen U	21	17.7	Freiburg U	22	14.7
Berlin HU	84	18.3	Frankfurt/M. U	23	22.7	München U	25	20.7	Freiburg U	19	21.4	Göttingen U	20	17.6
Hamburg U	83	21.7	Berlin U	20	26.0	Freiburg U	24	24.1	Berlin HU	18	24.9	Berlin HU	19	20.4
Freiburg U	81	24.9	Mannheim U	20	29.3	Göttingen U	21	27.2	Köln U	16	28.0	Bochum U	18	23.1
Bonn U	78	28.0	Tübingen U	19	32.4	Heidelberg U	21	30.2	Frankfurt/M. U	13	30.5	Bonn U	18	25.7
Frankfurt/M. U	67	30.7	Freiburg U	16	35.0	Frankfurt/M. U	19	32.9	Bonn U	12	32.8	Heidelberg U	17	28.2
Heidelberg U	60	33.1	Hamburg U	16	37.6	Berlin HU	18	35.5	Bochum U	11	35.0	Marburg U	17	30.7
Göttingen U	59	35.5	Bochum U	14	39.9	Erlangen-Nbg. U	17	37.9	Göttingen U	11	37.1	Hamburg U	16	33.1
Bochum U	56	37.7	Erlangen U	13	42.1	Bonn U	16	40.2	Konstanz U	11	39.2	Jena U	15	35.3
Münster U	54	39.8	Berlin U	12	44.0	Marburg U	15	42.4	Mainz U	11	41.4	Berlin FU	14	37.4
Erlangen-Nbg. U	50	41.8	Bielefeld U	12	46.0	Würzburg U	14	44.4	Heidelberg U	10	43.3	Potsdam U	14	39.4
Marburg U	44	43.6	Heidelberg U	12	48.0	Berlin U	13	46.3	Saarbrücken U	10	45.2	Regensburg U	13	41.3
Mainz U	43	45.3	Konstanz U	11	49.8	Bochum U	13	48.1	Bielefeld U	9	47.0	Trier U	13	43.2
Mannheim U	42	47.0	Mainz U	11	51.6	Kiel U	12	49.9	Düsseldorf U	9	48.7	Bielefeld U	12	45.0
Bielefeld U	40	48.6	Münster U	11	53.4	Leipzig U	12	51.6	Kiel U	9	50.5	Erlangen-Nbg. U	12	46.8
Kiel U	38	50.1	Kiel U	10	55.0	DAI[1)]	11	53.2	Mannheim U	9	52.2	Frankfurt/M. U	12	48.5
Trier U	38	51.6	Bamberg U	9	56.5	Münster U	11	54.7	Münster U	9	54.0	Köln U	12	50.3
			Dortmund U	9	57.9				Trier U	9	55.7	Leipzig U	12	52.1
												Mainz U	12	53.8
157 other institutions	1,210	48.4	73 other institutions	257	42.1	88 other institutions	315	45.3	59 other institutions	228	44.3	74 other institutions	314	46.2
In total	**2,502**	**100.0**	**In total**	**611**	**100.0**	**In total**	**696**	**100.0**	**In total**	**515**	**100.0**	**In total**	**680**	**100.0**

[1)] Deutsches Archäologisches Institut, Berlin and elsewhere.

Table A5-3:
Institutions with the highest number of DFG reviewers 1999 to 2001 by research area: Biology/Medicine

Total			Medicine			Biology			Veterinary medicine			Agriculture and forestry science		
Institution	**n**	**cum. %**	**Institution**	**n**	**cum. %**	**Institution**	**n**	**cum. %**	**Institution**	**n**	**cum. %**	**Institution**	**n**	**cum. %**
München U	148	4.2	München U	103	4.8	München U	36	3.7	Hannover U	8	12.1	München TU	37	10.4
Freiburg U	115	7.4	Heidelberg U	83	8.7	Bochum U	30	6.7	Gießen U	7	22.7	Göttingen U	33	19.7
Heidelberg U	110	10.5	Freiburg U	81	12.5	Tübingen U	28	9.6	München U	6	31.8	Hohenheim U	28	27.5
Göttingen U	105	13.5	Würzburg U	73	15.9	Würzburg U	28	12.4	Berlin FU	3	36.4	Bonn U	25	34.6
Würzburg U	103	16.4	Berlin HU	72	19.3	Göttingen U	25	14.9	Ulm U	3	40.9	Gießen U	22	40.7
Berlin HU	101	19.3	Münster U	68	22.5	Heidelberg U	25	17.5	Frankfurt/M. U	2	43.9	Kiel U	14	44.7
München TU	101	22.1	Tübingen U	66	25.6	Münster U	25	20.0	Freiburg U	2	47.0	Halle U	11	47.8
Bonn U	97	24.9	Erlangen-Nbg. U	63	28.5	Freiburg U	24	22.5	Göttingen U	2	50.0	Hannover U	11	50.8
Tübingen U	97	27.6	Marburg U	56	31.2	Köln U	23	24.8	Leipzig U	2	53.0	Braunschweig U	9	53.4
Münster U	95	30.3	Hannover MedHo	54	33.7	Marburg U	23	27.1	Mainz U	2	56.1	Berlin HU	8	55.6
Gießen U	82	32.6	Mainz U	53	36.2	Berlin FU	22	29.4	Tübingen U	2	59.1	Freiburg U	8	57.9
Marburg U	81	34.9	Düsseldorf U	53	38.7	Bonn U	22	31.6				BBA[1]	7	59.8
Erlangen-Nbg. U	78	37.1	Köln U	52	41.1	Düsseldorf U	21	33.7				FAL[2]	7	61.8
Berlin FU	77	39.3	Essen U	50	43.4	Berlin HU	20	35.8				Bayreuth U	6	63.5
Düsseldorf U	76	41.4	Bonn U	49	45.7	Halle U	20	37.8				Berlin FU	6	65.2
Köln U	76	43.6	Hamburg U	48	48.0	Hamburg U	19	39.7				Hamburg U	6	66.9
Hamburg U	74	45.6	Berlin FU	46	50.1	Konstanz U	19	41.7				Dresden TU	5	68.3
Mainz U	73	47.7	München TU	46	52.3	München TU	18	43.5				Hannover TiHo	5	69.7
Bochum U	67	49.6	Göttingen U	45	54.4	Frankfurt/M. U	17	45.2				Berlin TU	4	70.8
Frankfurt/M. U	63	51.4	Frankfurt/M. U	44	56.5	Bayreuth U	16	46.8				FBN[3]	4	71.9
			Ulm U	44	58.5	Mainz U	16	48.5				GSF[4]	4	73.0
						Regensburg U	16	50.1				Jena U	4	74.2
												Rostock U	4	75.3
163 other institutions	1,721	48.6	107 other institutions	885	41.5	100 other institutions	491	49.9	19 other institutions	19	40.9	46 other institutions	88	24.7
In total	**3,540**	**100.0**	**In total**	**2,134**	**100.0**	**In total**	**984**	**100.0**	**In total**	**66**	**100.0**	**In total**	**356**	**100.0**

[1] Biologische Bundesanstalt für Land- und Forstwirtschaft, Marburg; [2] Bundesforschungsanstalt für Landwirtschaft, Braunschweig; [3] Forschungsinstitut für die Biologie landwirtschaftlicher Nutztiere, Dummerstorf; [4] Forschungszentrum für Umwelt und Gesundheit, Oberschleißheim.

Table A5-4:
Institutions with the highest number of DFG reviewers 1999 to 2001 by research area: Natural Sciences

Total			Geosciences			Chemistry			Physics			Mathematics		
Institution	**n**	**cum. %**	**Institution**	**n**	**cum. %**	**Institution**	**n**	**cum. %**	**Institution**	**n**	**cum. %**	**Institution**	**n**	**cum. %**
München TU	54	2.5	Tübingen U	23	5.2	München TU	22	3.8	Hamburg U	24	3.0	Heidelberg U	14	4.3
Bonn U	52	4.9	Aachen TH	14	8.4	Münster U	17	6.7	München TU	21	5.7	Bonn U	11	7.6
Münster U	51	7.3	Berlin TU	14	11.6	Aachen TH	16	9.5	München U	20	8.2	Bielefeld U	10	10.6
Tübingen U	51	9.7	Bonn U	14	14.7	Berlin FU	15	12.0	Bochum U	19	10.6	Münster U	9	13.4
Berlin FU	50	12.0	Karlsruhe U	14	17.9	Berlin TU	14	14.5	Bonn U	19	12.9	Stuttgart U	9	16.1
Aachen TH	49	14.3	Münster U	14	21.1	Freiburg U	14	16.9	Erlangen-Nbg. U	17	15.1	Aachen TH	8	18.5
Berlin TU	49	16.6	Bremen U	13	24.0	Heidelberg U	14	19.3	Karlsruhe U	17	17.2	Berlin HU	8	21.0
Hamburg U	49	18.9	Göttingen U	13	27.0	Stuttgart U	14	21.7	Berlin FU	16	19.2	Berlin TU	8	23.4
Karlsruhe U	49	21.1	Berlin FU	12	29.7	Göttingen U	13	23.9	FZJ[1]	16	21.2	Erlangen-Nbg. U	8	25.8
Heidelberg U	47	23.3	Kiel U	12	32.4	Karlsruhe U	13	26.2	Hannover U	15	23.1	Augsburg U	7	28.0
München U	47	25.5	Bochum U	11	34.9	Mainz U	13	28.4	Heidelberg U	15	25.0	Berlin FU	7	30.1
Erlangen-Nbg. U	45	27.6	Frankfurt/M. U	11	37.4	Marburg U	13	30.6	Mainz U	15	26.9	Duisburg U	7	32.2
Bochum U	43	29.6	München U	11	39.9	Tübingen U	13	32.9	Berlin TU	13	28.5	Freiburg U	7	34.3
Göttingen U	43	31.6	Erlangen-Nbg. U	10	42.2	München U	12	34.9	Freiburg U	12	30.0	Jena U	6	36.2
Mainz U	41	33.5	Köln U	10	44.4	Würzburg U	12	37.0	Göttingen U	12	31.5	Paderborn U	6	38.0
Stuttgart U	41	35.4	Dresden TU	9	46.5	Dresden TU	11	38.9	Konstanz U	12	33.0	Tübingen U	6	39.8
Freiburg U	40	37.3	Hamburg U	9	48.5	Hamburg U	11	40.8	Aachen TH	11	34.4	Würzburg U	6	41.6
Würzburg U	37	39.0	Mainz U	9	50.6	Erlangen-Nbg. U	10	42.5	Berlin HU	11	35.8			
Dresden TU	36	40.7	Stuttgart U	9	52.6	Köln U	10	44.2	Dortmund U	11	37.2			
Köln U	34	42.3	Würzburg U	9	54.6	Ulm U	10	46.0	Dresden TU	11	38.6			
									IFM[2]	11	39.9			
									Münster U	11	41.3			
147 other institutions	1,239	57.7	54 other institutions	200	45.4	73 other institutions	314	54.0	83 other institutions	467	58.7	52 other institutions	192	58.4
In total	**2,147**	**100.0**	**In total**	**441**	**100.0**	**In total**	**581**	**100.0**	**In total**	**796**	**100.0**	**In total**	**329**	**100.0**

[1] Forschungszentrum Jülich; [2] Institut für Meereskunde a.d. Universität Kiel.

Table A5-5:
Institutions with the highest number of DFG reviewers 1999 to 2001 by research area: Engineering Sciences

Total			General engineering sciences and mechanical engineering			Architecture, urban development, civil engineering			Mining and metallurgy			Electrical engineering, computer science		
Institution	n	cum. %	Institution	n	cum. %	Institution	n	cum. %	Institution	n	cum. %	Institution	n	cum. %
Aachen TH	96	6.1	Aachen TH	48	5.8	Aachen TH	21	8.2	Clausthal U	12	9.6	München TU	25	6.8
München TU	80	11.2	Darmstadt U	41	10.8	München TU	18	15.2	Aachen TH	10	17.6	Darmstadt U	19	11.9
Darmstadt U	70	15.6	Berlin TU	39	15.5	Hannover U	15	21.1	MPIE[2)]	8	24.0	Aachen TH	17	16.5
Karlsruhe U	68	19.9	Karlsruhe U	35	19.7	Karlsruhe U	14	26.6	Erlangen-Nbg. U	6	28.8	Karlsruhe U	15	20.6
Berlin TU	61	23.8	München TU	35	24.0	Braunschweig U	12	31.3	Stuttgart U	6	33.6	Erlangen-Nbg. U	13	24.1
Stuttgart U	61	27.7	Dresden TU	33	28.0	Dresden TU	11	35.5	Freiberg U	5	37.6	Kaiserslautern U	13	27.6
Dresden U	55	31.2	Stuttgart U	33	32.0	Bochum U	10	39.5	Berlin TU	4	40.8	Stuttgart U	12	30.9
Braunschweig TU	50	34.3	Dortmund U	26	35.1	Stuttgart U	10	43.4	DLR[1)]	4	44.0	Braunschweig U	11	33.9
Hannover U	47	37.3	Braunschweig U	24	38.0	Weimar U	10	47.3	IFW[3)]	4	47.2	Paderborn U	11	36.9
Bochum U	43	40.0	Bochum U	22	40.7	Berlin TU	9	50.8	Karlsruhe U	4	50.4	Saarbrücken U	11	39.8
Dortmund U	43	42.8	Hannover U	22	43.3	Dortmund U	9	54.3	MPIM[4)]	4	53.6	Dresden TU	10	42.5
Erlangen-Nbg. U	38	45.2	Hamburg TU	20	45.8	Kassel U	8	57.4	BAM[5)]	3	56.0	Berlin TU	9	45.0
Hamburg-Harburg TU	32	47.2	Erlangen-Nbg. U	19	48.1	Wuppertal U	8	60.5	Bochum U	3	58.4	Hannover U	9	47.4
Kaiserslautern U	32	49.2	Magdeburg U	18	50.2	Darmstadt U	7	63.3	Braunschweig U	3	60.8	Bochum U	8	49.6
Clausthal TU	31	51.2	Clausthal U	17	52.3	Hamburg U	7	66.0	Darmstadt U	3	63.2	Bremen U	8	51.8
Kassel U	23	52.7	Duisburg U	16	54.2	Kaiserslautern U	6	68.4	FZJ[6)]	3	65.6	Dortmund U	7	53.7
DLR[1)]	21	54.0	Freiberg U	13	55.8	Essen U	5	70.3	Göttingen U	3	68.0	Ulm U	7	55.6
Duisburg U	21	55.3	Kaiserslautern U	13	57.4	Cottbus U	4	71.9				Hamburg U	6	57.2
Paderborn U	21	56.7	Chemnitz U	12	58.8	Leipzig U	4	73.4				Kiel U	6	58.8
Freiberg U	20	57.9	DLR[1)]	12	60.3	Münster U	4	75.0				Frankfurt/M. U	5	60.2
Magdeburg U	20	59.2				Rostock U	4	76.6				Freiburg U	5	61.5
Saarbrücken	20	60.5												
138 other institutions	623	39.5	88 other institutions	328	39.7	31 other institutions	60	23.4	29 other institutions	40	32.0	62 other institutions	142	38.5
In total	**1,576**	**100.0**	**In total**	**826**	**100.0**	**In total**	**256**	**100.0**	**In total**	**125**	**100.0**	**In total**	**369**	**100.0**

[1)] Deutsches Zentrum für Luft- und Raumfahrt, Köln and elsewhere; [2)] MPI für Eisenforschung, Düsseldorf; [3)] Leibniz-Institut für Festkörper- und Werkstoffforschung, Dresden; [4)] MPI für Metallforschung, Stuttgart; [5)] Bundesanstalt für Materialforschung und -prüfung, Berlin; [6)] Forschungszentrum Jülich.

Table A6-1:
The most frequently occurring countries of origin[1] of AvH research fellows and award winners 1997 to 2001

Country of origin	Visiting researchers (=total)	Research fellows	Award winners
USA	425	226	199
China	351	348	3
Russian Federation	260	218	42
India	220	217	3
Japan	150	128	22
France	114	99	15
Spain	100	95	5
Poland	91	87	4
Italy	91	77	14
United Kingdom	75	62	13
Australia	80	63	17
Canada	64	40	24
Hungary	57	51	6
Ukraine	47	46	1
Nigeria	45	45	
Romania	42	41	1
Bulgaria	40	39	1
Korea	37	35	2
Israel	32	9	23
Turkey	31	31	0
Egypt	30	30	0
Yugoslavia	29	29	0
Argentina	24	22	2
Czech Republic	24	23	1
Bangladesh	21	21	
Netherlands	21	16	5
Belgium	20	18	2
New Zealand	19	18	1
Brazil	19	19	
Mexico	18	17	1
Croatia	16	16	
Slovakia	15	15	
Slovenia	14	13	1
Finland	14	11	3
Greece	13	12	1
Sweden	13	8	5
Austria	12	10	2
South Africa	11	10	1
Switzerland	11	8	3
Pakistan	11	11	
Taiwan	10	10	
58 other countries of origin	178	168	10
In total	**2,895**	**2,462**	**433**

[1] Only countries from which ten or more visiting researchers originated.

Source: AvH (2002), visiting researchers by institution and DFG research area (1997 to 2001), special report.

Table A6-2:
AvH research fellows and award winners 1997 to 2001 by non-university institution[1] and DFG scientific discipline

Institution	Headquarters	Total			Humanities and Social Sciences			Biology/ Medicine			Natural Sciences			Engineering Sciences		
		Sum	Research fellows	Award winners	Sum	Research fellows	Award winners	Sum	Research fellows	Award winners	Sum	Research fellows	Award winners	Sum	Research fellows	Award winners
Forschungszentrum Jülich GmbH (FZJ)	Jülich	26	23	3				5	5		15	12	3	6	6	
Fritz-Haber-Institut der MPG	Berlin	26	21	5				1	1		25	20	5			
MPI für Metallforschung	Stuttgart	26	17	9							3	2	1	23	15	8
MPI für Polymerforschung	Mainz	21	15	6							20	14	6	1	1	
MPI für Kolloid- und Grenzflächenforschung	Golm	20	17	3				2	2		18	15	3			
MPI für Festkörperforschung	Stuttgart	17	15	2							17	15	2			
Deutsches Zentrum für Luft- und Raumfahrt (DLR)	Köln[2]	16	15	1							3	3		13	12	1
MPI für Quantenoptik	Garching	15	10	5							15	10	5			
Deutsches Elektronen-Synchrotron (DESY)	Hamburg	13	9	4							13	9	4			
Forschungszentrum Karlsruhe (FZK)	Karlsruhe	13	12	1							5	4	1	8	8	
MPI für biophysikalische Chemie	Göttingen	13	10	3				10	7	3	3	3				
MPI für extraterrestrische Physik	Garching	12	6	6							12	6	6			
MPI für Mikrostrukturphysik	Halle	10	5	5							10	5	5			
Deutsches Krebsforschungszentrum (DKFZ)	Heidelberg	9	8	1				9	8	1						
Europ. Laboratorium f. Molekularbiologie (EMBL)	Heidelberg	9	8	1				9	8	1						
Institut f. Festkörper- u. Werkstoffforschung Dresden	Dresden	9	8	1							6	5	1	3	3	
MPI für Astrophysik	Garching	9	5	4							9	5	4			
MPI für Biochemie	Planegg	9	8	1				9	8	1						
MPI für Hirnforschung	Frankfurt/Main	9	8	1				9	8	1						
MPI für Kernphysik	Heidelberg	9	3	6							9	3	6			
MPI für Kohlenforschung	Mülheim/Ruhr	9	9								9	9				
MPI für molekulare Physiologie	Dortmund	9	9					1	1		8	8				
MPI für Strahlenchemie	Mülheim/Ruhr	8	8								8	8				
Deutsches Archäologisches Institut (DAI)	Berlin[2]	7	7		7	7										
MBI f. nichtlineare Optik u. Kurzzeitspektroskopie	Berlin	7	6	1							7	6	1			
MPI für medizinische Forschung	Heidelberg	7	5	2				7	5	2						
MPI für Radioastronomie	Bonn	7	6	1							7	6	1			
Alfred-Wegener-Institut f. Polar- u. Meeresfor. (AWI)	Bremerhaven[2]	6	6					4	4		2	2				
Gesellschaft für Biotechnologische Forschung (GBF)	Braunschweig	6	6					4	4					2	2	
MPI für Strömungsforschung	Göttingen	6	6								6	6				
MPI für Wissenschaftsgeschichte	Berlin	6	6		5	5		1	1							
GeoForschungsZentrum Potsdam (GFZ)	Potsdam	5	4	1							5	4	1			
Gesellschaft für Schwerionenforschung (GSI)	Darmstadt	5	5								5	5				
GSF – Forschungszentrum für Umwelt u. Gesundheit	Oberschleißheim[2]	5	5					3	3		2	2				
Hahn-Meitner-Institut (HMI)	Berlin	5	5								4	4		1	1	
Institut für Deutsche Sprache (IDS)	Mannheim	5	4	1	5	4	1									
Max-Delbrück-Centrum f. Molekulare Medizin (MDC)	Berlin	5	4	1				5	4	1						
MPI für ausländisches u. internationales Strafrecht	Freiburg	5	4	1	5	4	1									
MPI für Gravitationsphysik	Golm	5	3	2							5	3	2			
MPI für molekulare Genetik	Berlin	5	3	2				5	3	2						
MPI für molekulare Pflanzenphysiologie	Golm	5	5					5	5							
MPI für Physik (Werner-Heisenberg-Inst.)	München	5	2	3							5	2	3			
113 other institutions		181	168	13	52	50	2	62	57	5	51	45	6	16	16	
In total		**605**	**509**	**96**	**74**	**70**	**4**	**151**	**134**	**17**	**307**	**241**	**66**	**73**	**64**	**9**

[1] Only institutions with five or more visits by visiting researchers in the period stated.

[2] And elsewhere.

Source: AvH (2002), visiting researchers by institution and DFG research area (1997 to 2001), special report.

Table A6-3:
AvH research fellows and award winners 1997 to 2001 by university[1)] and DFG scientific discipline

University	Total			Social sciences			Biology/Medicine			Natural Sciences			Engineering Sciences		
	Sum	Research fellows	Award winners	Sum	Research fellows	Award winners	Sum	Research fellows	Award winners	Sum	Research fellows	Award winners	Sum	Research fellows	Award winners
München U	115	98	17	44	39	5	24	22	2	45	35	10	2	2	
München TU	114	87	27	1	1		19	18	1	69	53	16	25	15	10
Berlin FU	111	101	10	57	55	2	9	9		45	37	8			
Heidelberg U	94	81	13	40	37	3	18	14	4	36	30	6			
Berlin HU	85	64	21	45	40	5	8	7	1	29	15	14	3	2	1
Bonn U	82	71	11	24	21	3	20	18	2	38	32	6			
Erlangen-Nürnberg U	78	67	11	7	7		10	10		42	33	9	19	17	2
Göttingen U	78	64	14	19	14	5	20	20		37	28	9	2	2	
Tübingen U	77	65	12	29	25	4	19	16	3	29	24	5			
Köln U	69	59	10	33	29	4	12	10	2	24	20	4			
Freiburg U	67	61	6	22	21	1	23	20	3	21	19	2	1	1	
Berlin TU	62	55	7	14	11	3	6	6		29	28	1	13	10	3
Bochum U	61	49	12	10	9	1	4	4		27	21	6	20	15	5
Frankfurt/Main U	55	46	9	21	18	3	8	7	1	26	21	5			
Stuttgart U	55	47	8	1	1		3	3		23	19	4	28	24	4
Darmstadt TU	54	40	14				2	1	1	18	11	7	34	28	6
Karlsruhe U	54	37	17	1	1		2	2		37	22	15	14	12	2
Würzburg U	52	45	7	8	8		20	16	4	24	21	3			
Münster U	51	45	6	19	16	3	7	7		22	19	3	3	3	
Marburg U	47	43	4	9	9		12	11	1	26	23	3			
Ulm U	47	36	11	1	1		5	4	1	36	27	9	5	4	1
Hamburg U	45	40	5	12	12		9	9		24	19	5			
Aachen TH	44	38	6				3	3		20	18	2	21	17	4
Bielefeld U	42	34	8	9	9		3	2	1	30	23	7			
Mainz U	39	36	3	9	9		7	6	1	23	21	2			
Bayreuth U	35	24	11	9	9		4	3	1	22	12	10			
Kiel U	35	31	4	8	8		11	10	1	15	12	3	1	1	
Konstanz U	34	29	5	5	5		8	7	1	21	17	4			
Gießen U	31	28	3	6	5	1	12	10	2	11	11		2	2	
Regensburg U	28	24	4	9	9		8	5	3	11	10	1			
Dresden TU	24	22	2	1	1		2	1	1	12	11	1	9	9	
Hannover U	22	17	5	2	2		2	2		12	7	5	6	6	
Leipzig U	20	17	3	5	4	1	8	7	1	7	6	1			
Potsdam U	20	19	1	4	4		2	2		13	12	1	1	1	
Saarbrücken U	20	18	2	6	5	1	2	2		9	9		3	2	1
Duisburg U	19	19		2	2					8	8		9	9	
Düsseldorf U	19	17	2	1	1		9	9		9	7	2			
Jena U	19	18	1	3	3		4	3	1	10	10		2	2	
Dortmund U	18	15	3	1	1		1	1		11	8	3	5	5	
Kaiserslautern U	18	15	3				2	1	1	13	11	2	3	3	
Braunschweig TU	16	13	3				1	1		10	7	3	5	5	
Augsburg U	15	14	1	3	3					10	9	1	2	2	

>> Continued over

University	Total			Social Sciences			Biology/Medicine			Natural Sciences			Engineering Sciences		
	Sum	Research fellows	Award winners	Sum	Research fellows	Award winners	Sum	Research fellows	Award winners	Sum	Research fellows	Award winners	Sum	Research fellows	Award winners
Hohenheim U	14	14		1	1		11	11		1	1		1	1	
Hamburg-Harburg TU	12	9	3				2	2					10	7	3
Bremen U	12	8	4	4	4					6	3	3	2	1	1
Chemnitz TU	12	11	1	1	1					7	7		4	3	1
Clausthal TU	12	11	1							7	6	1	5	5	
Essen U	12	11	1	1	1		1	1		8	7	1	2	2	
Magdeburg U	12	11	1	2	2		4	4		2	2		4	3	1
Freiberg TU	11	11		1	1					6	6		4	4	
Wuppertal U	11	10	1	1	1					8	7	1	2	2	
Osnabrück U	10	10		3	3		3	3		3	3		1	1	
Halle-Wittenberg U	9	9					1	1		7	7		1	1	
Siegen U	9	8	1	4	3	1				3	3		2	2	
Kassel U	8	7	1							6	6		2	1	1
Paderborn U	8	8								7	7		1	1	
Trier U	8	8		8	8										
Greifswald U	7	6	1	2	2		2	1	1	3	3				
Hannover MedHo	7	7					6	6		1	1				
Rostock U	7	7		1	1					4	4		2	2	
Mannheim U	6	6		3	3		1	1		2	2				
Oldenburg U	6	6								5	5		1	1	
18 other universities	26	26		10	10		1	1		5	5		10	10	
In total	**2,290**	**1,953**	**337**	**542**	**496**	**46**	**381**	**340**	**41**	**1,075**	**871**	**204**	**292**	**246**	**46**

[1] Only institutions with five or more visits by visiting researchers in the period stated.

Source: AvH (2002), visiting researchers by institution and DFG research area (1997 to 2001), special report.

Table A6-4:
Institutions with the highest number of AvH visiting researchers 1997 to 2001 by research area: Humanities and Social Sciences

Total			Social sciences			History and fine arts studies			Linguistic and literary studies			Psychology, education, philosophy, theology		
Institution	n	cum. %	Institution	n	cum. %	Institution	n	cum. %	Institution	n	cum. %	Institution	n	cum. %
Berlin FU	57	9.3	Frankfurt/Main U	13	8.8	Berlin FU	27	15.9	Berlin FU	22	11.5	Heidelberg U	13	12.3
Berlin HU	45	16.6	München U	13	17.6	Berlin HU	17	25.9	München U	17	20.3	Berlin HU	10	21.7
München U	44	23.7	Bonn U	11	25.0	Heidelberg U	13	33.5	Köln U	14	27.6	Tübingen U	10	31.1
Heidelberg U	40	30.2	Freiburg U	8	30.4	Köln U	10	39.4	Berlin HU	13	34.4	Münster U	7	37.7
Köln U	33	35.6	Köln U	8	35.8	München U	9	44.7	Bonn U	9	39.1	Freiburg U	6	43.4
Tübingen U	29	40.3	Berlin FU	6	39.9	Tübingen U	8	49.4	Heidelberg U	9	43.8	Frankfurt/Main U	5	48.1
Bonn U	24	44.2	Berlin HU	5	43.2	DAI[3)]	7	53.5	Göttingen U	8	47.9	München U	5	52.8
Freiburg U	22	47.7	Heidelberg U	5	46.6	Göttingen U	5	56.5	Tübingen U	8	52.1	Berlin TU	4	56.6
Frankfurt/Main U	21	51.1	MPI Strafrecht[1)]	5	50.0	MPI Wiss.-Gesch.[4)]	5	59.4	Bayreuth U	6	55.2	Bielefeld U	3	59.4
Göttingen U	19	54.2	Münster U	5	53.4	Berlin TU	4	61.8	Berlin TU	6	58.3	Bochum U	3	62.3
Münster U	19	57.3	Bremen U	4	56.1	Bonn U	4	64.1	Freiburg U	6	61.5	Erlangen-Nbg. U	3	65.1
Berlin TU	14	59.6	Göttingen U	4	58.8	Hamburg U	4	66.5	Bielefeld U	5	64.1	Konstanz U	3	67.9
Hamburg U	12	61.5	Regensburg U	4	61.5	Marburg U	4	68.8	IDS[6)]	5	66.7	Ak. d. Wiss. Göttingen	2	69.8
Bochum U	10	63.1	WZB Sozialforschung[2)]	4	64.2	MPI Geschichte[5)]	4	71.2	Saarbrücken U	5	69.3	Berlin FU	2	71.7
Bayreuth U	9	64.6	Gießen U	3	66.2	Bochum U	3	72.9	Bochum U	4	71.4	For. d. Ev. Studiengem.[7)]	2	73.6
Bielefeld U	9	66.1	Kiel U	3	68.2	Mainz U	3	74.7	Hamburg U	4	73.4	Göttingen U	2	75.5
Mainz U	9	67.5	Mannheim U	3	70.3	Münster U	3	76.5	Mainz U	4	75.5	Hamburg U	2	77.4
Marburg U	9	69.0	Osnabrück U	3	72.3	Würzburg U	3	78.2	Münster U	4	77.6	Kiel U	2	79.2
Regensburg U	9	70.5	Trier U	3	74.3				Marburg U	3	79.2	MPI Bildungsf.[8)]	2	81.1
Kiel U	8	71.8	Tübingen U	3	76.4				Regensburg U	3	80.7	Würzburg U	2	83.0
Trier U	8	73.1												
Würzburg U	8	74.4												
77 other institutions	158	100.0	32 other institutions	35	100.0	29 other institutions	37	100.0	26 other institutions	37	100.0	18 other institutions	18	100.0
In total	**616**			**148**			**170**			**192**			**106**	

[1)] MPI für ausländisches und internationales Strafrecht, Freiburg; [2)] Wissenschaftszentrum Berlin für Sozialforschung, Berlin; [3)] Deutsches Archäologisches Institut, Berlin and elsewhere; [4)] MPI für Wissenschaftsgeschichte, Berlin; [5)] MPI für Geschichte, Göttingen; [6)] Institut für deutsche Sprache, Mannheim; [7)] Forschungsstätte der Evangelischen Studiengemeinschaft, Heidelberg; [8)] MPI für Bildungsforschung, Berlin.

Source: AvH (2002), visiting researchers by institution and DFG research area (1997 to 2001), special report.

Table A6-5:
Institutions with the highest number of AvH visiting researchers 1997 to 2001 by research area: Biology/Medicine

Total			Medicine			Biology			Veterinary medicine			Agriculture and forestry science		
Institution	**n**	**cum. %**	**Institution**	**n**	**cum. %**	**Institution**	**n**	**cum. %**	**Institution**	**n**	**cum. %**	**Institution**	**n**	**cum. %**
München U	24	4.5	München U	8	6.0	München U	15	4.6	BFAV[11]	2	22.2	Göttingen U	9	14.1
Freiburg U	23	8.8	Freiburg U	7	11.3	Freiburg U	14	8.9	Berlin FU	1	33.3	Bonn U	6	23.4
Bonn U	20	12.6	Würzburg U	7	16.5	München TU	14	13.2	BgVV[12]	1	44.4	Kiel U	6	32.8
Göttingen U	20	16.4	DKFZ[2]	6	21.1	Heidelberg U	13	17.2	Bonn U	1	55.6	Gießen U	5	40.6
Würzburg U	20	20.1	Marburg U	6	25.6	Tübingen U	12	20.9	FAL[13]	1	66.7	Hohenheim U	5	48.4
München TU	19	23.7	Tübingen U	6	30.1	Würzburg U	12	24.5	Freiburg U	1	77.8	BBA[14]	4	54.7
Tübingen U	19	27.3	Erlangen-Nbg. U	5	33.8	Bonn U	9	27.3	Hohenheim U	1	88.9	Berlin TU	4	60.9
Heidelberg U	18	30.6	Heidelberg U	5	37.6	EMBL[3]	9	30.1	Leipzig U	1	100.0	München TU	3	65.6
Gießen U	12	32.9	Leipzig U	5	41.4	Göttingen U	9	32.8				Karlsruhe U	2	68.8
Köln U	12	35.2	Mainz U	5	45.1	MPI Bioph. Ch.[1]	9	35.6						
Marburg U	12	37.4	Münster U	5	48.9	Hamburg U	8	38.0						
Hohenheim U	11	39.5	Berlin FU	4	51.9	Köln U	8	40.5						
Kiel U	11	41.5	Berlin HU	4	54.9	Konstanz U	8	42.9						
Erlangen-Nbg. U	10	43.4	Bonn U	4	57.9	MPI Bioch.[4]	8	45.4						
MPI Bioph. Ch.[1]	10	45.3	Köln U	4	60.9	Düsseldorf U	7	47.5						
Berlin FU	9	47.0	Frankfurt/M. U	3	63.2	MPI Hirnforsch.[5]	6	49.4						
DKFZ[2]	9	48.7	Magdeburg U	3	65.4	Erlangen-Nbg. U	5	50.9						
Düsseldorf U	9	50.4	MDC[6]	3	67.7	Frankfurt/M. U	5	52.5						
EMBL[3]	9	52.1	MPI Hirnforsch.[5]	3	69.9	Gießen U	5	54.0						
Hamburg U	9	53.8	MPI Neurobio.[7]	3	72.2	Marburg U	5	55.5						
MPI Bioch.[4]	9	55.5	Regensburg U	3	74.4	MPI med. Forsch.[8]	5	57.1						
MPI Hirnforsch.[5]	9	57.1				MPI mol. Genetik[9]	5	58.6						
						MPI mol. Pfl.-phys.[10]	5	60.1						
						Regensburg U	5	61.7						
88 other institutions	228	100.0	24 other institutions	34	100.0	68 other institutions	125	100.0	No other institutions			20 other institutions	20	100.0
In total	**532**			**133**			**326**			**9**			**64**	

[1] MPI für biophysikalische Chemie, Göttingen; [2] Deutsches Krebsforschungszentrum, Heidelberg; [3] Europäisches Laboratorium für Molekularbiologie, Heidelberg; [4] MPI für Biochemie, Planegg; [5] MPI für Hirnforschung, Frankfurt/Main; [6] Max-Delbrück-Centrum für molekulare Medizin, Berlin; [7] MPI für Neurobiologie, Planegg; [8] MPI für medizinische Forschung, Heidelberg; [9] MPI für molekulare Genetik, Berlin; [10] MPI für molekulare Pflanzenphysiologie, Golm; [11] Friedrich-Loeffler-Institut BFA Viruskrankheiten der Tiere, Insel Riems; [12] Bundesinstitut für gesundheitlichen Verbraucherschutz, Berlin; [13] Bundesforschungsanstalt für Landwirtschaft, Braunschweig; [14] Biologische Bundesanstalt für Land- und Forstwirtschaft, Braunschweig and elsewhere.

Source: AvH (2002), visiting researchers by institution and DFG research area (1997 to 2001), special report.

Table A6-6:
Institutions with the highest number of AvH visiting researchers 1997 to 2001 by research area: Natural Sciences

Total			Geosciences			Chemistry			Physics			Mathematics		
Institution	**n**	**cum. %**	**Institution**	**n**	**cum. %**	**Institution**	**n**	**cum. %**	**Institution**	**n**	**cum. %**	**Institution**	**n**	**cum. %**
München TU	69	5.0	Tübingen U	8	8.4	München TU	43	7.6	Frankfurt/Main U	21	3.6	Bielefeld U	12	8.5
Berlin FU	45	8.2	Kiel U	7	15.8	Göttingen U	27	12.3	München TU	21	7.3	Berlin HU	10	15.6
München U	45	11.5	Bayreuth U	6	22.1	Ulm U	23	16.4	München U	21	10.9	Bonn U	9	22.0
Erlangen-Nbg. U	42	14.5	Karlsruhe U	6	28.4	München U	21	20.1	Berlin FU	17	13.8	Berlin TU	8	27.7
Bonn U	38	17.3	GFZ[2)]	5	33.7	Berlin FU	18	23.3	Erlangen-Nbg. U	17	16.8	Berlin FU	7	32.6
Göttingen U	37	20.0	Köln U	5	38.9	Erlangen-Nbg. U	18	26.5	Karlsruhe U	17	19.7	Erlangen-Nbg. U	7	37.6
Karlsruhe U	37	22.6	Münster U	5	44.2	Marburg U	18	29.6	Heidelberg U	16	22.5	Köln U	7	42.6
Heidelberg U	36	25.3	Berlin HU	4	48.4	Heidelberg U	17	32.6	Hamburg U	15	25.0	Stuttgart U	7	47.5
Ulm U	36	27.9	Berlin TU	4	52.6	MPI Koll. u. Grenzf.[6)]	16	35.4	Konstanz U	14	27.5	München TU	5	51.1
Bielefeld U	30	30.0	Freiberg TU	4	56.8	FHI[1)]	15	38.1	Bonn U	13	29.7	Paderborn U	5	54.6
Berlin HU	29	32.1	Göttingen U	4	61.1	Mainz U	15	40.7	DESY[8)]	13	32.0	Aachen TH	4	57.4
Berlin TU	29	34.2	Berlin FU	3	64.2	MPI Polymerfor.[7)]	15	43.4	MPI Festkörperfor.[9)]	13	34.2	Bochum U	4	60.3
Tübingen U	29	36.3	Bochum U	3	67.4	Würzburg U	15	46.0	MPI Quantenoptik[10)]	13	36.4	Darmstadt TU	4	63.1
Bochum U	27	38.3	MPI Chemie[3)]	3	70.5	Bonn U	14	48.5	MPI Extraterr. Physik[11)]	12	38.5	WIAS[14)]	4	66.0
Frankfurt/M. U	26	40.2	Stuttgart U	3	73.7	Karlsruhe U	13	50.8	Darmstadt TU	11	40.4	Jena U	3	68.1
Marburg U	26	42.0	AWI[4)]	2	75.8	Tübingen U	13	53.1	FZJ[12)]	11	42.3	Kiel U	3	70.2
FHI[1)]	25	43.8	Bonn U	2	77.9	Freiburg U	12	55.2	Kaiserslautern U	11	44.2	Münster U	3	72.3
Hamburg U	24	45.6	Bremen U	2	80.0	Münster U	12	57.3	Ulm U	11	46.1	Tübingen U	3	74.5
Köln U	24	47.3	Freiburg U	2	82.1	Aachen TH	10	59.1	Bochum U	10	47.8			
Würzburg U	24	49.1	Hamburg U	2	84.2	Bochum U	10	60.8	FHI[1)]	10	49.6			
			MPI Meteorologie[5)]	2	86.3				MPI Mikr.phys.[13)]	10	51.3			
			München U	2	88.4									
			Potsdam U	2	90.5									
102 other institutions	704	100.0	9 other institutions	9	100.0	68 other institutions	222	100.0	67 other institutions	282	100.0	27 other institutions	36	100.0
In total	**1,382**			**95**			**567**			**579**			**141**	

[1)] Fritz-Haber-Institut der MPG, Berlin; [2)] GeoForschungsZentrum Potsdam; [3)] MPI für Chemie, Mainz; [4)] Alfred-Wegener-Institut für Polar- und Meeresforschung, Bremerhaven and elsewhere; [5)] MPI für Meteorologie, Hamburg; [6)] MPI für Kolloid- und Grenzflächenforschung, Golm; [7)] MPI für Polymerforschung, Mainz; [8)] Deutsches Elektronen-Synchrotron, Hamburg; [9)] MPI für Festkörperforschung, Stuttgart; [10)] MPI für Quantenoptik, Garching; [11)] MPI für extraterrestrische Physik, Garching; [12)] Forschungszentrum Jülich; [13)] MPI für Mikrostrukturphysik, Halle; [14)] Weierstraß-Institut für Angewandte Analysis und Stochastik, Berlin.

Source: AvH (2002), visiting researchers by institution and DFG research area (1997 to 2001), special report.

Table A6-7:
Institutions with the highest number of AvH visiting researchers 1997 to 2001 by research area: Engineering Sciences

Total			General engineering sciences and mechanical engineering			Architecture, urban development, civil engineering			Mining and metallurgy			Electrical engineering, computer science		
Institution	**n**	**cum. %**	**Institution**	**n**	**cum. %**	**Institution**	**n**	**cum. %**	**Institution**	**n**	**cum. %**	**Institution**	**n**	**cum. %**
Darmstadt TU	34	9.3	Darmstadt TU	24	9.5	Aachen TH	4	12.5	Clausthal TU	1	100.0	München TU	10	12.5
Stuttgart U	28	17.0	MPI Metallf.[1]	23	18.7	Bochum U	4	25.0				Bochum U	9	23.8
München TU	25	23.8	Stuttgart U	22	27.4	München TU	3	34.4				Darmstadt TU	9	35.0
MPI Metallf.[1]	23	30.1	Aachen TH	15	33.3	Stuttgart U	3	43.8				Erlangen-Nbg. U	7	43.8
Aachen TH	21	35.9	DLR[2]	12	38.1	Berlin TU	2	50.0				Duisburg U	6	51.3
Bochum U	20	41.4	Erlangen-Nbg. U	12	42.9	Karlsruhe U	2	56.3				Dortmund U	3	55.0
Erlangen-Nbg. U	19	46.6	München TU	12	47.6	Kassel U	2	62.5				Stuttgart U	3	58.8
Karlsruhe U	14	50.4	Karlsruhe U	10	51.6	Berlin FH Soz.arb. u. -päd.	1	65.6				Aachen TH	2	61.3
Berlin TU	13	54.0	Berlin TU	9	55.2	Berlin HU	1	68.8				Berlin HU	2	63.8
DLR[2]	13	57.5	Dresden TU	8	58.3	Braunschweig TU	1	71.9				Berlin TU	2	66.3
Hamburg-Harb. TU	10	60.3	Hamburg-Harb. TU	8	61.5	Darmstadt TU	1	75.0				Chemnitz TU	2	68.8
Dresden TU	9	62.7	Bochum U	7	64.3	Dresden TU	1	78.1				FZJ[4]	2	71.3
Duisburg U	9	65.2	FZK[3]	6	66.7	FHI für Bauphysik[5]	1	81.3				FZK[3]	2	73.8
FZK[3]	8	67.4	Clausthal TU	4	68.3	Hannover U	1	84.4				Hamburg-Harburg TU	2	76.3
FZJ[4]	6	69.0	Freiberg TU	4	69.8	IRS[6]	1	87.5				Hannover U	2	78.8
Hannover U	6	70.7	FZJ[4]	4	71.4	LGA [7]	1	90.6				Karlsruhe U	2	81.3
Braunschweig TU	5	72.1	Ulm U	4	73.0	Rostock U	1	93.8				Magdeburg U	2	83.8
Clausthal TU	5	73.4				Weimar U	1	96.9				München U	2	86.3
Dortmund U	5	74.8				Wuppertal U	1	100.0				Saarbrücken U	2	88.8
Ulm U	5	76.2												
49 other institutions	87	100.0	40 other institutions	68	100.0	No other institutions			No other institutions			9 other institutions	9	100.0
In total	**365**			**252**			**32**			**1**			**80**	

[1] MPI für Metallforschung, Stuttgart; [2] Deutsches Zentrum für Luft- und Raumfahrt, Köln and elsewhere; [3] Forschungszentrum Karlsruhe; [4] Forschungszentrum Jülich; [5] Fraunhofer-Institut für Bauphysik, Stuttgart; [6] Institut für Regionalentwicklung und Strukturplanung, Erkner; [7] Landesgewerbeanstalt Bayern, Nürnberg.

Source: AvH (2002), visiting researchers by institution and DFG research area (1997 to 2001), special report.

Table A6-8:
AvH visiting researchers 1997 to 2001 in relation to the number of professors/scientists and academics in total per university[1)]

University	Visiting researcher	Professors		Scientists in total	
		n	Vis. reseacher per 100 prof.	n	Vis. reseacher pro 100 sci.
München TU	114	394	28.9	4,100	2.8
Ulm U	47	178	26.4	1,856	2.5
Konstanz U	34	145	23.4	898	3.8
Heidelberg U	94	410	22.9	3,396	2.8
Stuttgart U	55	243	22.6	2,677	2.1
Karlsruhe U	54	267	20.2	2,134	2.5
Bayreuth U	35	177	19.8	934	3.7
Darmstadt TU	54	277	19.5	1,743	3.1
Tübingen U	77	406	19.0	3,478	2.2
Berlin FU	111	607	18.3	3,169	3.5
Göttingen U	78	427	18.3	2,975	2.6
Freiburg U	67	375	17.9	3,222	2.1
Bielefeld U	42	237	17.7	1,394	3.0
Bonn U	82	480	17.1	3,133	2.6
Erlangen-Nürnberg U	78	468	16.7	3,340	2.3
München U	115	710	16.2	5,129	2.2
Berlin TU	62	392	15.8	2,402	2.6
Clausthal TU	12	76	15.8	441	2.7
Würzburg U	52	340	15.3	2,523	2.1
Bochum U	61	401	15.2	2,354	2.6
Berlin HU	85	562	15.1	4,484	1.9
Hohenheim U	14	105	13.3	788	1.8
Marburg U	47	364	12.9	2,175	2.2
Kaiserslautern U	18	144	12.5	953	1.9
Köln U	69	565	12.2	3,195	2.2
Hamburg-Harburg TU	12	101	11.9	524	2.3
Frankfurt/Main U	55	473	11.6	2,636	2.1
Aachen TH	44	388	11.3	3,930	1.1
Regensburg U	28	260	10.8	1,788	1.6
Augsburg U	15	144	10.4	650	2.3
Potsdam U	20	200	10.0	1,008	2.0
Freiberg TU	11	112	9.8	633	1.7
Münster U	51	559	9.1	3,699	1.4
Mainz U	39	429	9.1	3,105	1.3
Duisburg U	19	212	9.0	891	2.1
Kiel U	35	401	8.7	2,364	1.5
Gießen U	31	370	8.4	2,239	1.4
Hannover MedHo	7	86	8.1	1,436	0.5
Düsseldorf U	19	238	8.0	2,115	0.9
Chemnitz TU	12	159	7.5	898	1.3
Saarbrücken U	20	265	7.5	1,917	1.0
Braunschweig TU	16	231	6.9	1,527	1.0
Hannover U	22	344	6.4	2,207	1.0
Magdeburg U	12	192	6.3	1,541	0.8
Dortmund U	18	304	5.9	1,523	1.2
Hamburg U	45	773	5.8	3,533	1.3
Osnabrück U	10	176	5.7	683	1.5
Jena U	19	351	5.4	2,517	0.8
Trier U	8	151	5.3	673	1.2
Mannheim U	6	114	5.3	712	0.8
Leipzig U	20	433	4.6	2,613	0.8
Dresden TU	24	539	4.5	3,669	0.7
Siegen U	9	231	3.9	706	1.3
Wuppertal U	11	285	3.9	946	1.2
Bremen U	12	343	3.5	1,713	0.7
Essen U	12	352	3.4	1,886	0.6
Oldenburg U	6	181	3.3	773	0.8
Greifswald U	7	221	3.2	1,189	0.6
Kassel U	8	273	2.9	943	0.8
Paderborn U	8	283	2.8	988	0.8
Rostock U	7	297	2.4	1,769	0.4
Halle-Wittenberg U	9	397	2.3	2,488	0.4

[1)] Only institutions with five or more visits by visiting researchers in the period stated.

Sources:
AvH (2002), visiting researchers by institution and DFG research area (1997 to 2001), special report.

Federal Statistical Office (2002), Full time employment scientific and artistic staff according to organisational classification, university, fields of teaching and research and staff unit (status: 2000), special report.

Table A6-9:
DAAD funding accounts and support of individuals 2000 and 2001 by university [1)]

University	Total funding (Mio €)					Support of individuals (n)						
	In total	Support of individuals	Programmes and projects			In total	Foreign nationals			Germans		
			In total	ERASMUS	excl. ERASMUS		In total	Students and graduates	Re-searchers	In total	Students and graduates	Re-searchers
Berlin HU	9.1	5.6	3.5	1.2	2.3	1,010	701	575	126	309	280	29
Göttingen U	8.5	5.7	2.8	0.8	2.0	914	635	565	70	279	247	32
Berlin FU	8.4	6.1	2.3	0.8	1.5	1,080	603	472	131	477	422	55
Dresden TU	7.8	4.8	3.0	0.6	2.4	840	677	611	66	163	146	17
Bonn U	7.6	5.6	2.0	0.6	1.4	855	510	423	87	345	314	31
München U	6.9	5.0	1.9	0.6	1.3	881	550	447	103	331	311	20
Heidelberg U	6.6	4.7	1.9	0.7	1.2	823	504	437	67	319	303	16
Hamburg U	6.4	4.9	1.5	0.6	1.0	859	439	358	81	420	388	32
Freiburg U	6.3	4.3	2.0	0.8	1.3	714	376	312	64	338	316	22
Tübingen U	6.3	4.4	1.8	0.4	1.4	777	477	379	98	300	272	28
Berlin TU	5.9	3.8	2.1	0.5	1.6	630	455	367	88	175	139	36
Karlsruhe U	5.2	3.3	1.9	0.3	1.6	562	459	398	61	103	94	9
Aachen TH	5.1	3.4	1.6	0.5	1.1	593	500	427	73	93	85	8
Bochum U	5.0	2.9	2.1	0.5	1.7	504	364	316	48	140	116	24
Hannover U	4.9	3.3	1.6	0.4	1.2	596	497	448	49	99	89	10
Leipzig U	4.7	2.6	2.1	0.9	1.2	576	319	269	50	257	240	17
Stuttgart U	4.7	2.9	1.7	0.2	1.5	502	385	325	60	117	97	20
Mainz U	4.4	2.4	2.0	1.0	1.1	417	225	173	52	192	161	31
Erlangen-Nürnb. U	4.3	2.4	1.9	0.6	1.3	406	264	214	50	142	118	24
Köln U	4.3	2.9	1.4	0.6	0.8	435	243	192	51	192	168	24
Münster U	4.2	2.3	1.9	0.7	1.2	402	199	137	62	203	177	26
Darmstadt TU	3.9	2.1	1.8	0.4	1.5	390	289	240	49	101	88	13
Kiel U	3.7	2.5	1.2	0.4	0.8	380	211	170	41	169	158	11
Frankfurt/Main U	3.6	2.6	1.1	0.4	0.7	491	266	201	65	225	200	25
München TU	3.6	2.2	1.3	0.3	1.0	348	261	209	52	87	74	13
Saarbrücken U	3.4	2.0	1.4	0.6	0.8	350	253	227	26	97	78	19
Gießen U	3.3	2.2	1.0	0.3	0.7	316	247	180	67	69	50	19
Marburg U	2.9	2.1	0.8	0.5	0.3	409	254	214	40	155	128	27
Würzburg U	2.9	2.0	0.9	0.4	0.5	371	241	208	33	130	122	8
Bielefeld U	2.8	1.5	1.3	0.3	1.0	253	156	123	33	97	78	19
Bremen U	2.8	1.8	1.0	0.2	0.8	307	231	193	38	76	58	18
Hohenheim U	2.6	2.0	0.6	0.1	0.6	257	219	180	39	38	26	12
Halle U	2.6	1.7	0.9	0.2	0.8	278	197	175	22	81	67	14
Kassel U	2.5	1.7	0.8	0.2	0.6	357	280	241	39	77	39	38
Hamburg-Harb. TU	2.4	1.3	1.1	0.1	1.0	262	246	228	18	16	5	11
Jena U	2.4	1.3	1.1	0.5	0.6	317	226	184	42	91	79	12
Dortmund U	2.4	1.2	1.2	0.2	1.0	208	150	121	29	58	46	12
Passau U	2.3	1.1	1.3	0.4	0.8	302	180	172	8	122	119	3
Kaiserslautern U	2.3	1.2	1.1	0.1	1.0	152	129	111	18	23	19	4
Braunschweig TU	2.3	1.0	1.3	0.3	1.0	170	87	65	22	83	76	7
Magdeburg U	2.3	1.0	1.3	0.1	1.2	153	112	83	29	41	29	12
Trier U	2.2	1.4	0.8	0.6	0.3	268	188	175	13	80	71	9
Konstanz U	2.2	1.5	0.8	0.3	0.5	314	200	173	27	114	95	19
Duisburg U	2.2	1.2	1.0	0.3	0.8	172	137	113	24	35	24	11
Frankfurt/Oder U	2.1	0.3	1.9	0.3	1.6	69	50	45	5	19	16	3
Potsdam U	2.1	1.2	0.9	0.3	0.6	214	138	105	33	76	62	14
Düsseldorf U	2.0	1.6	0.5	0.2	0.3	216	118	87	31	98	85	13
Regensburg U	1.9	0.9	1.1	0.4	0.6	195	102	88	14	93	83	10
Rostock U	1.9	1.1	0.8	0.2	0.6	216	162	118	44	54	42	12
Osnabrück U	1.9	0.7	1.2	0.2	1.0	152	70	56	14	82	69	13
Oldenburg U	1.9	0.7	1.2	0.2	1.0	129	84	56	28	45	39	6
Bayreuth U	1.7	1.0	0.7	0.3	0.4	178	113	80	33	65	53	12
Essen U	1.6	0.9	0.7	0.2	0.5	186	145	126	19	41	30	11
Freiberg TU	1.6	0.7	0.9	0.1	0.8	120	96	69	27	24	15	9
Mannheim U	1.5	0.7	0.7	0.3	0.4	172	84	78	6	88	81	7
Cottbus TU	1.4	0.3	1.1	0.2	0.9	69	49	40	9	20	17	3
Ilmenau TU	1.4	0.4	1.0	0.03	1.0	129	118	99	19	11	8	3
Ulm U	1.4	0.8	0.6	0.1	0.5	120	83	64	19	37	22	15
Reutl. H. f. T. u. W. FH	1.4	0.7	0.7	0.4	0.3	130	95	95		35	29	6
Augsburg U	1.3	0.5	0.8	0.3	0.5	166	123	113	10	43	40	3
Köln FH	1.2	0.7	0.5	0.2	0.3	127	77	65	12	50	42	8
Osnabrück FH	1.2	0.4	0.8	0.2	0.6	98	79	77	2	19	13	6
Paderborn U	1.2	0.6	0.6	0.2	0.4	95	73	59	14	22	17	5
Siegen U	1.2	0.4	0.8	0.1	0.7	78	41	25	16	37	22	15
Bamberg U	1.0	0.4	0.6	0.4	0.2	85	39	32	7	46	43	3
Greifswald U	1.0	0.5	0.5	0.2	0.3	109	50	34	16	59	47	12
Bremen U	0.9	0.3	0.6	0.3	0.3	67	4	4		63	62	1
Berlin HdK	0.9	0.7	0.3	0.2	0.1	114	53	50	3	61	54	7
Clausthal TU	0.9	0.6	0.3	0.1	0.2	97	86	64	22	11	4	7

>> Continued over

University	Total funding (Mio €)						Support of individuals (n)					
	In total	Support of individuals	Programmes and projects			In total	Foreign nationals			Germans		
			In total	ERASMUS	excl. ERASMUS		In total	Students and graduates	Re-searchers	In total	Students and graduates	Re-searchers
Aachen FH	0.9	0.1	0.8	0.2	0.7	17	5	2	3	12	10	2
Chemnitz TU	0.9	0.3	0.5	0.1	0.4	64	51	20	31	13	7	6
Wuppertal U	0.8	0.5	0.4	0.1	0.3	85	59	45	14	26	18	8
Hagen FernU	0.7	0.2	0.6	0.1	0.5	25	10	8	2	15	10	5
Darmstadt FH	0.7	0.1	0.6	0.1	0.5	20	5	3	2	15	11	4
Lüneburg FH	0.7	0.4	0.3	0.1	0.1	120	107	106	1	13	10	3
Nürnberg FH	0.7	0.1	0.6	0.1	0.5	28	15	14	1	13	10	3
Karlsr. H. f. T. FH	0.7	0.2	0.5	0.1	0.4	36	10	9	1	26	24	2
Lemgo FH	0.6	0.4	0.3	0.1	0.1	70	40	34	6	30	23	7
Weimar U	0.6	0.2	0.4	0.2	0.2	43	14	8	6	29	24	5
Hannover MedHo	0.6	0.3	0.3	0.01	0.3	48	43	39	4	5	4	1
Hamb. H. f. A. W. FH	0.6	0.2	0.4	0.1	0.3	54	3	2	1	51	38	13
Brandenburg FH	0.6	0.4	0.2	0.2	0.03	57	56	54	2	1	1	
Münster FH	0.6	0.1	0.5	0.3	0.2	18	2	2		16	14	2
München FH	0.6	0.2	0.4	0.2	0.2	26	4	1	3	22	21	1
Offenb. H. f. T. u. W. FH	0.6	0.1	0.4	0.1	0.4	18	16	16		2	2	
Kiel FH	0.5	0.01	0.5	0.1	0.4	4	2		2	2	2	
Wismar FH	0.5	0.1	0.4	0.1	0.3	14	5	5		9	8	1
Köln H. f. Musik	0.5	0.4	0.01	0.05	0.05	61	38	37	1	23	20	3
Wiesbaden FH	0.5	0.1	0.4	0.2	0.2	17	1		1	16	11	5
Fulda FH	0.5	0.1	0.4	0.1	0.4	20	17	17		3	3	
126 other universities	23.0	8.7	14.3	6.5	7.8	1791	843	709	135	946	819	127
In total	**264.1**	**152.3**	**111.6**	**35.1**	**76.5**	**27,168**	**17,620**	**14,691**	**2,930**	**9,546**	**8,297**	**1,249**

[1)] Only universities which received more than half a million euros in funding from the DAAD in the period stated.

Source: DAAD (2003), Funding accounts (2000 and 2001), special report.

Table A6-10:
The most frequently occurring countries of origin of DAAD-funded visiting researchers, students and graduates 2000 and 2001

Country of origin[1]	Researchers	Country of origin[2]	Students and graduates
China	265	Russian Federation	1,157
Russian Federation	243	Brazil	800
Poland	111	Poland	643
Brazil	107	Indonesia	631
Egypt	91	China	627
India	78	India	572
Ukraine	78	USA	407
Vietnam	77	Hungary	401
Turkey	70	France	341
USA	65	Ukraine	317
Hungary	65	Argentina	282
Romania	55	Romania	270
Bulgaria	52	Turkey	250
Argentina	51	Japan	238
Yugoslavia	49	Mexico	236
Cuba	49	Chile	236
Belarus	48	Vietnam	234
Indonesia	46	Spain	222
South Korea	46	Ethiopia	222
Mexico	36	Uzbekistan	222
Syria	36	Venezuela	206
Spain	34	Egypt	199
Slovakia	33	Thailand	189
Azerbaijan	32	Bulgaria	185
Chile	31	Belarus	168
Colombia	31	Slovakia	160
Mongolia	31	Czech Republic	159
South Africa	31	Kazakhstan	158
Japan	30	Mongolia	151
Ethiopia	29	Cameroon	145
Jordan	28	Kenya	142
Lithuania	28	South Korea	137
Palestinian Autonomous Territories	28	Tunisia	135
Italy	26	Yugoslavia	128
Burma	25	Kyrgyzstan	119
Czech Republic	24	Sudan	119
Greece	23	United Kingdom	116
Kenya	22	Italy	115
Latvia	22	Nigeria	109
Georgia	21	Bangladesh	105
Nigeria	21	Greece	105
Uzbekistan	21		
Armenia	20		
Costa Rica	20		
81 other countries of origin	601	111 other countries of origin	3,333
In total	**2,930**	**In total**	**14,691**

[1] Only countries from which more than 20 scientists and academics originated.

[2] Only countries from which more than 100 students or graduates originated.

Source: DAAD (2003), DAAD-funded international scientists and academics, students and graduates by university and subject (2000 and 2001), special report.

Contents

Table A6-11:
DAAD-funded international scientists and academics in 2000 and 2001 by university[1] and DFG scientific discipline

University	Total	Humanities and Social Sciences	Biology/ Medicine	Natural Sciences	Engineering Sciences	Not classified
Berlin FU	131	89	19	20	3	
Berlin HU	126	72	33	15	5	1
München U	103	70	22	11		
Tübingen U	98	54	10	34		
Berlin TU	88	19	10	29	30	
Bonn U	87	40	31	15	1	
Hamburg U	81	42	18	10	11	
Aachen TH	73	7	2	22	41	1
Göttingen U	70	14	39	13	4	
Gießen U	67	12	39	14	2	
Heidelberg U	67	45	12	9		1
Dresden TU	66	9	13	13	31	
Frankfurt/Main U	65	38	13	13		1
Freiburg U	64	37	12	11	4	
Münster U	62	42	8	12		
Karlsruhe U	61	6	4	28	18	5
Stuttgart U	60	6	3	20	30	1
Mainz U	52	26	7	19		
München TU	52	2	13	22	15	
Köln U	51	25	10	15		1
Erlangen-Nürnberg U	50	14	9	18	9	
Leipzig U	50	31	8	9	2	
Darmstadt TU	49	4	3	19	22	1
Hannover U	49	24	8	7	9	1
Bochum U	48	23	3	9	13	
Rostock U	44	4	16	21	3	
Jena U	42	11	8	19	4	
Kiel U	41	10	13	12	6	
Marburg U	40	22	10	7	1	
Hohenheim U	39	1	34	1	3	
Kassel U	39	9	9	8	13	
Bremen U	38	19	3	10	6	
Bayreuth U	33	15	6	12		
Bielefeld U	33	19	6	7	1	
Potsdam U	33	11	2	19	1	
Würzburg U	33	11	10	12		
Chemnitz TU	31	5		16	10	
Düsseldorf U	31	15	9	7		
Dortmund U	29	10	1	9	9	
Magdeburg U	29	5	2	5	17	
Oldenburg U	28	9	2	12	5	
Freiberg TU	27	2		13	12	
Konstanz U	27	22	3	2		
Saarbrücken U	26	15	2	9		
Duisburg U	24	6		9	9	
Braunschweig TU	22	2	1	9	10	
Clausthal TU	22			8	14	
Halle-Wittenberg U	22	7	6	6	3	
Essen U	19	3	6	9	1	
Ilmenau TU	19			4	15	
Ulm U	19		6	12	1	
Hamburg-Harburg TU	18		1	5	11	1
Kaiserslautern U	18			12	6	
Greifswald U	16	4	3	9		
Siegen U	16	7			9	
Osnabrück U	14	7	4	2	1	
Paderborn U	14	4	1	5	4	
Regensburg U	14	10		4		
Wuppertal U	14	8	1	1	4	
Trier U	13	10		3		
Köln FH	12	1			11	
Augsburg U	10	7		3		
Hannover TiHo	10		10			
Lübeck MedU	10		9		1	
München UdBW	10	1		4	5	
In total	**2,749**	**1,043**	**533**	**713**	**446**	**14**

[1] Only universities with ten or more DAAD scientists and academics in the period stated.

Source: DAAD (2003), DAAD-funded international scientists and academics, students and graduates by university and subject (2000 and 2001), special report.

Table A6-12:
Universities with the highest number of DAAD-funded international scientists and academics 2000 and 2001 by DFG research area: Humanities and Social Sciences

Total			Social sciences			History and fine arts studies			Linguistic and literary studies			Psychology, education, philosophy, theology		
University	n	cum. %	University	n	cum. %	University	n	cum. %	University	n	cum. %	University	n	cum. %
Berlin FU	89	8.5	München U	24	7.8	Berlin FU	25	12.8	Berlin FU	30	8.2	Berlin HU	17	9.7
Berlin HU	72	15.4	Berlin FU	18	13.7	Berlin HU	16	20.9	München U	25	15.1	Berlin FU	16	18.8
München U	70	22.1	Berlin HU	18	19.5	Heidelberg U	15	28.6	Tübingen U	24	21.7	Tübingen U	16	27.8
Tübingen U	54	27.3	Bonn U	17	25.1	München U	14	35.7	Berlin HU	21	27.5	Heidelberg U	10	33.5
Heidelberg U	45	31.6	Hamburg U	16	30.3	Münster U	12	41.8	Leipzig U	16	31.9	Konstanz U	10	39.2
Hamburg U	42	35.7	Hannover U	14	34.9	Freiburg U	11	47.4	Bonn U	15	36.0	Dresden TU	7	43.2
Münster U	42	39.7	Münster U	14	39.4	Tübingen U	9	52.0	Hamburg U	15	40.1	Frankfurt/M. U	7	47.2
Bonn U	40	43.5	Bremen U	13	43.6	Bochum U	8	56.1	Saarbrücken U	15	44.2	München U	7	51.1
Frankfurt/M. U	38	47.2	Frankfurt/M. U	13	47.9	Bonn U	7	59.7	Heidelberg U	14	48.1	Bielefeld U	6	54.5
Freiburg U	37	50.7	Freiburg U	11	51.5	Hamburg U	7	63.3	Münster U	14	51.9	Marburg U	6	58.0
Leipzig U	31	53.7	Gießen U	10	54.7	Mainz U	6	66.3	Frankfurt/M. U	13	55.5	Erlangen-Nbg. U	5	60.8
Mainz U	26	56.2	Köln U	10	58.0	Berlin TU	5	68.9	Bayreuth U	11	58.5	Freiburg U	5	63.6
Köln U	25	58.6	Leipzig U	9	60.9	Frankfurt/M. U	5	71.4	Bochum U	10	61.3	Jena U	5	66.5
Hannover U	24	60.9	Mainz U	7	63.2	Göttingen U	5	74.0	Freiburg U	10	64.0	Berlin TU	4	68.8
Bochum U	23	63.1	Bielefeld U	6	65.1	Köln U	5	76.5	Mainz U	10	66.8	Halle U	4	71.0
Konstanz U	22	65.2	Heidelberg U	6	67.1	Leipzig U	5	79.1	Marburg U	8	69.0	Hamburg U	4	73.3
Marburg U	22	67.3				Marburg U	5	81.6	Düsseldorf U	7	70.9	Hannover U	4	75.6
Berlin TU	19	69.1				Hannover U	4	83.7	Köln U	7	72.8	Oldenburg U	4	77.8
Bielefeld U	19	70.9				Wuppertal U	4	85.7	Bielefeld U	6	74.5			
Bremen U	19	72.8				Bayreuth U	3	87.2	Erlangen-Nbg. U	6	76.1			
						Trier U	3	88.8	Konstanz U	6	77.7			
38 other universities	284	100.0	35 other universities	101	100.0	18 other universities	22	100.0	29 other universities	81	100.0	20 other universities	39	100.0
In total	**1,043**		**In total**	**307**		**In total**	**196**		**In total**	**364**		**In total**	**176**	

Source: DAAD (2003), DAAD-funded international scientists and academics, students and graduates by university and subject (2000 and 2001), special report.

Table A6-13:
Universities with the highest number of DAAD-funded international scientists and academics 2000 and 2001 by DFG research area: Biology/Medicine

Total			Medicine			Biology			Veterinary medicine			Agriculture and forestry science		
University	n	cum. %	University	n	cum. %	University	n	cum. %	University	n	cum. %	University	n	cum. %
Gießen U	39	7.3	Berlin HU	14	9.3	Bonn U	14	7.3	Hannover TiHo	9	29.0	Hohenheim U	30	18.9
Göttingen U	39	14.6	Heidelberg U	9	15.3	Frankfurt/M. U	11	13.0	Gießen U	7	51.6	Göttingen U	26	35.2
Hohenheim U	34	21.0	München U	9	21.3	Berlin FU	10	18.1	Berlin FU	5	67.7	Gießen U	19	47.2
Berlin HU	33	27.2	Göttingen U	8	26.7	München U	9	22.8	München U	4	80.6	Berlin HU	11	54.1
Bonn U	31	33.0	Hamburg U	7	31.3	Berlin HU	8	26.9	Leipzig U	2	87.1	Rostock U	11	61.0
München U	22	37.1	Lübeck MedU	7	36.0	Gießen U	8	31.1	Bonn U	1	90.3	Bonn U	10	67.3
Berlin FU	19	40.7	Bonn U	6	40.0	Hamburg U	8	35.2	Kassel U	1	93.5	Kassel U	7	71.7
Hamburg U	18	44.1	Dresden TU	6	44.0	Jena U	6	38.3	Lübeck MedU	1	96.8	Freiburg U	6	75.5
Rostock U	16	47.1	Berlin TU	5	47.3	Marburg U	6	41.5	Marburg U	1	100.0	München TU	6	79.2
Dresden TU	13	49.5	Gießen U	5	50.7	Tübingen U	6	44.6				Dresden TU	4	81.8
Frankfurt/M. U	13	52.0	Köln U	5	54.0	Düsseldorf U	5	47.2				Halle U	4	84.3
Kiel U	13	54.4	Würzburg U	5	57.3	Göttingen U	5	49.7				Kiel U	4	86.8
München TU	13	56.8	Düsseldorf U	4	60.0	Kiel U	5	52.3				Bayreuth U	3	88.7
Freiburg U	12	59.1	Essen U	4	62.7	Köln U	5	54.9				Hamburg U	3	90.6
Heidelberg U	12	61.4	Hannover U	4	65.3	Mainz U	5	57.5				Osnabrück U	3	92.5
Berlin TU	10	63.2	Kiel U	4	68.0	Würzburg U	5	60.1				Erlangen-Nbg. U	2	93.7
Hannover TiHo	10	65.1	Münster U	4	70.7	Berlin TU	4	62.2				Hannover U	2	95.0
Köln U	10	67.0	Tübingen U	4	73.3	Erlangen-Nbg. U	4	64.2						
Marburg U	10	68.9	Ulm U	4	76.0	Hohenheim U	4	66.3						
Tübingen U	10	70.7				München TU	4	68.4						
Würzburg U	10	72.6				Münster U	4	70.5						
						Rostock U	4	72.5						
32 other universities	146	100.0	19 other universities	36	100.0	26 other universities	53	100.0	No other universities			8 other universities	8	100.0
In total	**533**		**In total**	**150**		**In total**	**193**		**In total**	**31**		**In total**	**159**	

Source: DAAD (2003), DAAD-funded international scientists and academics, students and graduates by university and subject (2000 and 2001), special report.

Table A6-14:
Universities with the highest number of DAAD-funded international scientists and academics 2000 and 2001 by DFG research area: Natural Sciences

Total			Geosciences			Chemistry			Physics			Mathematics		
University	n	cum. %	University	n	cum. %	University	n	cum. %	University	n	cum. %	University	n	cum. %
Tübingen U	34	4.8	Tübingen U	11	11.7	Berlin TU	15	5.9	Aachen TH	12	5.6	Potsdam U	9	6.0
Berlin TU	29	8.8	Freiberg TU	11	23.4	Tübingen U	15	11.7	Darmstadt TU	11	10.7	Berlin HU	7	10.7
Karlsruhe U	28	12.8	Kiel U	6	29.8	Karlsruhe U	13	16.8	Chemnitz TU	10	15.4	Frankfurt/M. U	7	15.4
Aachen TH	22	15.8	Berlin TU	5	35.1	Rostock U	13	21.9	Köln U	9	19.6	Kaiserslautern U	7	20.1
München TU	22	18.9	Göttingen U	5	40.4	München TU	11	26.2	Bayreuth U	8	23.4	Karlsruhe U	7	24.8
Rostock U	21	21.9	Stuttgart U	5	45.7	Dresden TU	8	29.3	Rostock U	8	27.1	Oldenburg U	7	29.5
Berlin FU	20	24.7	Aachen TH	4	50.0	Erlangen-Nbg. U	8	32.4	Ulm U	8	30.8	Berlin FU	6	33.6
Stuttgart U	20	27.5	Jena U	4	54.3	Freiburg U	8	35.5	Berlin FU	7	34.1	Essen U	6	37.6
Darmstadt TU	19	30.2	Mainz U	4	58.5	Münster U	8	38.7	Gießen U	7	37.4	Berlin TU	5	40.9
Jena U	19	32.8	München U	4	62.8	Marburg U	7	41.4	München TU	7	40.7	Bielefeld U	5	44.3
Mainz U	19	35.5	Heidelberg U	3	66.0	Saarbrücken U	7	44.1	Bonn U	6	43.5	Bonn U	5	47.7
Potsdam U	19	38.1	Karlsruhe U	3	69.1	Stuttgart U	7	46.9	Mainz U	6	46.3	Erlangen-Nbg. U	5	51.0
Erlangen-Nbg. U	18	40.7	Bochum U	2	71.3	Aachen TH	6	49.2	Stuttgart U	6	49.1	Jena U	5	54.4
Chemnitz TU	16	42.9	Bonn U	2	73.4	Berlin FU	6	51.6	Braunschweig TU	5	51.4	Tübingen U	5	57.7
Berlin HU	15	45.0	Darmstadt TU	2	75.5	Düsseldorf U	6	53.9	Clausthal TU	5	53.7	Darmstadt TU	4	60.4
Bonn U	15	47.1	Frankfurt/M. U	2	77.7	Bremen U	5	55.9	Duisburg U	5	56.1	Dortmund U	4	63.1
Köln U	15	49.2	Hamburg U	2	79.8	Dortmund U	5	57.8	Jena U	5	58.4	Gießen U	4	65.8
Gießen U	14	51.2	Köln U	2	81.9	Göttingen U	5	59.8	Karlsruhe U	5	60.7	Mainz U	4	68.5
Dresden TU	13	53.0	Münster U	2	84.0	Greifswald U	5	61.7	München U	5	63.1	München TU	4	71.1
Frankfurt/M. U	13	54.8	Potsdam U	2	86.2	Jena U	5	63.7	Potsdam U	5	65.4			
Freiberg TU	13	56.7	Würzburg U	2	88.3	Magdeburg U	5	65.6						
Göttingen U	13	58.5				Mainz U	5	67.6						
						Würzburg U	5	69.5						
39 other universities	296	100.0	11 other universities	11	100.0	32 other universities	78	100.0	31 other universities	74	100.0	23 other universities	43	100.0
In total	**713**		**In total**	**94**		**In total**	**256**		**In total**	**214**		**In total**	**149**	

Source: DAAD (2003), DAAD-funded international scientists and academics, students and graduates by university and subject (2000 and 2001), special report.

Table A6-15:
Universities with the highest number of DAAD-funded international scientists and academics 2000 and 2001 by DFG research area: Engineering Sciences

Total			General engineering sciences and mechanical engineering			Architecture, urban development, civil engineering			Mining and metallurgy			Electrical engineering, computer science		
University	n	cum. %	University	n	cum. %	University	n	cum. %	University	n	cum. %	University	n	cum. %
Aachen TH	41	9.2	Aachen TH	20	10.5	Stuttgart U	13	12.6	Clausthal TU	6	54.5	Aachen TH	15	10.6
Dresden TU	31	16.1	Berlin TU	16	18.8	Kassel U	10	22.3	Berlin TU	2	72.7	Dresden TU	12	19.1
Berlin TU	30	22.9	Magdeburg U	14	26.2	Berlin TU	8	30.1	Freiberg TU	2	90.9	Ilmenau TU	11	27.0
Stuttgart U	30	29.6	Stuttgart U	13	33.0	Braunschweig TU	7	36.9	Dresden TU	1	100.0	Hamburg U	10	34.0
Darmstadt TU	22	34.5	Dresden TU	12	39.3	Darmstadt TU	7	43.7				Darmstadt TU	8	39.7
Karlsruhe U	18	38.6	Hamburg-Harb. TU	10	44.5	Karlsruhe U	7	50.5				Erlangen-Nbg. U	7	44.7
Magdeburg U	17	42.4	München TU	9	49.2	Aachen TH	6	56.3				Karlsruhe U	6	48.9
Ilmenau TU	15	45.7	Chemnitz TU	8	53.4	Dresden TU	6	62.1				Dortmund U	5	52.5
München TU	15	49.1	Darmstadt TU	7	57.1	Bochum U	4	66.0				Duisburg U	5	56.0
Clausthal TU	14	52.2	Freiberg TU	7	60.7	München TU	4	69.9				Siegen U	5	59.6
Bochum U	13	55.2	Clausthal TU	6	63.9	Freiberg TU	3	72.8				Berlin TU	4	62.4
Kassel U	13	58.1	Köln FH	6	67.0	Hannover U	3	75.7				Bochum U	4	65.2
Freiberg TU	12	60.8	Bochum U	5	69.6	Kiel U	3	78.6				Köln FH	4	68.1
Hamburg U	11	63.2	Hannover U	5	72.3	Berlin FU	2	80.6				München UdBW	4	70.9
Hamburg-Harb. TU	11	65.7	Karlsruhe U	5	74.9	Bremen U	2	82.5				Stuttgart U	4	73.8
Köln FH	11	68.2	Ilmenau TU	4	77.0	Dortmund U	2	84.5				Berlin HU	3	75.9
Braunschweig TU	10	70.4	Paderborn U	4	79.1	Duisburg U	2	86.4				Freiburg U	3	78.0
Chemnitz TU	10	72.6	Braunschweig TU	3	80.6	Gießen U	2	88.3				Kiel U	3	80.1
Dortmund U	9	74.7	Halle-Wittenberg U	3	82.2	Göttingen U	2	90.3				Magdeburg U	3	82.3
Duisburg U	9	76.7	Hohenheim U	3	83.8	Leipzig U	2	92.2				Oldenburg U	3	84.4
Erlangen-Nbg. U	9	78.7	Kaiserslautern U	3	85.3									
Hannover U	9	80.7	Siegen U	3	86.9									
Siegen U	9	82.7	Wuppertal U	3	88.5									
25 other universities	77	100.0	14 other universities	22	100.0	8 other universities	8	100.0	No other universities		100.0	16 other universities	22	100.0
In total	**446**		**In total**	**191**		**In total**	**103**		**In total**	**11**		**In total**	**141**	

Source: DAAD (2003), DAAD-funded international scientists and academics, students and graduates by university and subject (2000 and 2001), special report.

Table A6-16:
DAAD-funded international students and graduates 2000 and 2001 by university [1] and DFG scientific discipline

University	Total	Humanities and Social Sciences	Biology/ Medicine	Natural Sciences	Engineering Sciences	Not classified
Dresden TU	611	206	104	59	237	5
Berlin HU	575	395	131	32	14	3
Göttingen U	565	154	354	47	10	
Berlin FU	472	312	89	56	7	8
Hannover U	448	195	123	32	91	7
München U	447	237	104	40	66	
Heidelberg U	437	265	135	33	4	
Aachen TH	427	71	23	43	289	1
Bonn U	423	191	175	42	15	
Karlsruhe U	398	20	12	162	202	2
Tübingen U	379	209	65	95	10	
Berlin TU	367	62	35	50	219	1
Hamburg U	358	219	77	30	26	6
Stuttgart U	325	19	21	48	237	
Bochum U	316	207	14	23	72	
Freiburg U	312	189	84	29	9	1
Leipzig U	269	215	24	24	6	
Kassel U	241	159	14	8	57	3
Darmstadt TU	240	24	14	27	175	
Hamburg-Harburg TU	228	13	7	42	166	
Saarbrücken U	227	176	17	25	9	
Erlangen-Nürnberg U	214	74	39	43	57	1
Marburg U	214	184	22	8		
München TU	209	20	56	44	87	2
Würzburg U	208	120	44	40	4	
Frankfurt/Main U	201	146	40	14	1	
Bremen U	193	106	33	18	36	
Köln U	192	145	26	19		2
Jena U	184	135	25	20	2	2
Gießen U	180	36	126	14	3	1
Hohenheim U	180	27	144	4	5	
Halle-Wittenberg U	175	81	74	16	4	
Trier U	175	164	1	6	4	
Konstanz U	173	147	17	9		
Mainz U	173	82	41	48		2
Kiel U	170	56	77	28	9	
Münster U	137	87	38	11	1	
Essen U	126	96	15	7	8	
Bielefeld U	123	84	18	18	3	
Dortmund U	121	14	1	10	95	1
Rostock U	118	66	15	25	12	
Augsburg U	113	110		3		
Duisburg U	113	45		14	54	
Kaiserslautern U	111	1	10	71	29	
Potsdam U	105	77	12	16		
Ilmenau TU	99	4		14	81	
Regensburg U	88	63	13	11	1	
Düsseldorf U	87	27	38	21	1	
Magdeburg U	83	12	3	15	53	
Bayreuth U	80	32	22	18	7	1
Freiberg TU	69			37	32	
Braunschweig TU	65	4	11	22	28	
Köln FH	65	4		1	57	3
Clausthal TU	64	4		27	33	
Ulm U	64	8	27	20	9	
Paderborn U	59	5		4	50	
Oldenburg U	56	3	4	14	35	
Osnabrück U	56	38	8	9	1	
Wuppertal U	45	23	2	11	9	
Greifswald U	34	9	13	9	3	
Siegen U	25	9		9	7	
Hannover TiHo	24		24			
München UdBW	23	7		6	10	
Chemnitz TU	20	7		5	8	
Lübeck MedU	20	1	12	6	1	
In total	**13,099**	**5,901**	**2,673**	**1,712**	**2,761**	**52**

[1] Only universities with ten or more scientists and academics (cf. Table A6-11) or 20 students and graduates in the period stated.

Source: DAAD (2003), DAAD-funded international scientists and academics, students and graduates by university and subject (2000 and 2001), special report.

Contents

Table A6-17: DAAD-funded international scientists and academics, students and graduates 2000 and 2001 in relation to the number of professors/scientists and academics in total by university[1)]

University	Grantees		Professors			Scientists and academics in total		
	DAAD sci.	Stud./ grad.	n	DAAD sci. per 100 prof.	Stud./grad. per 100 prof.	n	DAAD sci. per 100 sci.	Stud./grad. per 100 sci.
Hohenheim U	39	180	105	37.1	171.4	788	4.9	22.8
Clausthal TU	22	64	76	28.9	84.2	441	5.0	14.5
Stuttgart U	60	325	243	24.7	133.7	2,677	2.2	12.1
Tübingen U	98	379	406	24.1	93.3	3,478	2.8	10.9
Freiberg TU	27	69	112	24.1	61.6	633	4.3	10.9
Karlsruhe U	61	398	267	22.8	149.1	2,134	2.9	18.7
Berlin TU	88	367	392	22.4	93.6	2,402	3.7	15.3
Berlin HU	126	575	562	22.4	102.3	4,484	2.8	12.8
Berlin FU	131	472	607	21.6	77.8	3,169	4.1	14.9
Ilmenau TU	19	99	93	20.4	106.5	625	3.0	15.8
Chemnitz TU	31	20	159	19.5	12.6	898	3.5	2.2
Aachen TH	73	427	388	18.8	110.1	3,930	1.9	10.9
Bayreuth U	33	80	177	18.6	45.2	934	3.5	8.6
Konstanz U	27	173	145	18.6	119.3	898	3.0	19.3
Bonn U	87	423	480	18.1	88.1	3,133	2.8	13.5
Gießen U	67	180	370	18.1	48.6	2,239	3.0	8.0
Hamburg-Harburg TU	18	228	101	17.8	225.7	524	3.4	43.5
Darmstadt TU	49	240	277	17.7	86.6	1,743	2.8	13.8
Freiburg U	64	312	375	17.1	83.2	3,222	2.0	9.7
Potsdam U	33	105	200	16.5	52.5	1,008	3.3	10.4
Göttingen U	70	565	427	16.4	132.3	2,975	2.4	19.0
Heidelberg U	67	437	410	16.3	106.6	3,396	2.0	12.9
Oldenburg U	28	56	181	15.5	30.9	773	3.6	7.2
Magdeburg U	29	83	192	15.1	43.2	1,541	1.9	5.4
Rostock U	44	118	297	14.8	39.7	1,769	2.5	6.7
München U	103	447	710	14.5	63.0	5,129	2.0	8.7
Kassel U	39	241	273	14.3	88.3	943	4.1	25.6
Hannover U	49	448	344	14.2	130.2	2,207	2.2	20.3
Bielefeld U	33	123	237	13.9	51.9	1,394	2.4	8.8
Frankfurt/Main U	65	201	473	13.7	42.5	2,636	2.5	7.6
Lübeck MedU	10	20	75	13.3	26.7	961	1.0	2.1
München TU	52	209	394	13.2	53.0	4,100	1.3	5.1
Düsseldorf U	31	87	238	13.0	36.6	2,115	1.5	4.1
Hannover TiHo	10	24	77	13.0	31.2	312	3.2	7.7
Kaiserslautern U	18	111	144	12.5	77.1	953	1.9	11.6
Dresden TU	66	611	539	12.2	113.4	3,669	1.8	16.7
Mainz U	52	173	429	12.1	40.3	3,105	1.7	5.6
Bochum U	48	316	401	12.0	78.8	2,354	2.0	13.4
Jena U	42	184	351	12.0	52.4	2,517	1.7	7.3
Leipzig U	50	269	433	11.5	62.1	2,613	1.9	10.3
Duisburg U	24	113	212	11.3	53.3	891	2.7	12.7
Münster U	62	137	559	11.1	24.5	3,699	1.7	3.7
Bremen U	38	193	343	11.1	56.3	1,713	2.2	11.3
Marburg U	40	214	364	11.0	58.8	2,175	1.8	9.8
Erlangen-Nürnberg U	50	214	468	10.7	45.7	3,340	1.5	6.4
Ulm U	19	64	178	10.7	36.0	1,856	1.0	3.4
Hamburg U	81	358	773	10.5	46.3	3,533	2.3	10.1
Kiel U	41	170	401	10.2	42.4	2,364	1.7	7.2
Saarbrücken U	26	227	265	9.8	85.7	1,917	1.4	11.8
Würzburg U	33	208	340	9.7	61.2	2,523	1.3	8.2
Dortmund U	29	121	304	9.5	39.8	1,523	1.9	7.9
Braunschweig TU	22	65	231	9.5	28.1	1,527	1.4	4.3
Köln U	51	192	565	9.0	34.0	3,195	1.6	6.0
Trier U	13	175	151	8.6	115.9	673	1.9	26.0
Osnabrück U	14	56	176	8.0	31.8	683	2.0	8.2
Greifswald U	16	34	221	7.2	15.4	1,189	1.3	2.9
Augsburg U	10	113	144	6.9	78.5	650	1.5	17.4
Siegen U	16	25	231	6.9	10.8	706	2.3	3.5
München UdBW	10	23	171	5.8	13.5	559	1.8	4.1
Halle-Wittenberg U	22	175	397	5.5	44.1	2,488	0.9	7.0
Essen U	19	126	352	5.4	35.8	1,886	1.0	6.7
Regensburg U	14	88	260	5.4	33.8	1,788	0.8	4.9
Paderborn U	14	59	283	4.9	20.8	988	1.4	6.0
Wuppertal U	14	45	285	4.9	15.8	946	1.5	4.8
Köln FH	12	65	384	3.1	16.9	432	2.8	15.0

[1)] Only universities with ten or more scientists and academics or 20 or more students and graduates in the period stated (cf. Tables A6-11 and A6-16).

Sources:
DAAD (2003), DAAD-funded international scientists and academics, students and graduates by university and subject (2000 and 2001), special report.

Federal Statistical Office (2002), Full time employment scientific and artistic staff according to organisational classification, university, fields of teaching and r[illegible]ort.

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Table A6-18:
Participation of German universities[1] in the Fifth EU Framework Programme 1998 to 2002

University	Participation
Aachen TH	135
Stuttgart U	130
München TU	91
Karlsruhe U	84
München U	83
Berlin TU	73
Tübingen U	63
Erlangen-Nürnberg U	54
Heidelberg U	54
Dresden TU	53
Freiburg U	52
Hamburg U	50
Hannover U	49
Bremen U	45
Ulm U	45
Mainz U	43
Würzburg U	43
Göttingen U	42
Bonn U	40
Frankfurt/Main U	40
Berlin FU	38
Kiel U	35
Darmstadt TU	34
Braunschweig TU	33
Dortmund U	33
Köln U	31
Bochum U	29
Essen U	28
Saarbrücken U	27
Berlin HU	26
Düsseldorf U	26
Konstanz U	23
Duisburg U	22
Gießen U	22
Jena U	22
Regensburg U	22
Oldenburg U	21
Kassel U	19
Wuppertal U	19
Hohenheim U	18
Münster U	18
Paderborn U	18
Kaiserslautern U	16
Halle U	15
Rostock U	15
Bielefeld U	14
Hannover MedHo	14
Potsdam U	14
Magdeburg U	13
Bayreuth U	12
Freiberg TU	12
Leipzig U	12
Lübeck MedU	11
Siegen U	11
Hamburg-Harburg TU	10
Chemnitz TU	8
Clausthal TU	8
Ilmenau TU	8
Greifswald U	7
Hannover TiHo	7
Marburg U	7
Bamberg U	6
Trier U	6
Cottbus TU	5
Hagen FernU	5
Koblenz-Landau U	5
München UdBW	5
47 other universities	66
In total	**2,145**

[1] Only universities with five or more instances of participation.

Source: European Commission Directorates-General "Research" and "Information Society". Special report compiled for KOWI as well as calculations carried out by the DFG.

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Table A7-1:
Institute for Scientific Information (ISI), Philadelphia, classification system for fields of research

Fields of research	Subfields
f01 Multidisciplinary	f01_01 Multidisciplinary in agriculture, biol. and environmental sc.
	f01_02 Multidisciplinary in life sciences
	f01_03 Multidisciplinary in physical, chemical and earth sciences
f02 Agricultural sciences	f02_01 Agricultural chemistry
	f02_02 Agriculture/agronomy
	f02_03 Food science/nutrition
f03 Engineering	f03_01 AI, robotics & automatic control
	f03_02 Aerospace engineering
	f03_03 Civil engineering
	f03_04 Electrical and electronics engineering
	f03_05 Engineering management/general
	f03_06 Engineering mathematics
	f03_07 Environmental engineering & energy
	f03_08 Instrumentation & measurement
	f03_09 Mechanical engineering
	f03_10 Nuclear engineering
	f03_11 Spectroscopy/instrumentation/analytical sciences
f04 Materials science	f04_01 Materials science & engineering
	f04_02 Metallurgy
f05 Computer science	f05_01 Computer science & engineering
	f05_02 Information technology & communications systems
f06 Mathematics	f06_01 Mathematics
f07 Physics	f07_01 Optics & acoustics
	f07_02 Applied physics/condensed matter/materials sciences
	f07_03 Physics (nuclear-, particle-, theoret.- and plasma-physics)
f08 Astrophysics	f08_01 Space science
f09 Geosciences	f09_01 Geological, petroleum & mining engineering
	f09_02 Earth sciences
f10 Chemistry	f10_01 Chemical engineering
	f10_02 Chemistry & analysis
	f10_03 Chemistry
	f10_04 Inorganic & nuclear chemistry
	f10_05 Organic chemistry/polymer science
	f10_06 Physical chemistry/chemical physics
f11 Plant & animal science	f11_01 Animal sciences
	f11_02 Aquatic sciences
	f11_03 Entomology/pest control
	f11_04 Plant sciences
	f11_05 Veterinary medicine/animal health
	f11_06 Animal & plant science
f12 Biology & biochemistry	f12_01 Biology
	f12_02 Biotechnology & applied microbiology
	f12_03 Biochemistry & biophysics
	f12_04 Endocrinology, nutrition & metabolism
	f12_05 Experimental biology
	f12_06 Physiology
f13 Ecology/environment	f13_01 Environment/ecology
f14 Microbiology	f14_01 Microbiology
f15 Molecular biology & genetics	f15_01 Cell & developmental biology
	f15_02 Molecular biology & genetics
f16 Neuroscience	f16_01 Neurosciences & behavior
f17 Immunology	f17_01 Immunology
f18 Pharmacology	f18_01 Pharmacology & toxicology

>> Continued over

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Fields of research	Subfields
f19 Clinical medicine	f19_01 Anesthesia & intensive care
	f19_02 Cardiovascular & respiratory systems
	f19_03 Clinical immunology & infectious disease
	f19_04 Clinical psychology & psychiatry
	f19_05 Dentistry/oral surgery & medicine
	f19_06 Dermatology
	f19_07 Clinical endocrinology, metabolism & nutrition
	f19_08 Environmental medicine & public health
	f19_09 Gastroenterology & hepatology
	f19_10 General & internal medicine
	f19_11 Health care sciences & services
	f19_12 Hematology
	f19_13 Neurology
	f19_14 Oncology
	f19_15 Ophthalmology
	f19_16 Orthopedics, rehabilitation & sports medicine
	f19_17 Otolaryngology
	f19_18 Pediatrics
	f19_19 Clinical pharmacology/toxicology
	f19_20 Radiology, nuclear medicine & imaging
	f19_21 Reproductive medicine
	f19_22 Research/laboratory medicine & medical technology
	f19_23 Rheumatology
	f19_24 Surgery
	f19_25 Urology & nephrology
	f19_26 Cardiovascular & hematology research
	f19_27 Medical research, diagnosis & treatment
	f19_28 Medical research, general topics
	f19_29 Medical research, organs & systems
	f19_30 Oncogenesis & cancer research
f20 Psychology/psychiatry	f20_01 Psychiatry
	f20_02 Psychology
f21 Social sciences	f21_01 Communication
	f21_02 Environmental studies, geography & development
	f21_03 Library & information sciences
	f21_04 Political science & public administration
	f21_05 Public health & health care science
	f21_06 Rehabilitation
	f21_07 Social work & social policy
	f21_08 Sociology & anthropology
f22 Education	f22_01 Education
f23 Economics & business	f23_01 Economics
	f23_02 Management
f24 Law	f24_01 Law
f25 Arts & humanities	f25_01 Archaeology
	f25_02 Religion & theology
	f25_03 Art & architecture
	f25_04 Classical studies
	f25_05 Arts & humanities, general
	f25_06 History
	f25_07 Language & linguistics
	f25_08 Literature
	f25_09 Performing arts
	f25_10 Philosophy

Source: Da Pozzo, F.; Maye, I.; Roulin Perrard A. and von Ins, M. (2001), Die Schweiz und die weltweite Champions League der Forschungsinstitutionen 1994 – 1999. Ein Beitrag zu einem internationalen Benchmarking: Konzept und erste Resultate (http://www.cest.ch): 86 p.

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Table A7-2:
Rankings of German universities[1)] in the international comparative study carried out by CEST: "The international Champions League of research institutions"

University	CEST ranking	Publications	University	CEST ranking	Publications
München U	51	16,823	Berlin TU	246	5,471
Heidelberg U	73	13,619	Essen U	268	4,738
Berlin FU	84	12,684	Karlsruhe U	276	4,556
Tübingen U	117	10,437	Regensburg U	285	4,244
Hamburg U	129	9,792	Halle-Wittenberg U	287	4,208
Freiburg U	137	9,556	Saarbrücken U	308	3,784
Hannover U	138	9,511	Darmstadt TU	320	3,629
München TU	140	9,452	Bayreuth U	333	3,352
Bonn U	143	9,140	Braunschweig TU	346	3,062
Göttingen U	144	9,045	Konstanz U	359	2,888
Berlin HU	146	8,941	Lübeck MedU	366	2,780
Mainz U	148	8,907	Bielefeld U	367	2,780
Würzburg U	150	8,876	Dortmund U	392	2,462
Münster U	153	8,636	Wuppertal U	404	2,310
Erlangen-Nürnberg U	160	8,425	Rostock U	410	2,231
Düsseldorf U	180	7,353	Kaiserslautern U	431	1,961
Marburg U	185	7,197	Osnabrück U	471	1,482
Köln U	190	7,056	Greifswald U	476	1,457
Kiel U	202	6,754	Mannheim U	477	1,452
Frankfurt/Main U	203	6,752	Oldenburg U	496	1,206
Bochum U	208	6,632	Augsburg U	516	1,027
Ulm U	219	6,205	Hamburg-Harburg TU	530	894
Stuttgart U	237	5,748	Kassel U	533	857
Gießen U	240	5,622			

[1)] Publications are attributed to universities using the institute address of the author(s) contained in the ISI databases.

Based on contributions to international journals researched by the Centre for Science and Technology Studies (CEST), Bern, for the period 1994 to 1999 using the subject databases provided by the Institute for Scientific Information (ISI), Philadelphia (SCI/SSCI/A&HCI). Institutions listed met the following conditions:

> More than fifty publications could be found in at least one of 107 fields of research according to the ISI classification (cf. Table A7-1) and

> the citation rate for these publications was more than 20 percent above the global average in the respective field of research.

Source: Center for Science and Technology Studies (CEST) (2002), Ranking of the 575 Universities and Colleges of the Champions League, by number of Total Publications (cf. http://www.cest.ch).

Table A7-3:
Publication output of and citation rate for German universities 1994 to 1998 in the area of basic medical research[1)]

University	Publications	Proportion of publications per field of research (RCI = relative citation index)[2)]									
		Clinical medicine		Basic life sciences		Biomedical science		Pharmacology		Food science and nutrition	
	n	%	RCI	%	RCI	%	RCI	%	RCI	%	RCI
München U	7,099	43	**1.21**	25	1.18	27	1.07	4		1	
Heidelberg U	5,417	48	**1.36**	22	**1.49**	25	**1.51**	4			
Berlin FU	4,767	40	**1.34**	25	0.97	23	1.00	10	0.94	1	
Tübingen U	4,204	37	1.07	26	1.03	30	1.12	7	0.95		
Berlin HU	3,993	43	1.13	24	1.05	28	1.09	5	1.05		
Freiburg U	3,986	39	**1.42**	26	**1.36**	27	**1.40**	7	1.15		
Würzburg U	3,777	31	**1.29**	31	1.11	31	**1.37**	6	**1.36**	1	
Düsseldorf U	3,544	41	1.14	23	0.85	27	1.11	8	0.93	1	
Hannover MedHo	3,467	49	**1.26**	21	1.08	23	0.83	5	1.13	1	
Münster U	3,364	45	**1.26**	26	0.95	23	1.10	5	0.69	1	
Mainz U	3,318	38	1.11	26	1.05	27	**1.22**	9	**1.22**		
Göttingen U	3,128	39	**1.29**	29	0.84	26	1.11	5	0.73	1	
Hamburg U	3,077	44	**1.24**	27	1.16	24	1.05	4		1	
Ulm U	2,907	46	0.95	21	0.99	28	0.97	5	1.01	1	
Bonn U	2,867	39	1.01	27	1.05	23	0.93	9	1.06	2	
Erlangen U	2,686	46	1.08	21	1.08	26	1.14	6	0.95		
Frankfurt/Main U	2,564	37	**1.24**	25	0.92	24	1.02	13	1.03	1	
Köln U	2,523	42	1.08	25	0.82	27	1.14	5	0.77		
Marburg U	2,492	36	1.15	36	**1.22**	21	0.88	7	0.98		
München TU	2,462	36	**1.54**	32	**1.31**	21	**1.33**	5	0.73	5	1.19
Gießen U	2,287	36	1.06	29	0.87	28	0.87	4		2	
Essen U	2,115	51	**1.30**	19	1.10	22	0.97	8	**1.33**		
Kiel U	1,977	44	**1.20**	20	0.89	27	0.95	7	1.06	2	
Bochum U	1,930	37	1.01	27	0.92	31	0.83	4			
Aachen TH	1,595	43	0.90	25	0.96	26	1.02	6	0.73		
Lübeck MedU	1,558	50	1.17	22	0.75	25	0.82	3			
Regensburg U	1,521	35	**1.25**	34	1.18	23	0.92	7	0.56		
Jena U	1,450	33	0.95	28	0.68	26	0.81	12	0.58		
Saarbrücken U	1,416	41	0.92	27	0.64	26	1.00	6	0.81		
Leipzig U	1,251	35	1.16	28	0.54	30	0.96	6	0.79	1	
Halle U	1,031	25	**1.42**	31	0.70	14	1.03	13	0.61		
Magdeburg U	816	35	1.11	21	0.83	36	0.85	8	0.67		
Dresden TU	709	41	0.83	27	0.67	23	1.02	9	0.41		
Rostock U	533	40	0.80	26	0.50	26	0.92	7		2	
Bielefeld U	509	10	1.16	62	0.86	25	1.01	2			
Greifswald U	452	36	0.59	30	**1.24**	22	0.61	12	0.57		
Berlin TU	441	6		62	1.00	13	0.77	4		15	**1.51**
Bremen U	396	24	1.17	41	0.88	30	1.13	4			
Witten-Herdecke U	249	52	1.12	26	0.71	15	0.73	3		1	

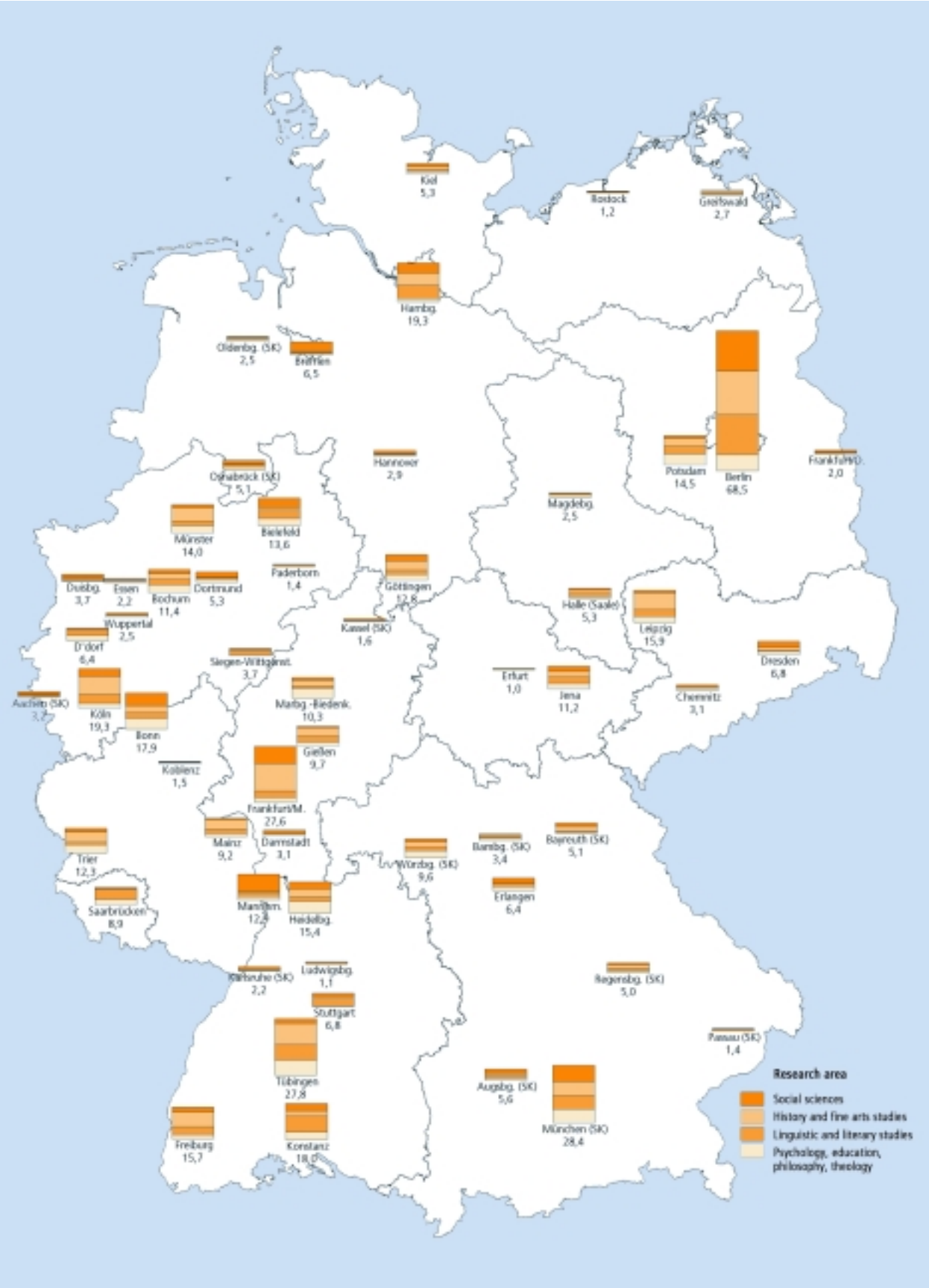
[1)] Each publication is attributed fully to the institutions listed as author addresses in the ISI/CWTS subject databases on which this is based. The names of the institutions are given by the standard name abbreviations used in the sources.

[2)] The relative citation index (RCI) is calculated on the basis of a 5 year citation impact time window (1994 to 1998). Figures are given for all fields which constitute at least five percent of the total output and in which at least 40 papers were published between 1994 and 1998.

Source: Tijssen, Robert J. W.; Leeuwen, Thed N. van and Raan, Anthony F. J. van (2003), Mapping the scientific performance of German medical research. An international comparative bibliometric study, Leiden: 70 pp.

Figure A3-1:

DFG approvals to universities and non-university institutions 1999 to 2001 by district[1]: Scientific discipline Humanities and Social Sciences (in millions of euros)



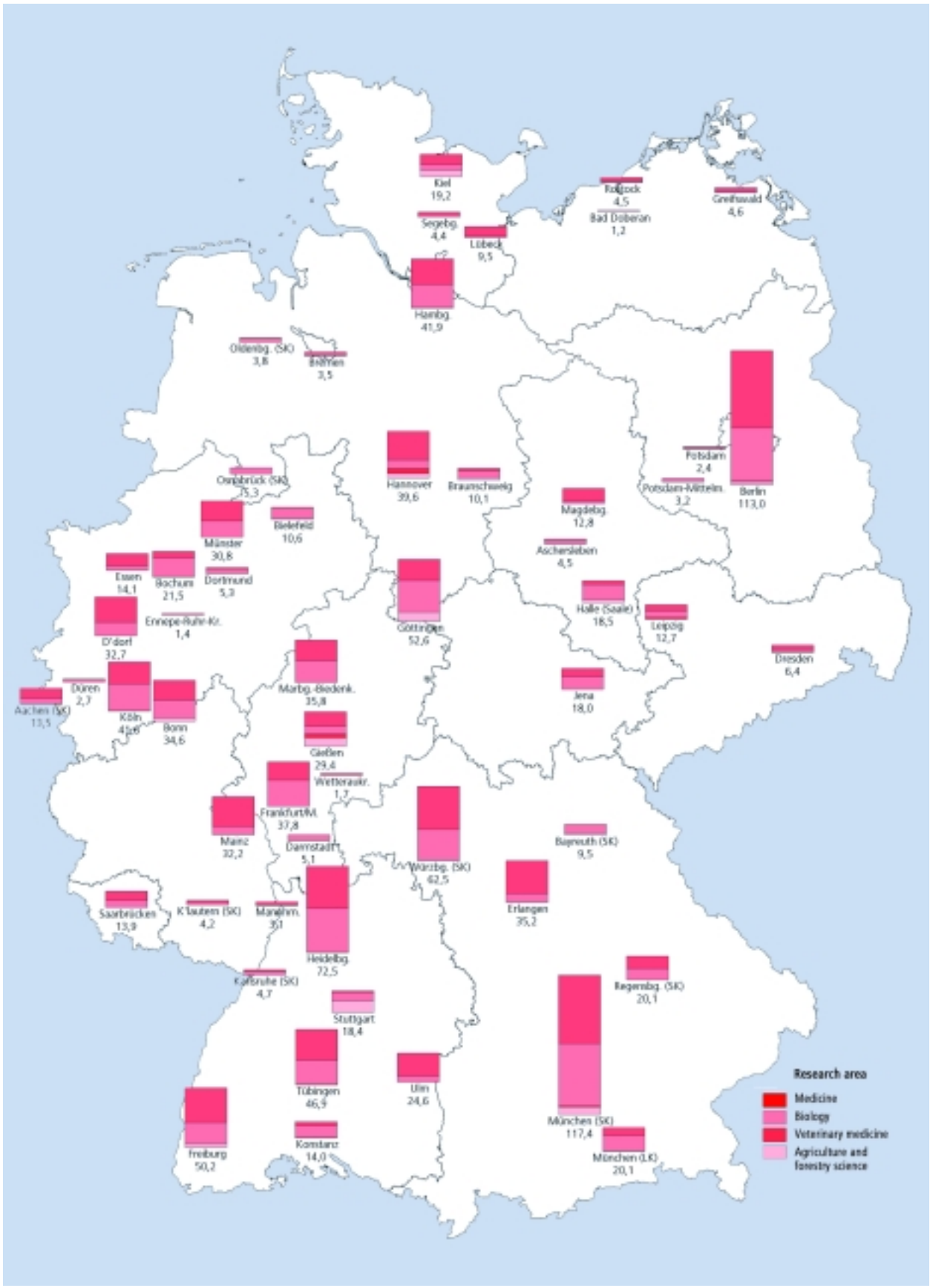
[1] Only districts which received more than 1 million euros in DFG approvals in total in this scientific discipline within the period stated.

SK = urban district

LK = rural district

Figure A3-2:

DFG approvals to universities and non-university institutions 1999 to 2001 by district [1)]
Scientific discipline Biology/Medicine (in millions of euros)



[1)] Only districts which received more than 1 million euros in DFG approvals in total in this scientific discipline within the period stated.
SK = urban district
LK = rural district

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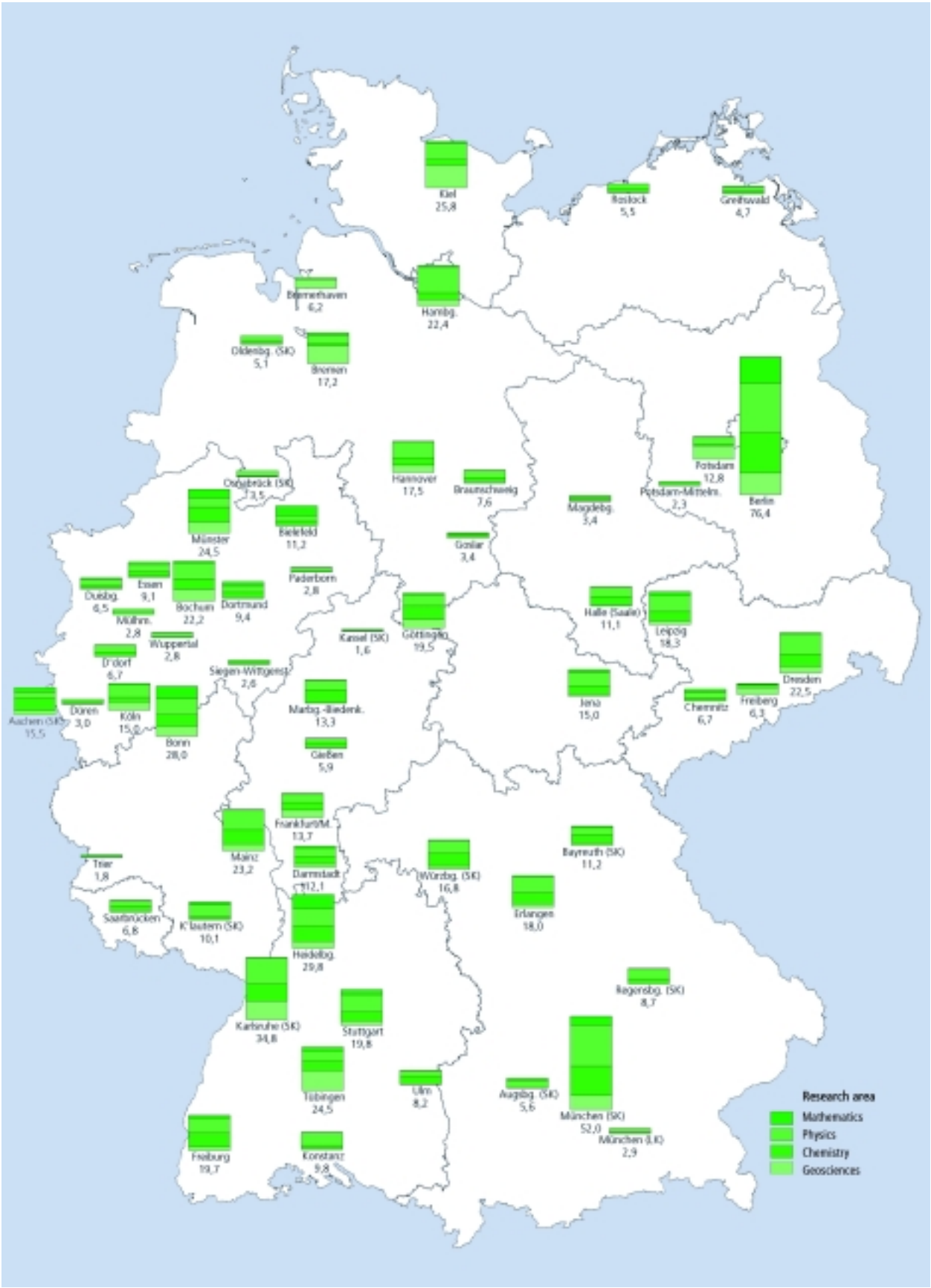
Figure A3-3:
DFG approvals to universities and non-university institutions 1999 to 2001 by district [1]: Scientific discipline Natural Sciences (in millions of euros)



[1] Only districts which received more than 1 million euros in DFG approvals in total in this scientific discipline within the period stated.
SK = urban district
LK = rural district

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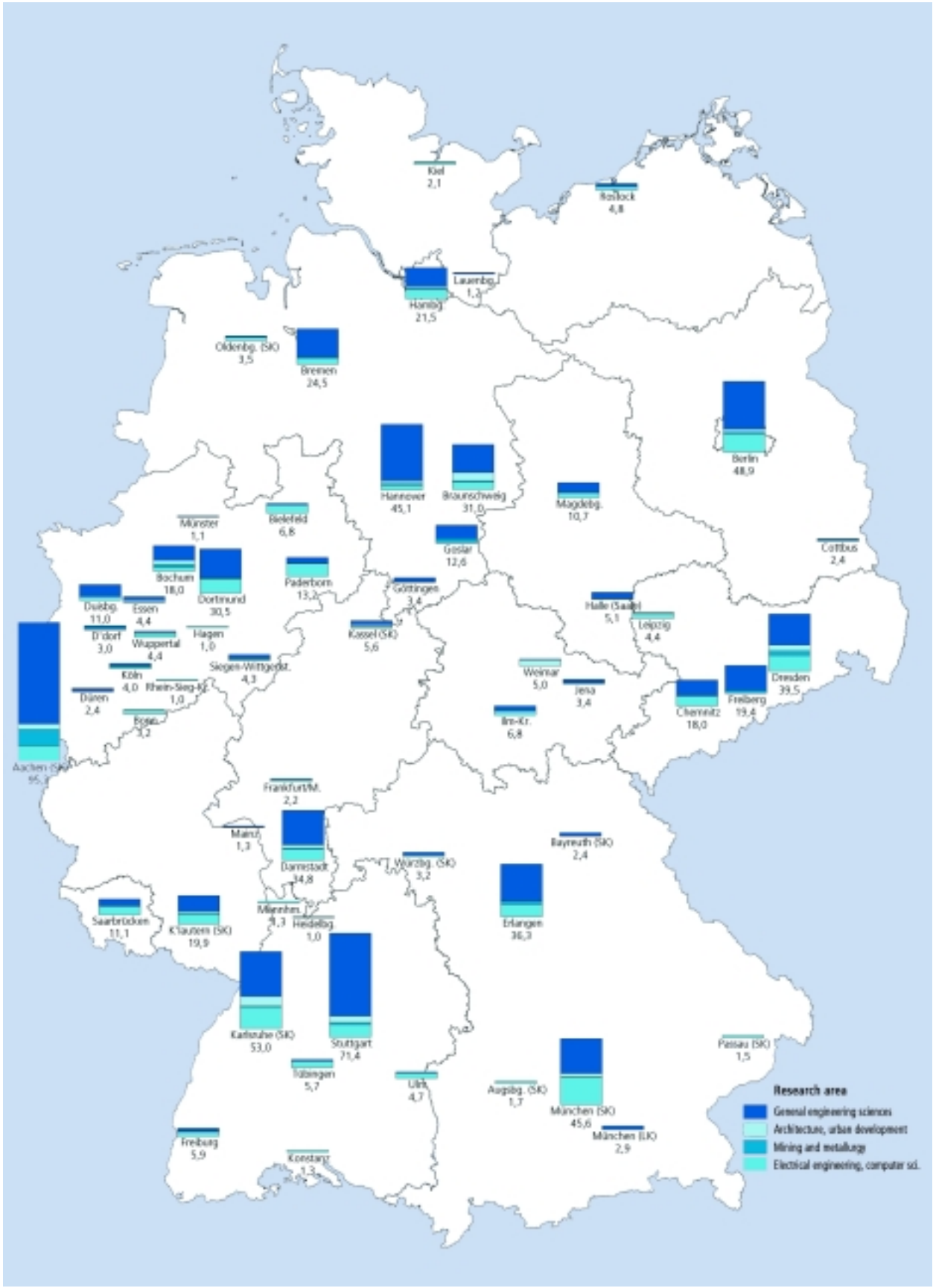
Figure A3-4:
DFG approvals to universities and non-university institutions 1999 to 2001 by district [1]: Scientific discipline Engineering Sciences (in millions of euros)



[1] Only districts which received more than 1 million euros in DFG approvals in total in this scientific discipline within the period stated.
SK = urban district
LK = rural district

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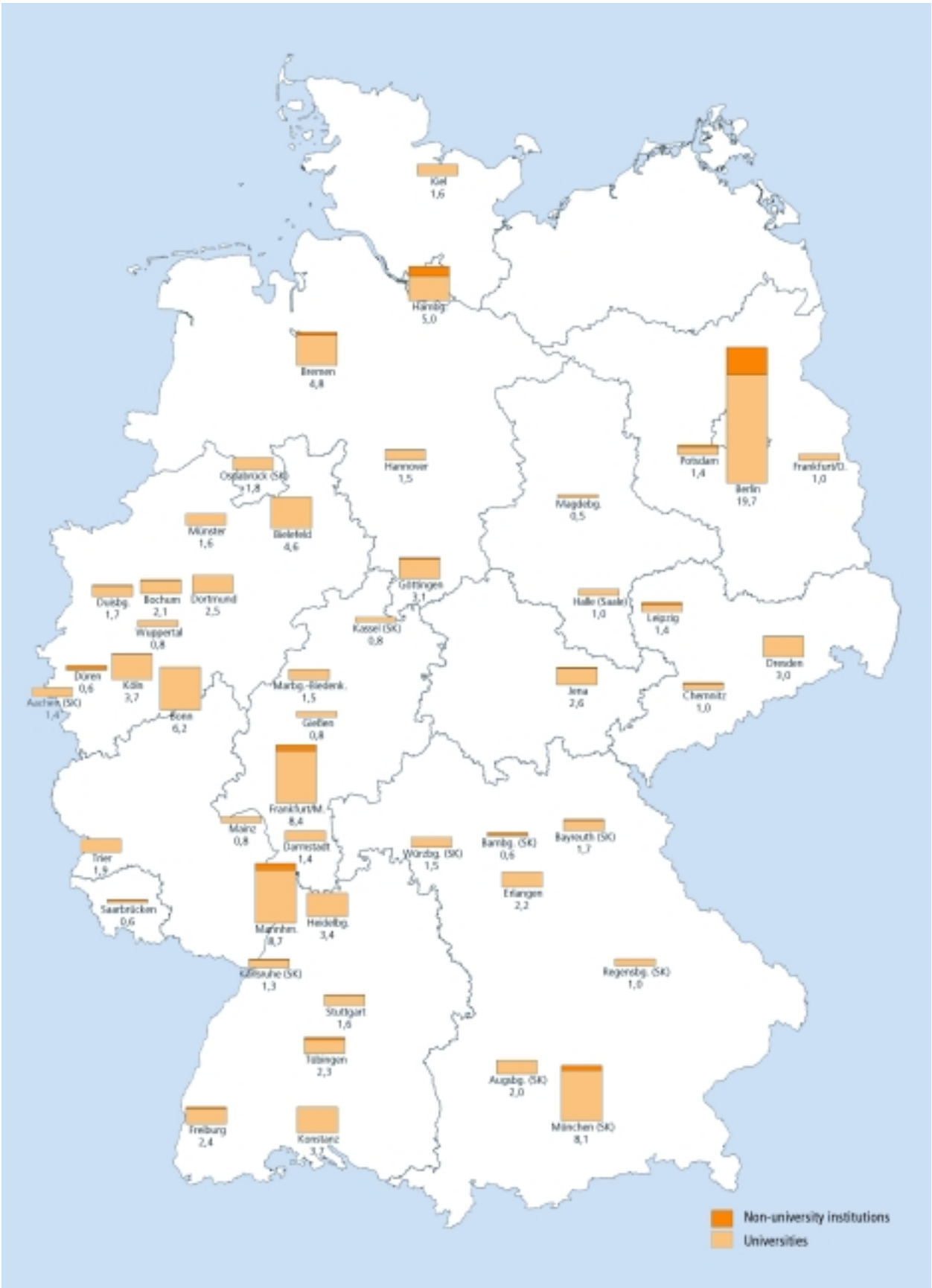
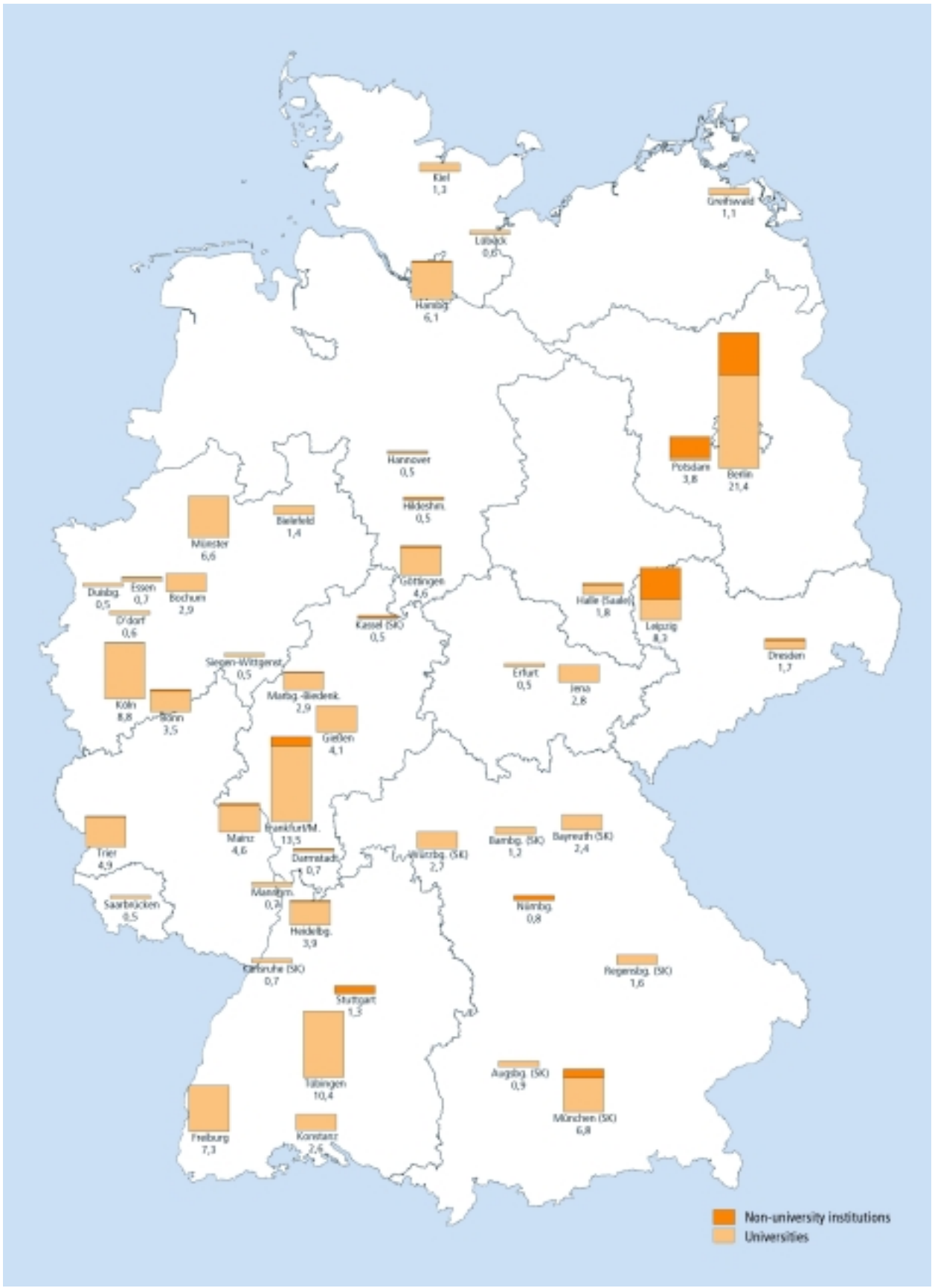
Figure A3-5:
DFG approvals to universities and non-university institutions 1999 to 2001 by district [1]: Research area social sciences (in millions of euros)



[1] Only districts which received more than half a million euros in DFG approvals in total in this research area within the period stated.
SK = urban district
LK = rural district

Contents

Figure A3-6:
DFG approvals to universities and non-university institutions 1999 to 2001 by district [1]:
Research area history and fine arts studies (in millions of euros)



[1] Only districts which received more than half a million euros in DFG approvals in total in this research area within the period stated.
SK = urban district
LK = rural district

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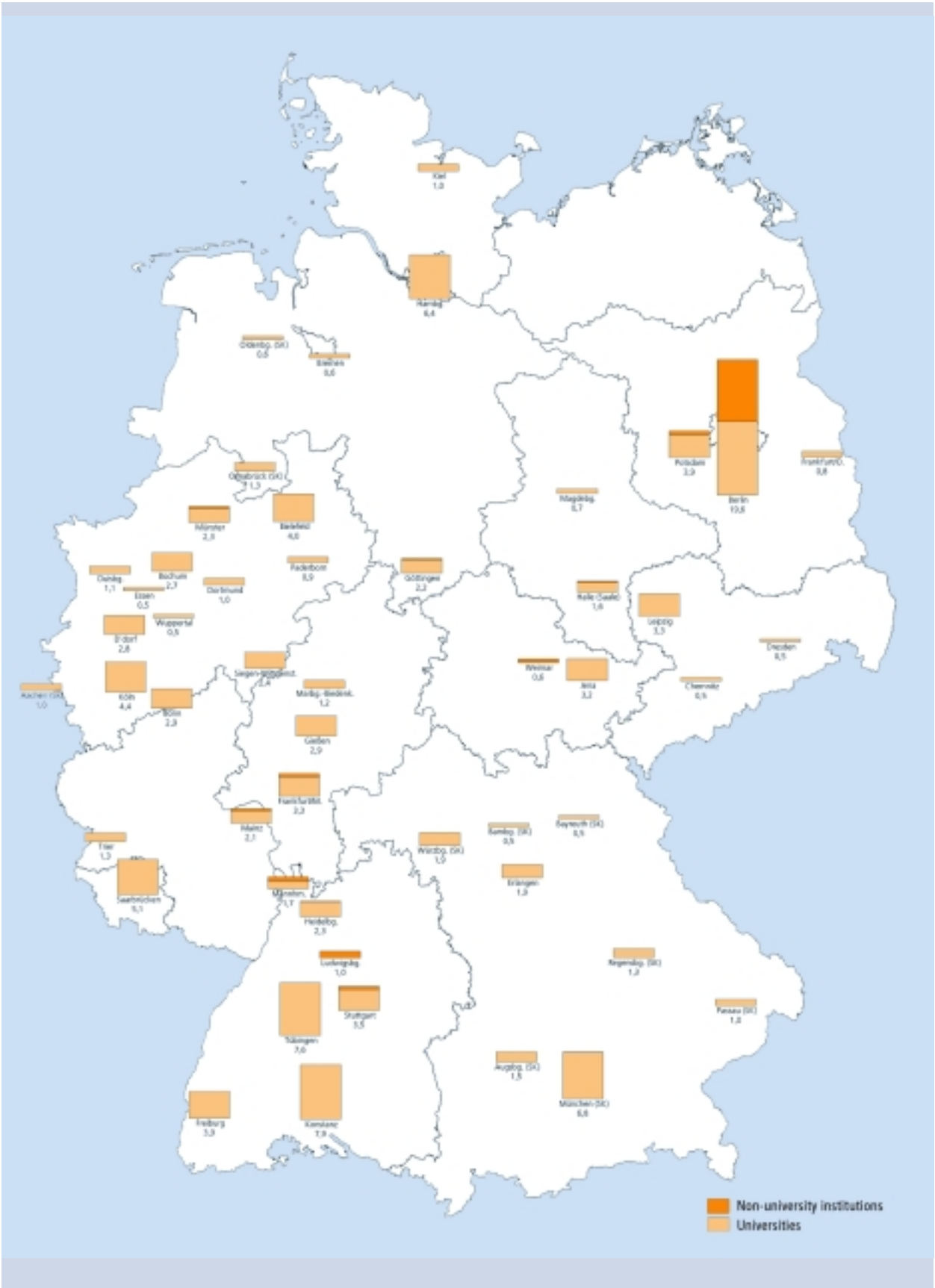
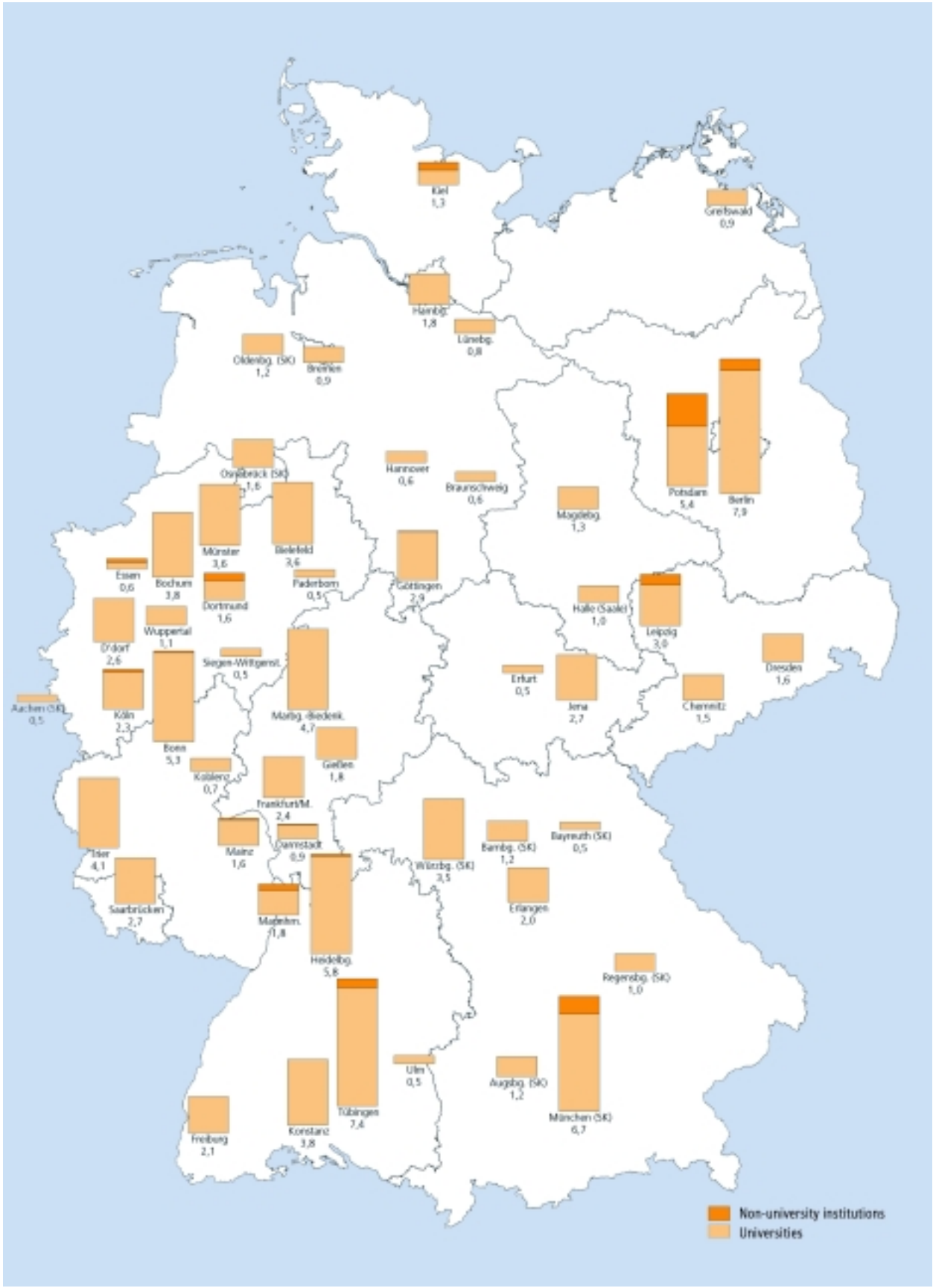
Figure A3-7:
DFG approvals to universities and non-university institutions 1999 to 2001 by district [1]:
Research area linguistic and literary studies (in millions of euros)



[1] Only districts which received more than half a million euros in DFG approvals in total in this research area within the period stated.
SK = urban district
LK = rural district

Figure A3-8:
DFG approvals to universities and non-university institutions 1999 to 2001 by district [1]:
Research area psychology, education, philosophy, theology (in millions of euros)



[1] Only districts which received more than half a million euros in DFG approvals in total in this research area within the period stated.
SK = urban district
LK = rural district

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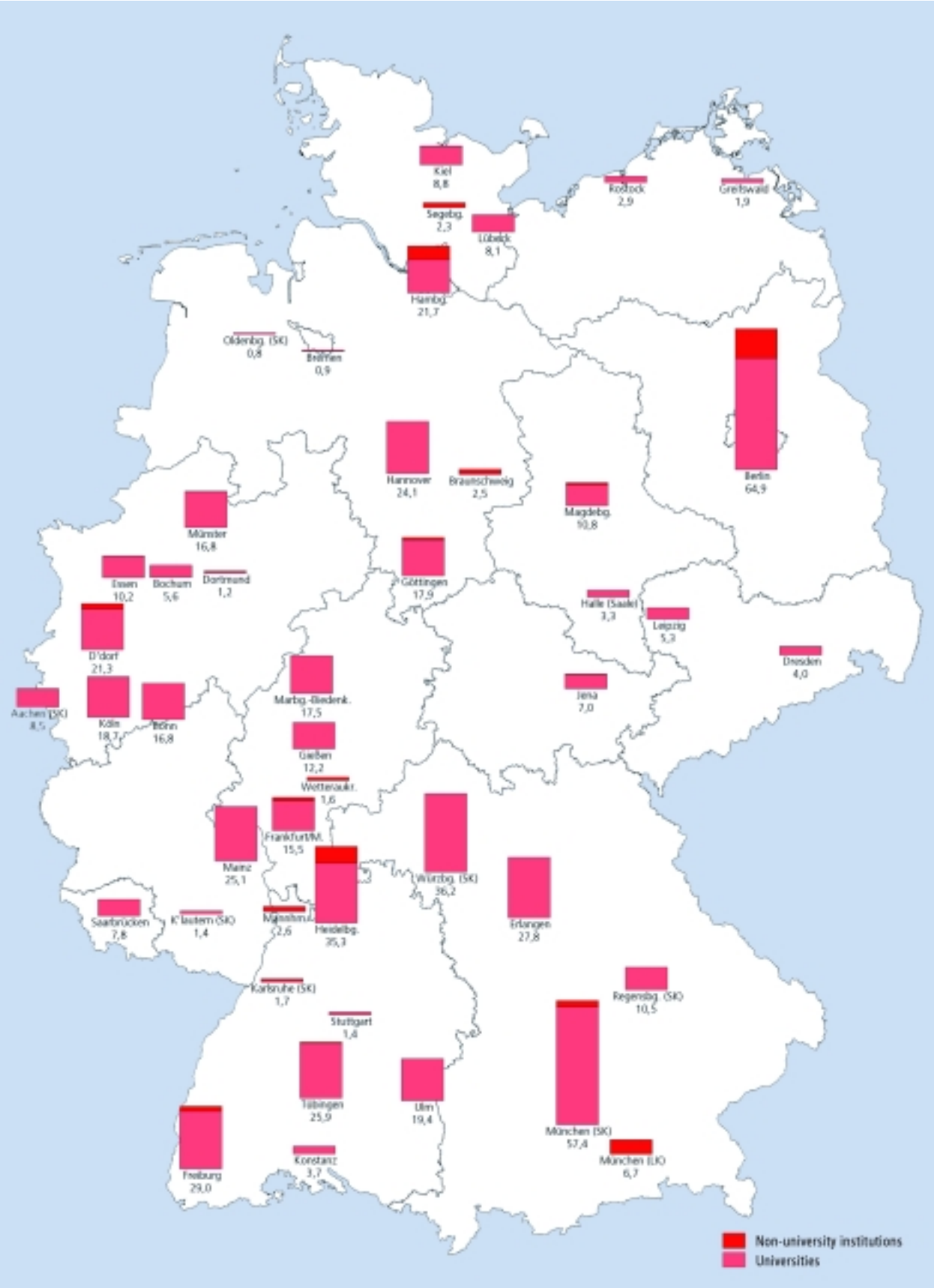
Figure A3-9:
DFG approvals to universities and non-university institutions 1999 to 2001 by district [1]: Research area medicine (in millions of euros)



[1] Only districts which received more than half a million euros in DFG approvals in total in this research area within the period stated.
SK = urban district
LK = rural district

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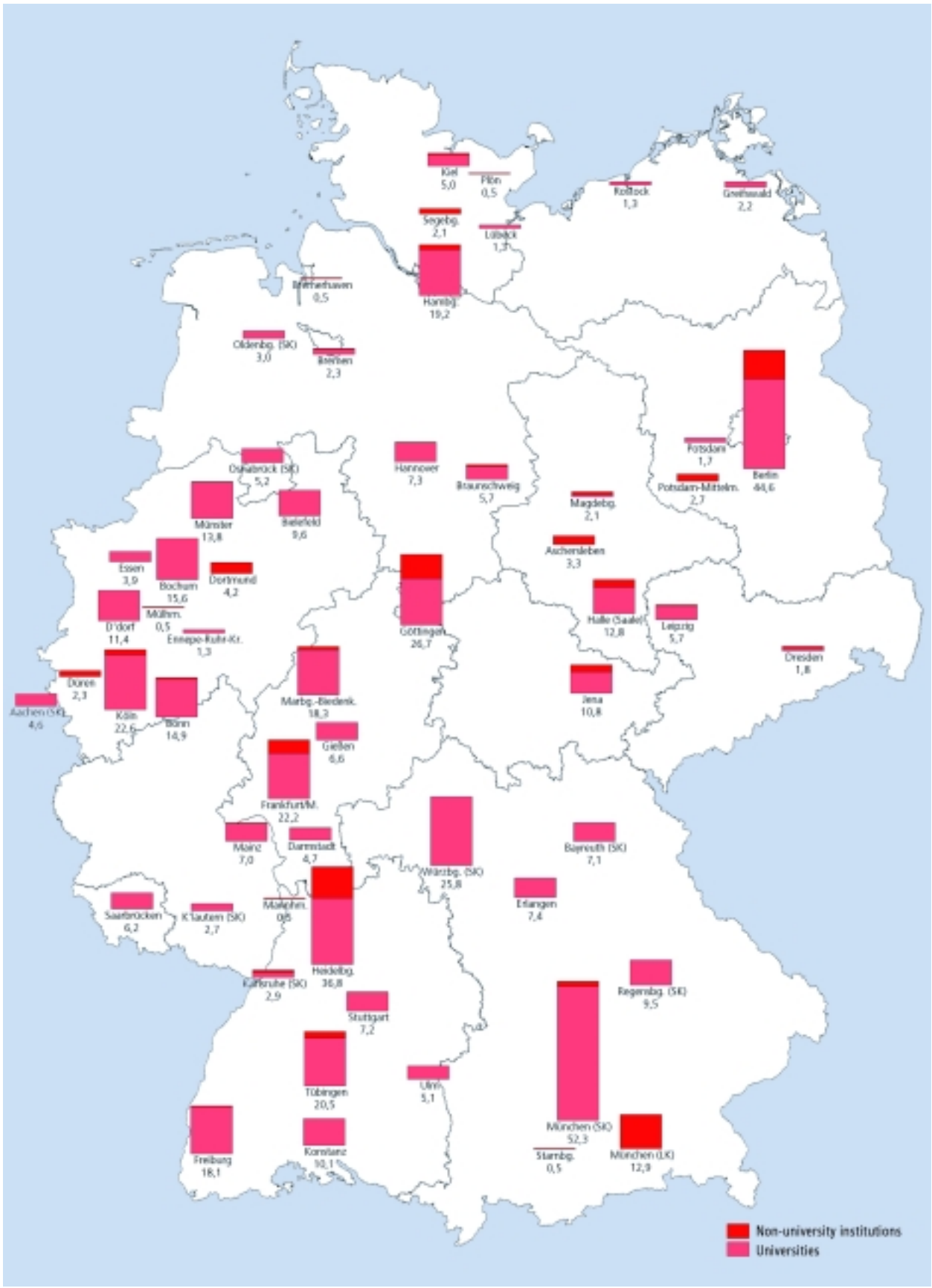
Figure A3-10:
DFG approvals to universities and non-university institutions 1999 to 2001 by district [1]: Research area biology (in millions of euros)



[1] Only districts which received more than half a million euros in DFG approvals in total in this research area within the period stated.

SK = urban district

LK = rural district

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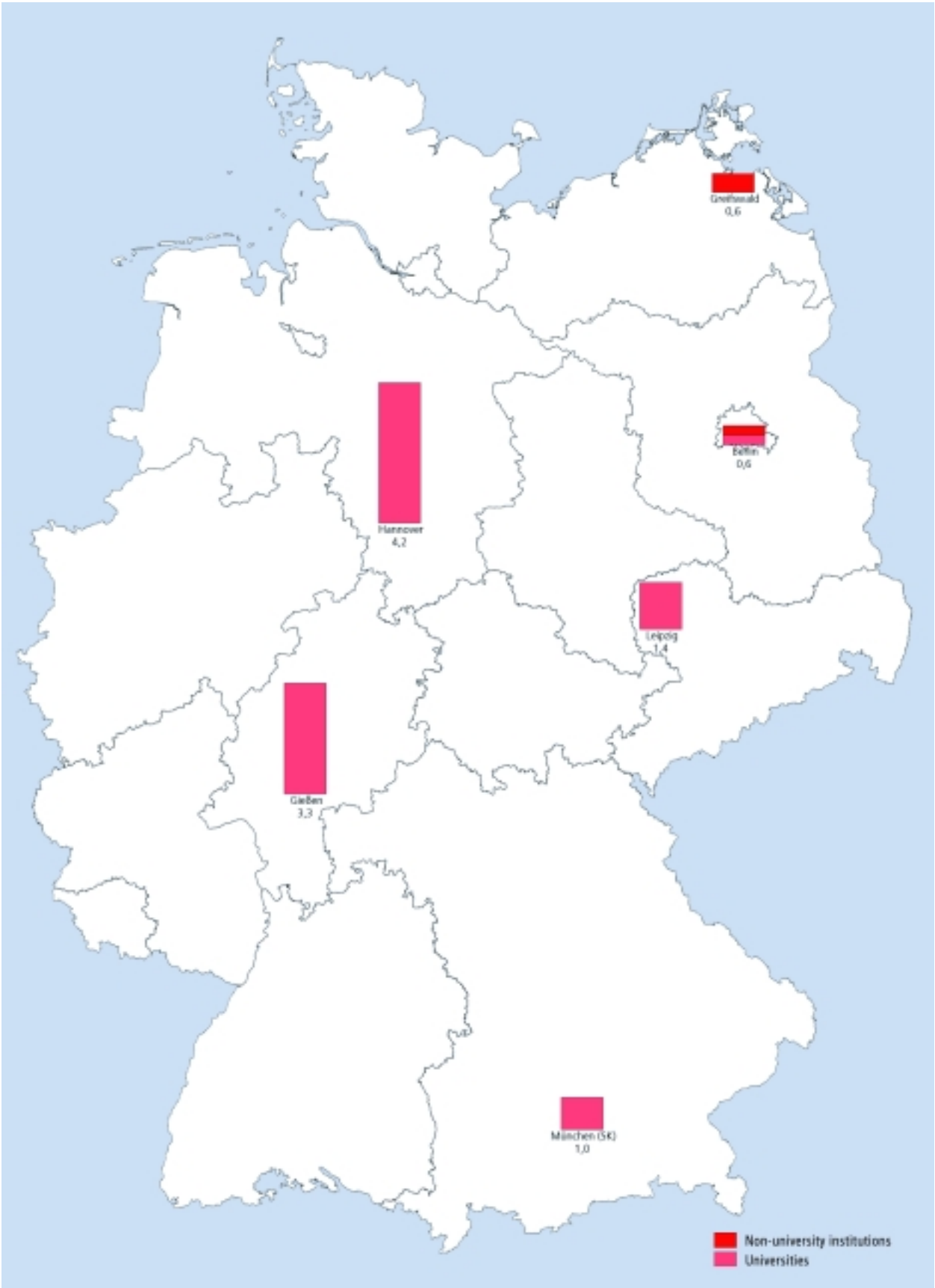
Figure A3-11:
DFG approvals to universities and non-university institutions 1999 to 2001 by district [1]: Research area veterinary medicine (in millions of euros)



[1] Only districts which received more than half a million euros in DFG approvals in total in this research area within the period stated.
SK = urban district
LK = rural district

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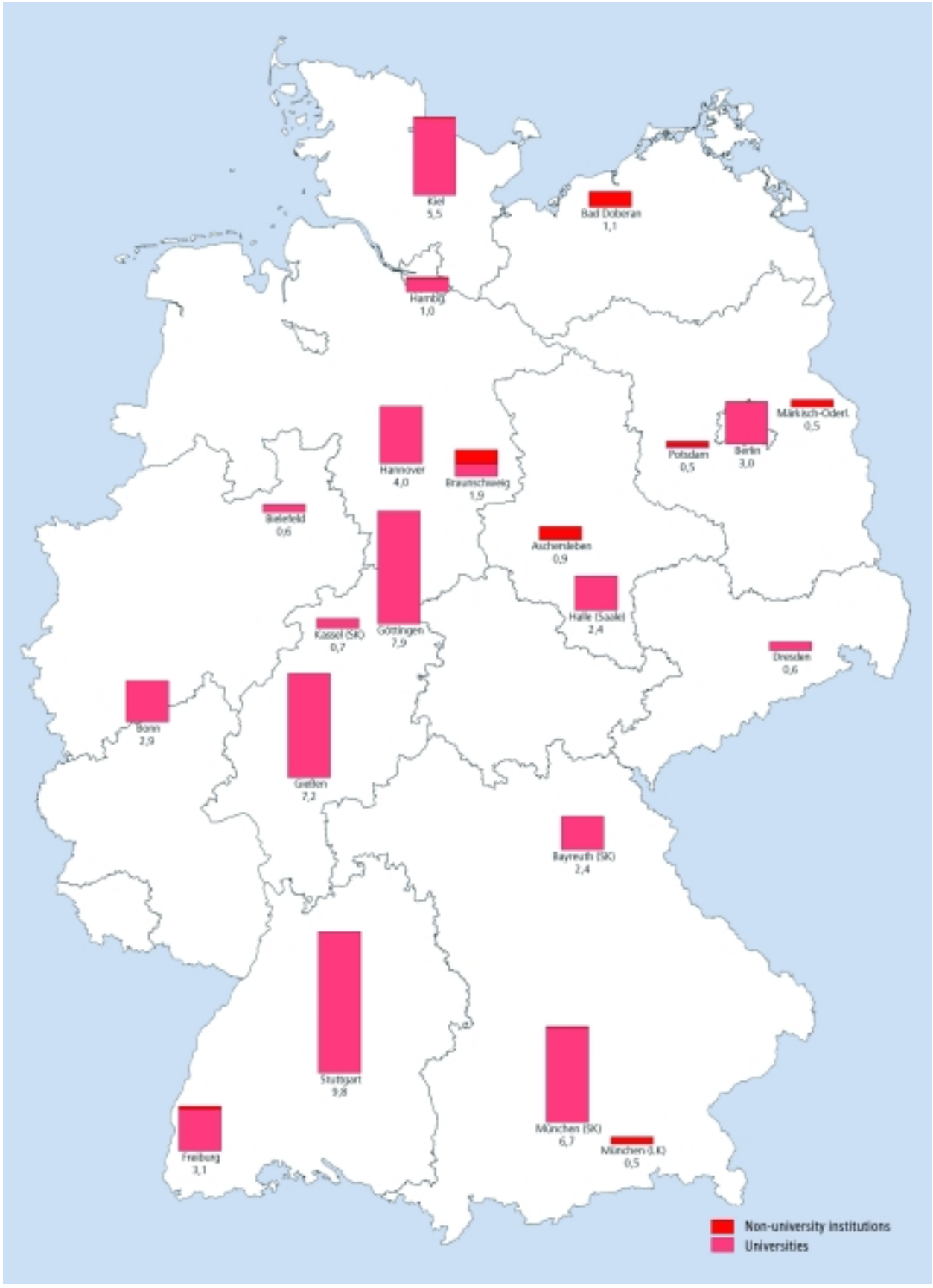
Figure A3-12:

DFG approvals to universities and non-university institutions 1999 to 2001 by district [1]: Research area agriculture and forestry science (in millions of euros)



[1] Only districts which received more than half a million euros in DFG approvals in total in this research area within the period stated.

SK = urban district

LK = rural district

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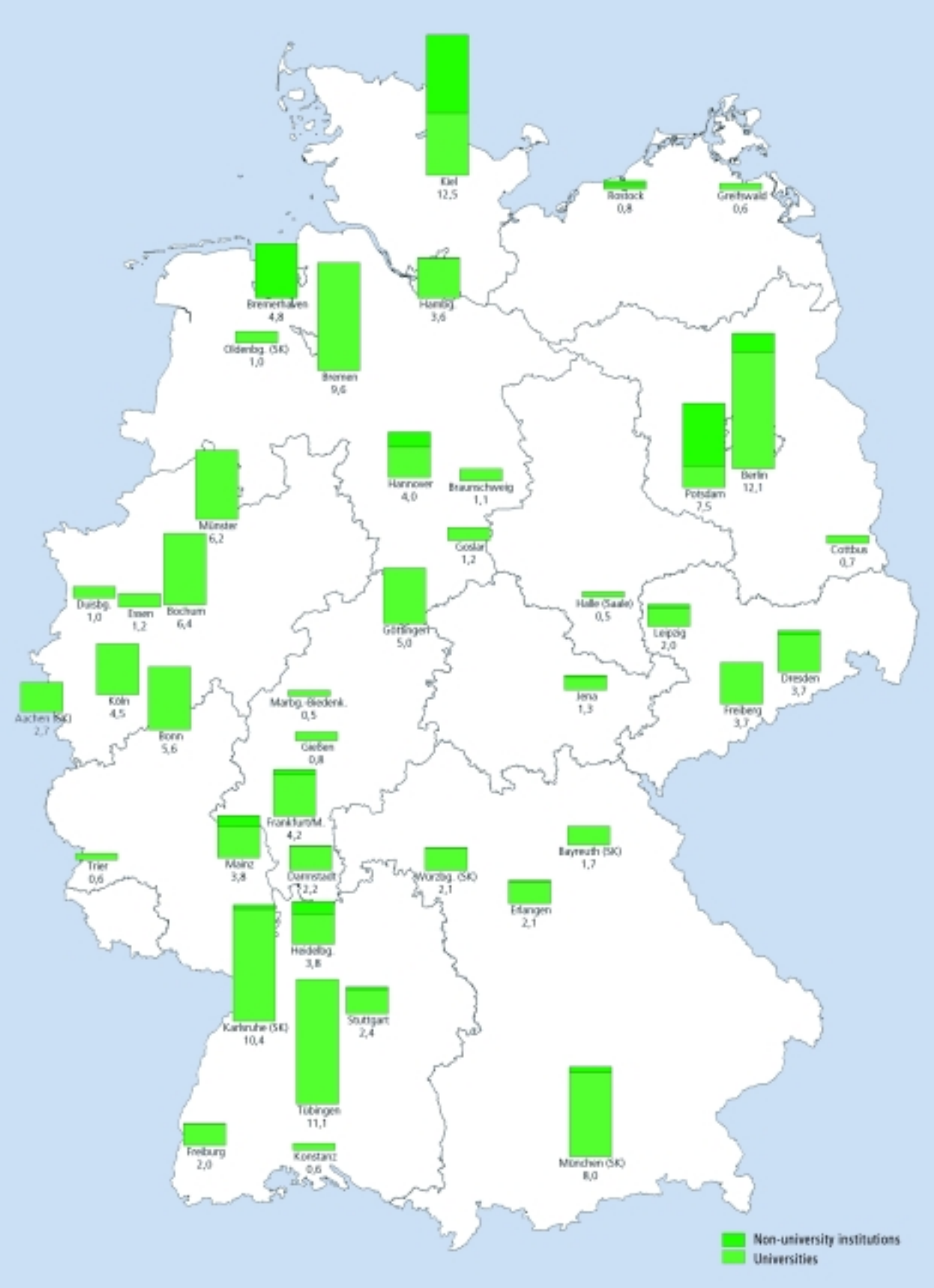
Figure A3-13:
DFG approvals to universities and non-university institutions 1999 to 2001 by district [1]: Research area geosciences (in millions of euros)



[1] Only districts which received more than half a million euros in DFG approvals in total in this research area within the period stated.
SK = urban district
LK = rural district

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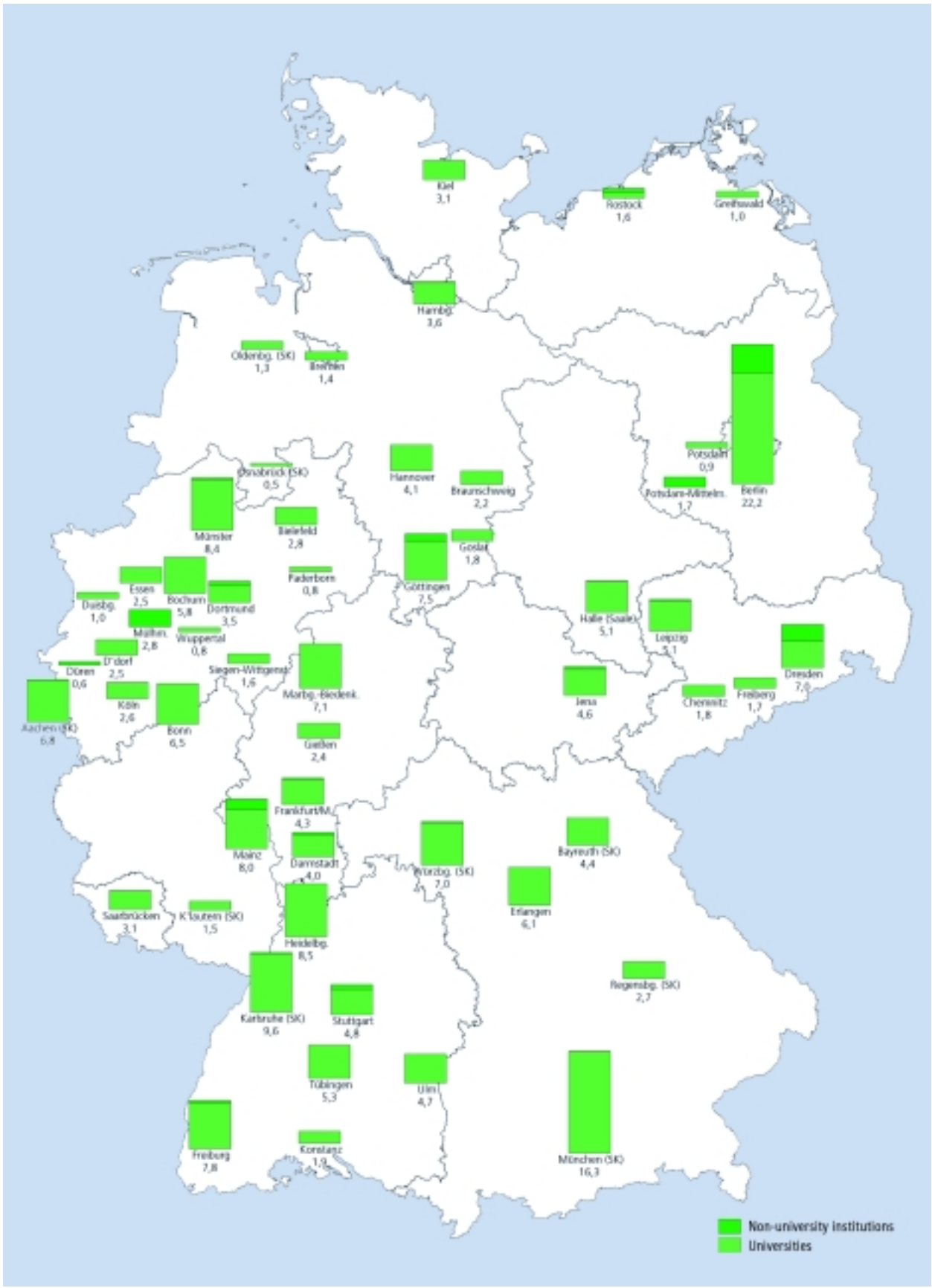
Figure A3-14:

DFG approvals to universities and non-university institutions 1999 to 2001 by district [1]: Research area chemistry (in millions of euros)



[1] Only districts which received more than half a million euros in DFG approvals in total in this research area withinthe period stated.
SK = urban district
LK = rural district

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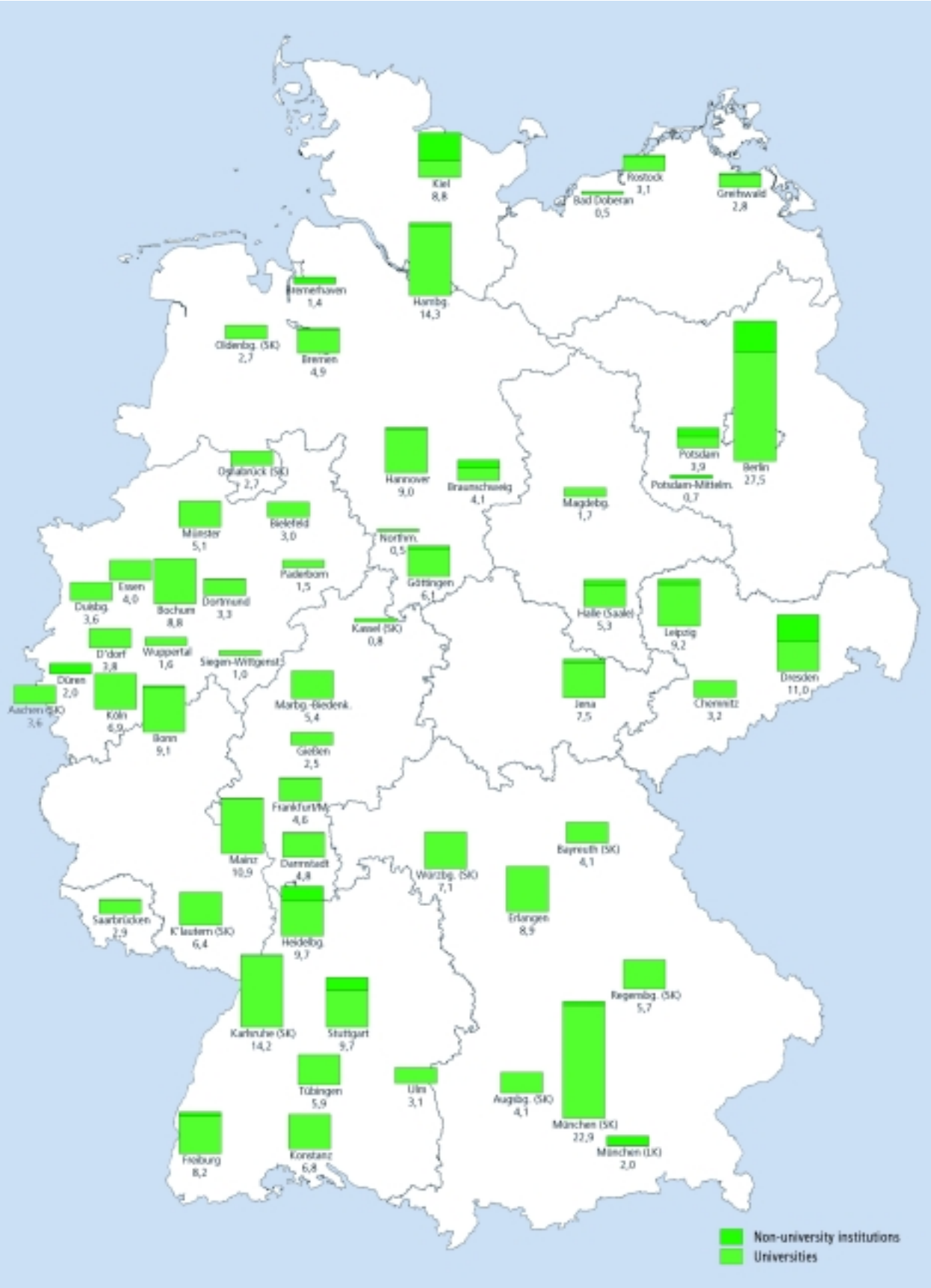
Figure A3-15:
DFG approvals to universities and non-university institutions 1999 to 2001 by district [1]: Research area physics (in millions of euros)



[1] Only districts which received more than half a million euros in DFG approvals in total in this research area within the period stated.
SK = urban district
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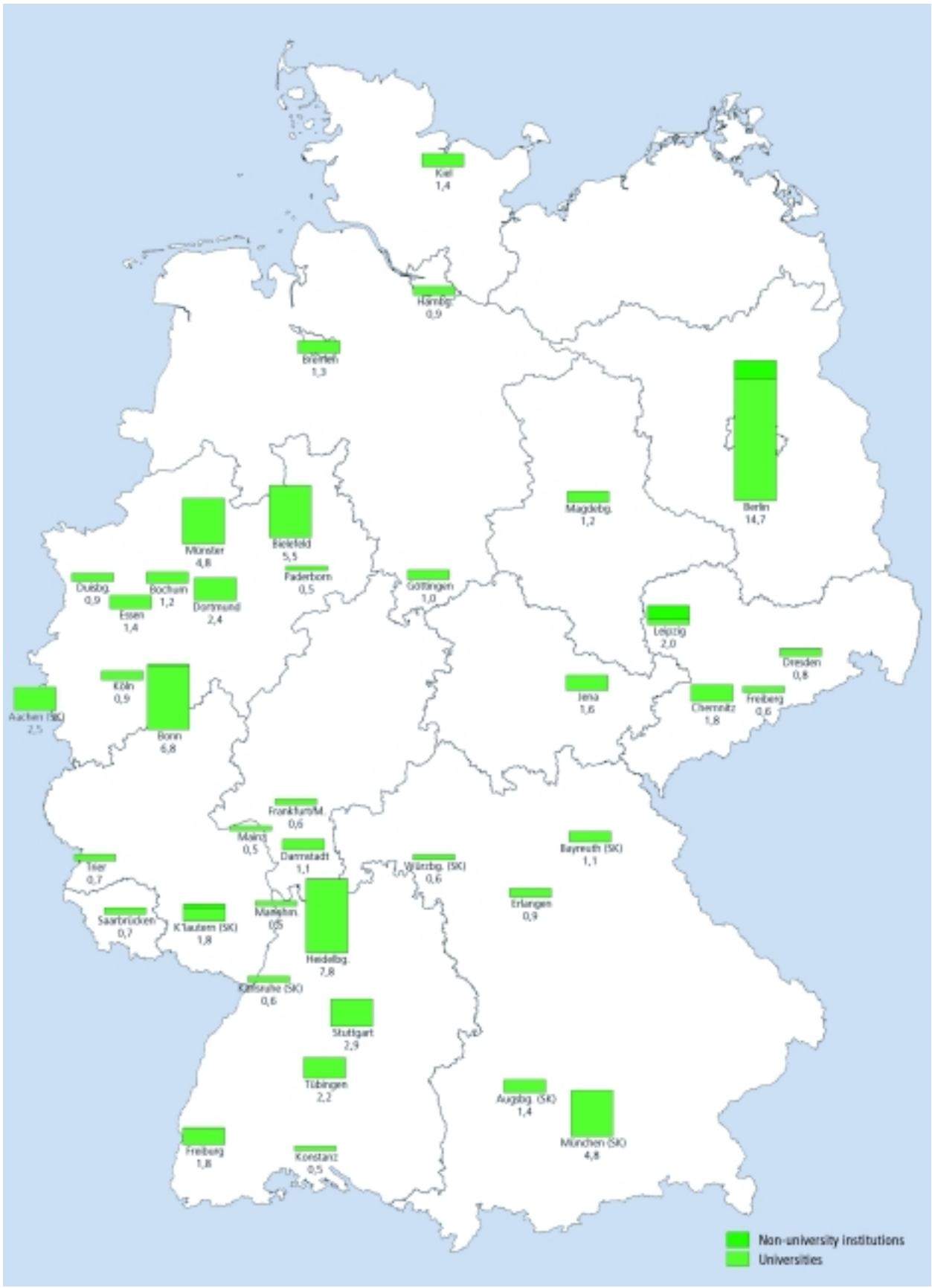
Figure A3-16:
DFG approvals to universities and non-university institutions 1999 to 2001 by district [1]: Research area mathematics (in millions of euros)



[1] Only districts which received more than half a million euros in DFG approvals in total in this research area within the period stated.
SK = urban district
LK = rural district

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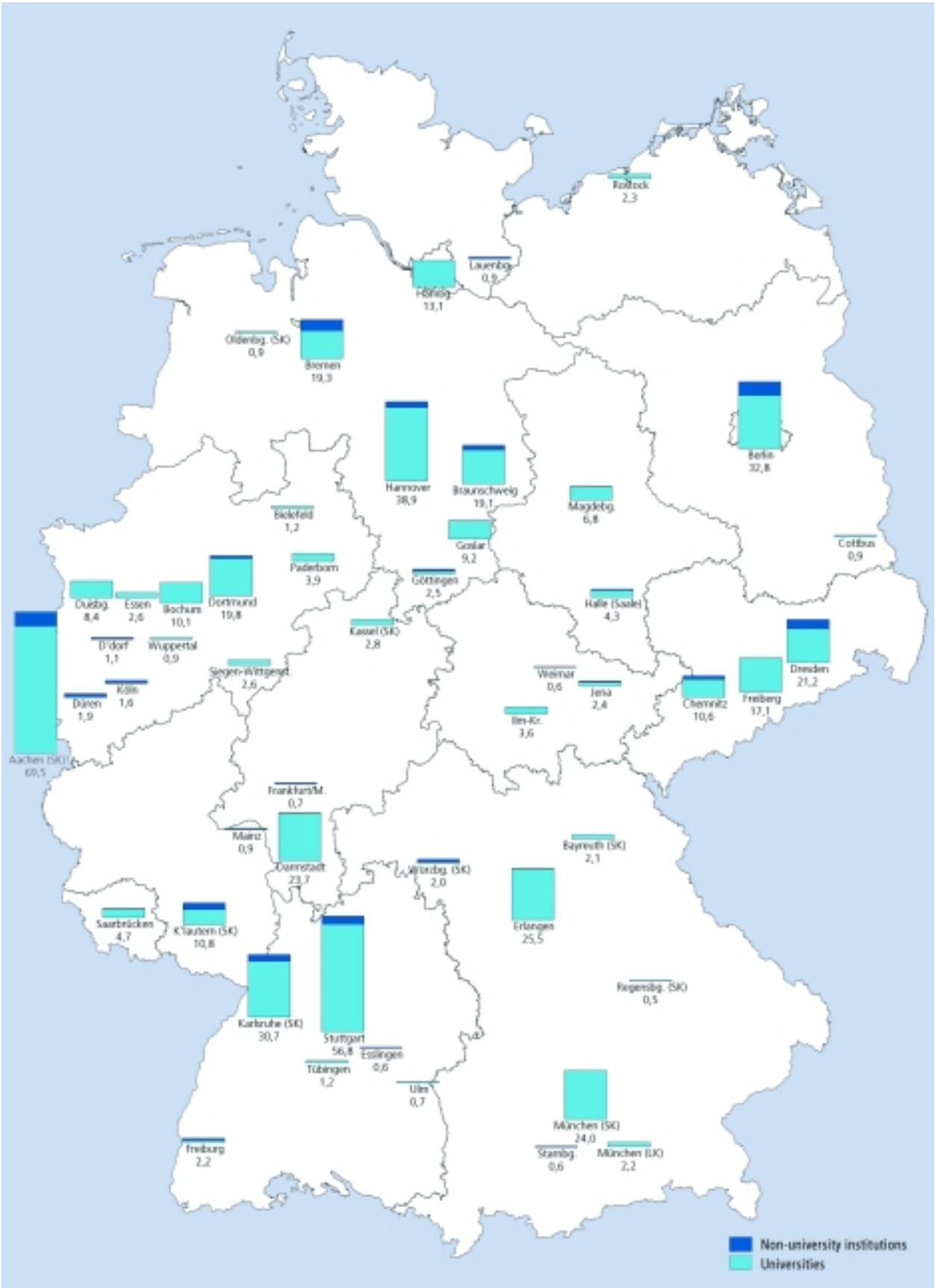
Figure A3-17:

DFG approvals to universities and non-university institutions 1999 to 2001 by district [1]:
Research area general engineering sciences and mechanical engineering (in millions of euros)



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SK = urban district

LK = rural district

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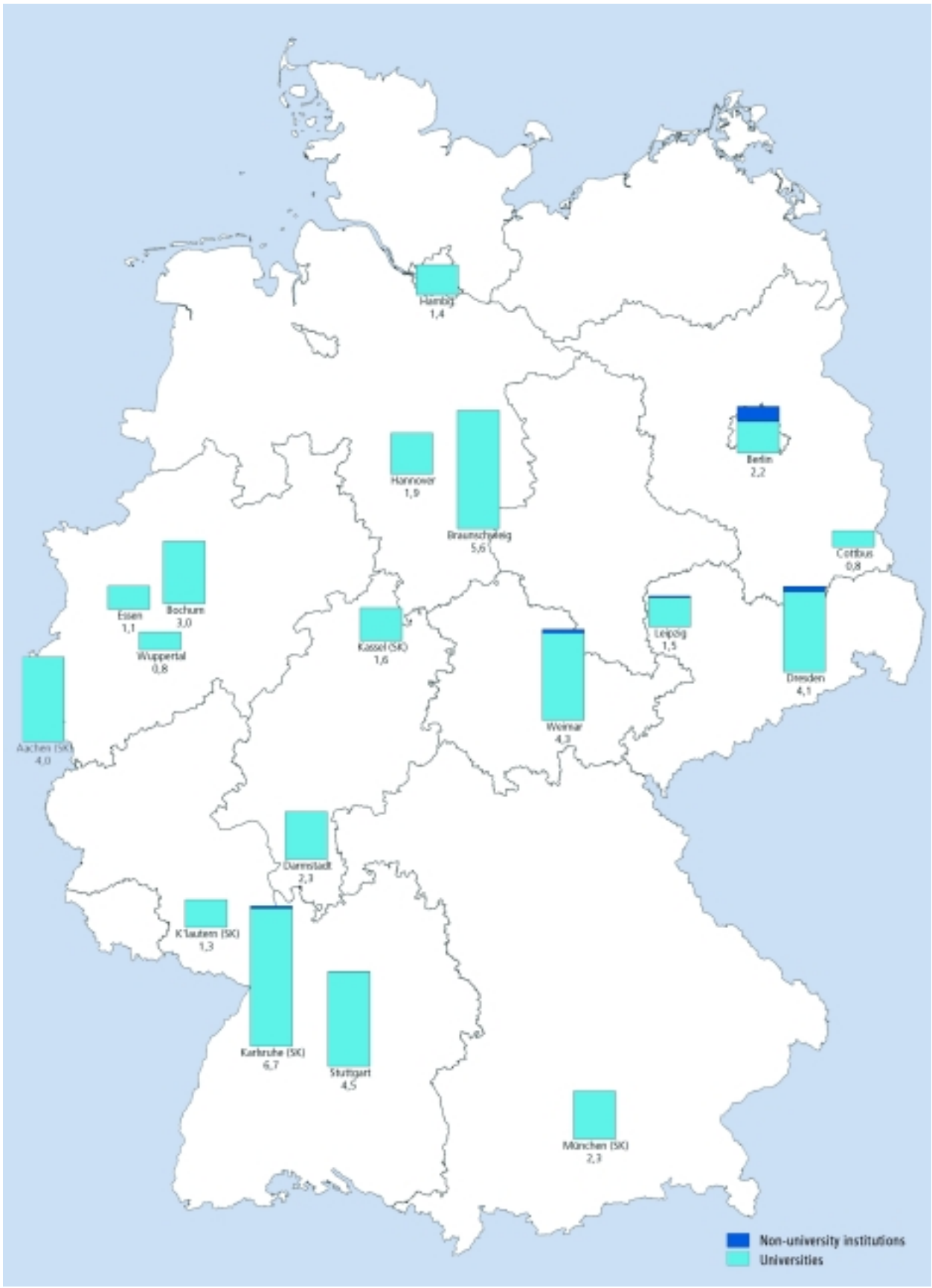
Figure A3-18:
DFG approvals to universities and non-university institutions 1999 to 2001 by district [1]:
Research area architecture, urban development, civil engineering (in millions of euros)



[1] Only districts which received more than half a million euros in DFG approvals in total in this research area within the period stated.
SK = urban district
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Figure A3-19:
DFG approvals to universities and non-university institutions 1999 to 2001 by district [1]: Research area mining and metallurgy (in millions of euros)

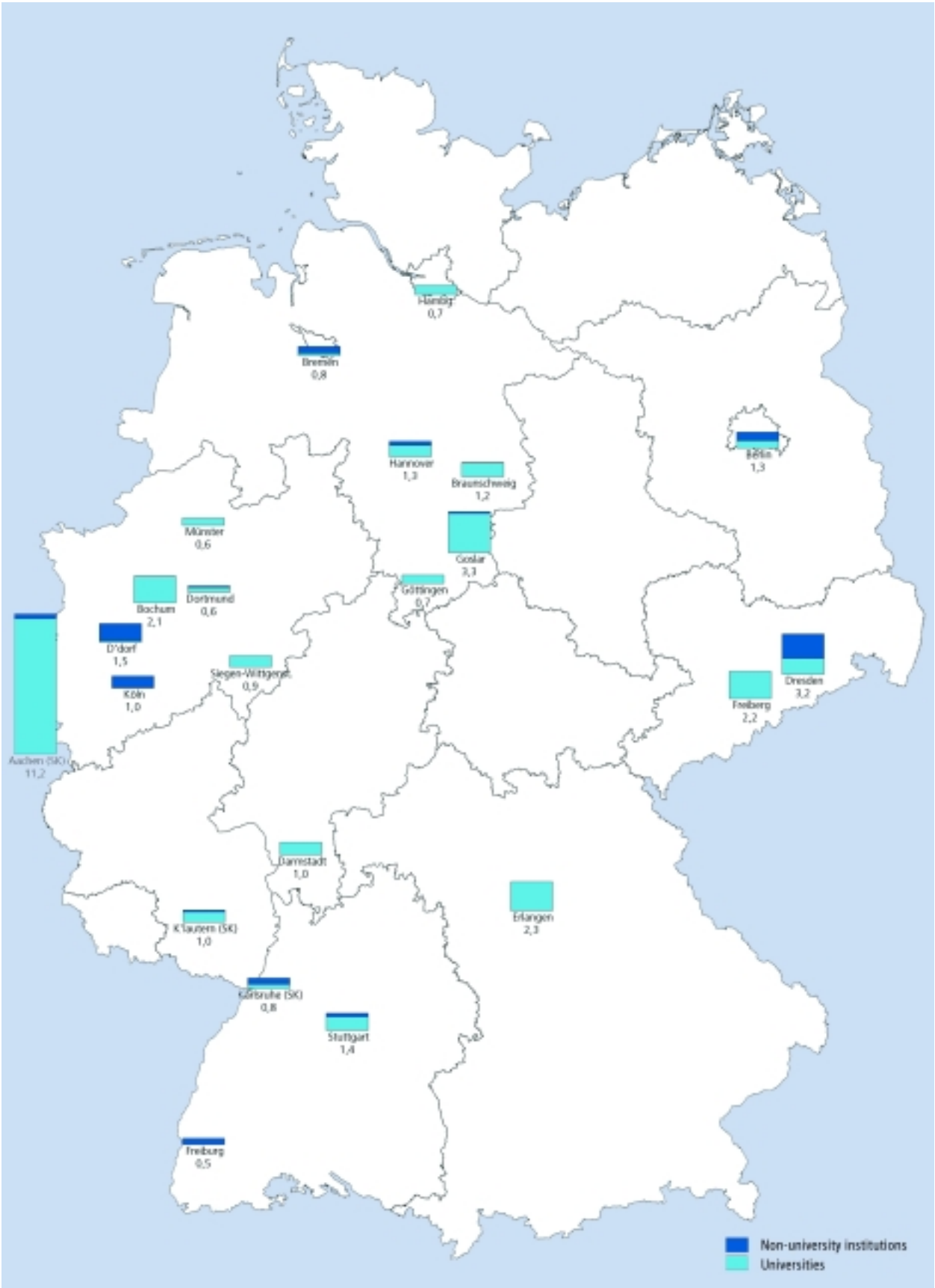

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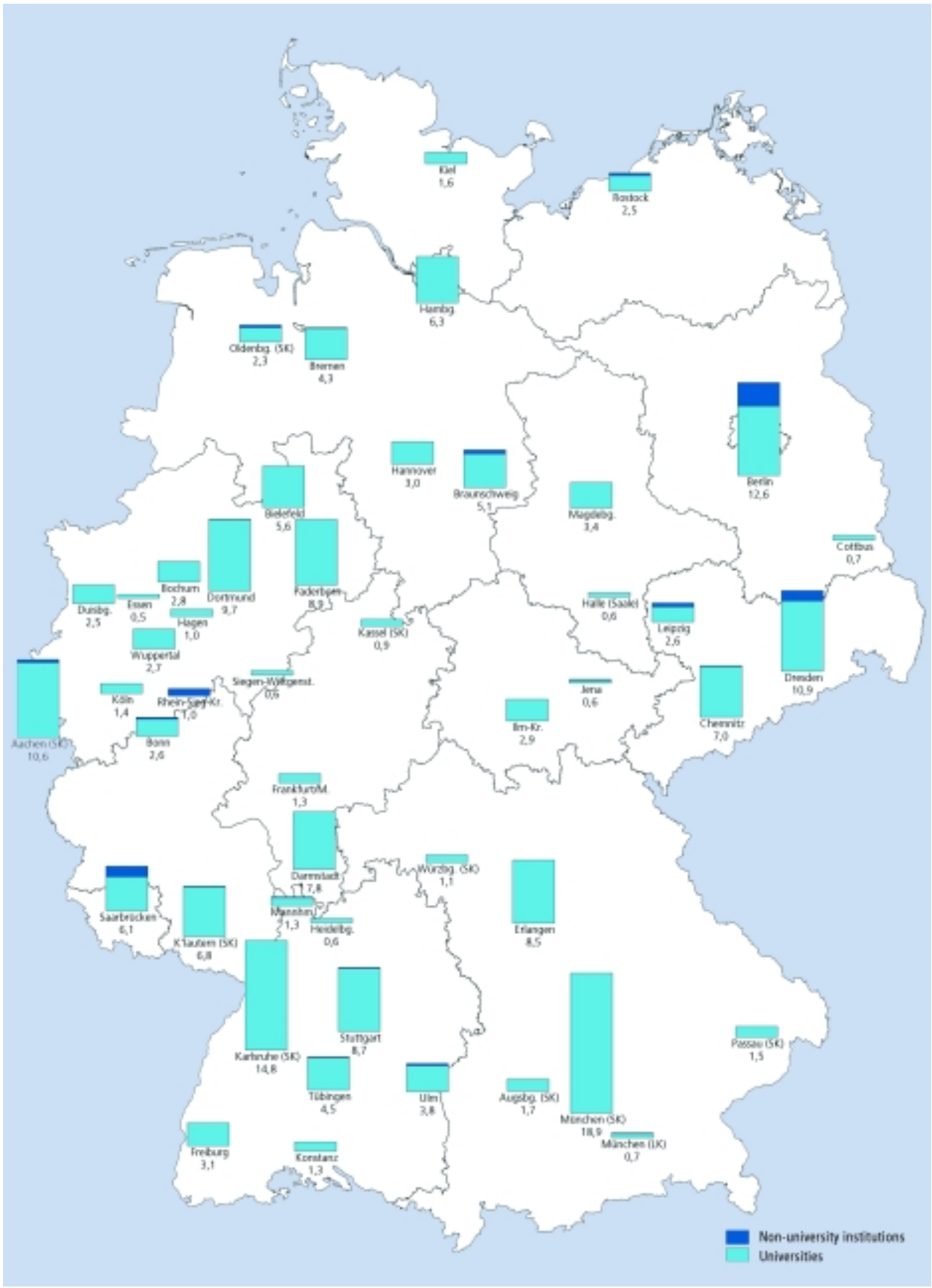
Figure A3-20:

DFG approvals to universities and non-university institutions 1999 to 2001 by district [1]: Research area electrical engineering, computer science (in millions of euros)



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