Center for
Higher Education
Policy Studies

CHEPS - higher education monitor

Country report

Higher education in GERMANY

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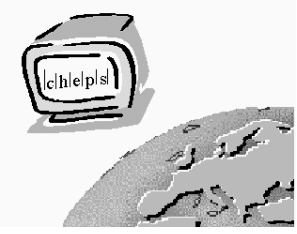

CHEPS - higher education monitor

TABLE OF CONTENTS

1 INTRODUCTION

The CHEPS Higher Education Monitor

The CHEPS Higher Education Monitor is an ongoing research project, commissioned by the Dutch Ministry of Education, Culture and Science. The project aims at providing higher education policy makers with relevant and up-to-date information on national higher education systems and changes in policies regarding these systems. This information is presented in in-depth country reports, comparative thematic reports, comparative trend-reports and a statistical data-base. The core countries for which this information is collected and presented are Austria, Denmark, Finland, Flanders, France, Germany, the Netherlands, Sweden and the United Kingdom.

Country reports

Increasingly, governments take international trends into account when developing national higher education policies. Continuing European integration, the increasing mobility of people within the European Union, as well as the supra-national initiatives deployed at the European level with respect to higher education (e.g. the Leonardo and Socrates programmes) necessitate such an orientation. Policy makers therefore need to have access to adequate information with respect to structure, trends and issues in higher education in other European countries as well as other relevant countries. New technologies have opened access for everyone to vast amounts of facts and figures on higher education in almost every country. Although these data are indispensable for higher education policy makers and analysts, they do not provide information that policy makers may use as such. What is lacking is a frame of reference that may be used to interpret the data.

Such a framework is offered by the CHEPS Higher Education Monitor country reports. These reports have a clear structure, describing the higher education infrastructure and the research infrastructure. In addition to an in-depth description of the institutional fabric of the higher education system, the reports address issues regarding finance, governance and quality in higher education. The country reports provide the frame of reference for the interpretation of policy initiatives, trend-analyses and cross-country comparisons.

International databases, such as those set up by the EC (for example the Eurydice database), OECD, and UNESCO are important sources of information. The data from these sources are extended, updated and refined by using national statistics, (inter)national journals and magazines, national policy documents, and research papers.

The country reports will be updated every year. These update reports will focus on the latest policy changes, trends and statistics in higher education.

2 EDUCATIONAL INFRASTRUCTURE[1]

2.1 Introduction

The Federal Republic of Germany is made up of 16 *Länder* (states), as a result of German unification through a Treaty between the Federal Republic of Germany and the German Democratic Republic on 3 October 1990. Each Land has its own constitution and government. The basic Law stipulates that the *Länder* have the right to legislate insofar as the Basic Law does not confer legislative power on the State. Educational legislation and administration of the educational system are therefore primarily the responsibility of the *Länder*.
The education system is divided into pre-school education, primary education, secondary education, tertiary education and continuing education. The first stages of the education system are characterised by relatively early pre-selection, based on pupils' achievements. However, there are opportunities for pupils to change their educational career.

2.2 Pre-school

Pre-school education is provided by institutions catering for children between the ages of 3 and 6 years (mainly *Kindergarten*). It is publicly or privately maintained and formally not part of the school system. Parents have to pay for a place in the *Kindergarten*. Pre-school education is not organised into grades, groups usually consist of children from different age groups. As a rule, each group is looked after by at least one trained educational staff member and also at least one helper.

Children of school age who have not yet attained a sufficient level of development to attend a school have a further option (*Schulkindergarten, Vorklassen*). These institutions are either assigned to the pre-school or the primary sector according to the particular *Land*. Attendance is usually voluntary, although in most *Länder* the authorities are entitled to make it compulsory for children of school age who are slow to develop.

2.3 Primary education

Once children reach the age of six, they are obliged to attend primary school (*Grundschul*e). All pupils in Germany enter the *Grundschule* which covers grades one to four. In Berlin and Brandenburg, the *Grundschule* covers six grades.

The transfer from primary school to one of several different types of lower secondary school where pupils remain at least until the completion of their full-time compulsory education is dealt with differently, depending on *Land* legislation. The advice of the school which the pupil is leaving is taken as a basis for the decision or as guidance in the decision regarding the pupil's future school career. This is accompanied by detailed consultations with parents. The final decision is made by the parents, but for certain school types is also dependent on pupils demonstrating a certain level of ability and/or on the capacity available in the desired school and/or on a decision by the school supervisory authority.

2.4 Secondary education

Secondary education breaks down into lower secondary level (*Sekundarstufe I*), which comprises education from grades 5 to 10 (or 7 to 10) of school for pupils in the age group 10-16 years old, and upper secondary level (*Sekundarstufe II*), which comprises all the courses of education that build on the foundations laid in the lower secondary level for pupils between 16 and 19 years old. Both age groups are required to attend school: the former full-time, the latter also full-time or part-time for three years. There are several types of secondary level education: *Hauptschule, Realschule*, *Gymnasium* and *Gesamtschule*. The pupils of the *Grundschule* continue in

[1] This chapter is primarily based on Eurydice European Unit report on German (higher) education of the European Commission

Realschulen and *Gymnasien* (each about 30%), some 25% continue in *Hauptschulen* and some 10% in *Gesamtschulen*.

2.4.1 Lower secondary education

General lower secondary schools build on the primary education provided at *Grundschulen*. In addition to and departure of the four types of secondary education, some *Länder* have introduced new types of schools. These new school types combine the educational paths of the *Hauptschule* and the *Realschule*. Depending on the *Land* they are called either the *Mittelschule*, the *Sekundarschule*, the *Regelschule*, the *Integrierte Haupt-und Realschule*, the *Verbundene Haupt- und Realschule, Erweiterte Realschule* or the *Regionale Schule*.
The function of all the courses of education at lower secondary level is to prepare pupils for courses of education at upper secondary level, the completion of which is required to qualify for tertiary education: either higher vocational, university or continuing education. Accordingly, lower secondary education is predominantly of a general nature whereas, although there are differences. The *Gymnasien*, for instance, focus on liberal education, whereas *Realschulen* focus on a combination of liberal and practical education.

Hauptschule
The *Hauptschule* provides its pupils with a basic general education. It generally comprises the fifth to the ninth year. The subjects are in principle similar to those in other types of schools, but the pace of instruction is generally slower and the contents is more basic.

Realschule
Realschulen provide a more extensive general education. The standard *Realschule* covers the fifth to tenth year. In many Länder the Realschule is divided in a *Unterstufe* and *Oberstufe* (of each three years). In Bayern, Berlin, Brandenburg, and Hamburg, the standard *Realschule* is usually limited to four years, i.e. it only begins in the sixth year. In addition there is a three- or four-year *Realschule* course for pupils who, after the sixth or seventh year at a *Hauptschule*, wish to transfer to *Realschule*. In three *Länder* (Saxony, Saxony-Anhalt and Thuringia) the *Realschule* as such is not offered in the lower secondary school system, but the *Realschule* leaving certificate can be chosen alongside the *Hauptschule* leaving certificate at *Mittelschulen* (in Saxony), *Sekundarschulen* (in Saxony-Anholt) and *Regelschulen* (in Thuringia).

Gymnasium
Gymnasien provide an intensified general or liberal education. The *Gymnasium* normally covers the fifth to the thirteenth grades, (or – where *Grundschule* lasts for six years and where the is an orientation stage independent of the school type- the seventh to thirteenth year) with a continuous course of education in lower and upper secondary levels. Apart from standard *Gymnasien*, there are special types of *Gymnasium* into which *Hauptschule* pupils can transfer following the seventh grade as well as special courses for particularly able *Realschule* and vocational school leavers. At the end of the tenth year of *Gymnasium*, pupils who have achieved at least pass marks in all subjects are promoted to the upper level of *Gymnasium* (*gymnasiale Oberstufe*)

Schools offering more than one educational path
The *Gesamtschulen* are offering more than one type of course of education. At these schools several courses of education in specific subjects and for specific grades is provided either in classes geared towards a particular final qualification or in set classes divided up into at least two levels of ability.

2.4.1.1 Certificates

On completion of the courses of education in lower secondary level, the pupils receive a certificate, provided that they have successfully completed grade 9 or 10 - depending on the type of school - or, in some *Länder*, passed a final examination. As a rule, pupils at the *Gymnasium* are not issued certificates, but a qualification to attend the *Gymnasiale Oberstufe*, the upper level of the *Gymnasium*. Pupils who have not achieved the

objectives of the course of education they were pursuing receive a school-leaving report instead. The forms for the certificates are prescribed by the Ministry of Education and Cultural Affairs of the *Länder*.

Qualification after grade 9
At the end of grade 9, it is possible in any *Land* to obtain a first general education qualification, which is called the *Hauptschulabschluß* (*Hauptschule* certificate). A certificate is issued if adequate marks are received in every subject. The certificate in general education is usually used for admission to vocational training in the so-called dual system. In addition, it qualifies a pupil, under certain conditions, for admission to *Berufsfachschulen* (a certain type of vocational school) and for a *Berufsgrundbildungsjahr* (a year of basic vocational training). Moreover, it is a prerequisite for subsequent admission to certain *Fachschulen* (technical schools) and institutions offering secondary education for adults (*Zweiter Bildungsweg*).
Qualification after grade 10
At the end of grade 10, it is possible in any *Land* to obtain an intermediate qualification (*Mittlerer Schulabschluß*) which is called *Realschulabschluß* (*Realschule* certificate). This certificate is issued by *Realschulen* if adequate marks are received in every subject. The *Mittlerer Schulabschluß* can be obtained after grade 10 at other types of lower secondary schools as well if certain standards of achievement are met, and also at the *Berufsschule* with the requisite achievement level and average mark. The *Realschulabschluß* qualifies a pupil for admission to upper secondary education courses, e.g. at special *Berufsfachschulen* and at the *Fachoberschule*. It is also used for entering a course of vocational training within the dual system.

Entitlement to proceed to the Gymnasiale Oberstufe
The entitlement to proceed to the upper level of the *Gymnasium* (*Gymnasiale Oberstufe*) is obtained, if certain standards of achievement are met, at the end of the 10th grade at the *Gymnasium* or *Gesamtschule* (in two *Länder* at the end of the 9th grade at the *Gymnasium*). However, an entrance qualification required for transfer to the *Gymnasiale Oberstufe* may be obtained by way of a *Mittlerer Schulabschluß* or via qualifications from a vocational school, if a certain level of performance is achieved.

2.4.2 Upper secondary education

Once pupils have completed compulsory schooling - generally when they reach the age of 15 - they move into upper secondary education, available for 16 to 19-year-olds. The type of school entered depends on the qualifications and entitlements obtained at the end of lower secondary education. The range of courses on offer includes full-time general education, vocational education and training, as well as vocational training within the dual system (*duales System*, see section 2.4.2.2.2). Grades 5 and 6 at all secondary schools can be organised as a phase of orientation (*Orientierungs-stufe Förderstufe*) with the choice of school career being left open until the end of grade 6. In some *Länder* the orientation stage may be a separate organisational unit independent of the standard school types. In this case the secondary schools subsequently attended will begin with the 7th grade.

2.4.2.1 General education: *Gymnasiale oberstufe*

The *Gymnasiale Oberstufe* (upper level of the *Gymnasium*) covers grades 11 to 13 (in four *Länder*, grades 10 to 12 or 11 to 12) and is usually divided up into a one-year introductory phase and a two-year qualification phase. Building on the foundations laid at lower secondary level, pupils are no longer taught in the class unit but follow half-year courses on completion of the introductory phase. Whilst still required to take certain subjects or subject combinations during the qualification phase, they now have extensive scope for individual specialisation and a wider range of subjects to chose from. Related subjects, the names of which may differ from one *Land* to another, are grouped together into three main areas: languages, literature and the arts; social sciences; and mathematics, natural sciences and technology

Each of these tree subject areas must be represented in the school record of each pupil until the end of the upper secondary level of the *Gymnasium* and in the *Abitur* examination. Religious education in line with the provisions of the *Land* and sports are also compulsory.

Grundkurse (basic courses) and *Leistungskurse* (intensified courses) help to organise the pupils' studies. Basic courses (usually two to three periods a week) are intended to provide a broad general education, intensified courses (at least five periods a week) are intended to provide a more in-depth introduction to liberal education, as a preparation for academic study. Basic courses constitute up to two-thirds of courses. Pupils are required to choose at least two intensified courses, one of which must be either German, continuation of a foreign language, mathematics or a natural science. If German is the first intensified course, the four subjects covered in the *Abitur* examination must include mathematics or a foreign language. New subjects introduced at the *Gymnasiale Oberstufe*, e.g. further foreign languages and vocational subjects, may be offered as a second intensified course. Some *Länder* restrict the choice of intensified courses to certain subject combinations.

The *Gymnasiale Oberstufe* concludes with the *Abitur* examination. Subsequent to passing the *Abitur* examination taken after 13 years of school, pupils are issued the certificate *Allgemeine Hochschulreife* (general higher education entrance qualification). This qualification can also be awarded after 12 years of school, provided that attendance of a total of at least 265 weekly periods can be proved for lower secondary level and the *Gymnasiale Oberstufe*. In addition to the results obtained in the *Abitur* examination, performance in the qualification phase is detailed on the pupil's certificate.

2.4.2.2 Vocational secondary education

2.4.2.2.1 Full-time vocational schools

Full-time vocational schools include the *Berufsfachschule*, the *Fachoberschule*, the *Berufliches Gymnasium* or *Fachgymnasium*, the *Fachschule* and other types of schools that exist only in certain *Länder* or are of marginal importance due to their small numbers.

Berufsfachschule
Berufsfachschulen are full-time schools which prepare their pupils for an occupation as well as extend their general education. They offer a very wide range of courses. There are *Berufsfachschulen* for business occupations, occupations involving foreign languages, crafts industry occupations, home-economics-related and social-work-related occupations, artistic occupations, health sector occupations etc. In cases where such schools do not provide a full career qualification, the period of *Berufsfachschule* attendance may - under certain conditions - be recognised as equivalent to the first year of dual system vocational training. Depending on the training objective, *Berufsfachschulen* require their pupils to have either a *Hauptschulabschluß* or a *Mittlerer Schulabschluß*. The duration of training at *Berufsfachschulen* varies from one to three years, depending on the intended career specialisation.

Fachoberschule (technical secondary school)
The *Fachoberschule* covers grades 11 and 12 and requires a *Realschulabschluß* or a qualification considered equivalent, such as the *Mittlerer Schulabschluß*. It equips the pupils with general and specialised theoretical and practical knowledge and skills and leads up to *Fachhochschulreife* (an entrance qualification for the *Fachhochschule*). There are *Fachoberschulen* for technology, business and administration, nutrition and domestic science, agriculture, social work, design, seafaring etc.
Practical training takes place in grade 11, i.e. in the first year of this school type, four days a week for the whole year. Alongside this, pupils must spend time in class. Completed vocational training can serve as a substitute for the 11th grade of the *Fachoberschule*, so that pupils with such qualifications can proceed directly with the 12th grade. Grade 12 (second year of the *Fachoberschule*) comprises a large amount of general and specialist instruction. The compulsory specialist subjects are German, social studies, mathematics, natural sciences, one foreign language and sport.

Berufliches Gymnasium/Fachgymnasium (upper level of the gymnasium with a technical bias)
This type of school is called *Berufliches Gymnasium* in some *Länder* and *Fachgymnasium* in others. In contrast to the *Gymnasium*, which normally offers a continuous period of education from grade 5 to grade 12 or 13, the *Berufliches Gymnasium* or *Fachgymnasium* has no lower or intermediate level. This type of school exists in some *Länder* in the form of the *Gymnasiale Oberstufe* with career-oriented specialisations and comprises a three-year course of education. Starting on the basis of a *Realschulabschluß* satisfying the requirements for

admittance to the *Gymnasiale Oberstufe* or an equivalent qualification, the *Berufliches Gymnasium/Fachgymnasium* leads, as a rule, to a general entrance qualification for higher education (*Allgemeine Hochschulreife*). Apart from the subjects offered at a *Gymnasium*, these schools have career-oriented subjects like business, engineering, nutrition and home economics and agronomy, which can be chosen in place of general subjects as the second intensified course and are examined in the *Abitur*.
Furthermore, *Berufliche Gymnasien* and *Fachgymnasien* in some cases offer pupils the opportunity to obtain more than one qualification at the same time (double qualification courses of education), This is usually a combination of a higher education entrance qualification (*Hochschulreife / Fachhochschulreife*) and a vocational qualification in accordance with *Land* law (e.g. for assistant occupations and in a number of recognised occupations requiring formal training - *anerkannte Ausbildungsberufe*). A vocational education of this kind may also be obtained at institutions combining the Gymnasium and vocational schools (e.g. *Oberstufenzentren*) or at a particular type of school such as the *Kollegschule* in *Nordrhein-Westfalen*. These double qualification courses of education at upper secondary level take three to four years to complete.

Fachschule (technical school providing advanced vocational training)
The aim of the continuing vocational training provided at *Fachschulen* is to enable skilled workers with job experience to take on responsibilities in middle management, i.e. to manage enterprises in their field (e.g. agriculture or domestic science) independently and to train junior personnel or to assume major responsibilities within clearly defined spheres of competence. Those who complete training at the *Fachschulen* figure as intermediaries between the functional sphere of graduates and that of qualified employees. As a rule, *Fachschulen* only take pupils who have completed vocational training in a recognised occupation requiring formal training (*anerkannter Ausbildungsberuf*) and have the relevant practical experience.

Fachschulen offer one- to three-year courses. Two-year courses are available in about 90 different specialisations in the fields of technology, business and design and lead up to a state-administered examination. The most strongly represented subjects include electrical engineering, mechanical engineering, construction engineering, chemical engineering and business management. There are also two-year *Fachschulen* for domestic science and for geriatric nursing as well as one-year *Fachschulen* (e.g. for agriculture) and three to four-year course at *Fachschulen* for social work, where pupils are trained to become "state-certified youth and child care workers", so-called *Erzieher* (for *Kindergarten*, among other things).

2.4.2.2.2 Vocational training in the dual system

Two-thirds of young people in Germany participate in vocational training in the dual system (*duales System*) for two to three and a half years, depending on the occupation chosen. It is described as a "dual system" because training is carried out in two places of learning: at the workplace (on the job training) and in a vocational school (*Berufsschule*). The aim of training in the dual system is to provide a broadly based basic vocational training and impart the skills and knowledge necessary to practice a skilled occupation within a structured course of training. Those successfully completing the training are entitled to do skilled work in one of about 370 recognised occupations requiring formal training (*anerkannte Ausbildungsberufe*).

Compulsory full-time schooling must be completed before commencing vocational training in the dual system. There are no other prerequisites for admission to the dual system. The training is based on a training contract under civil law between a training company and the trainee. The trainees spend three or four days a week at the company and up to two days at the *Berufsschule*. The training companies assume the costs of the on-the-job training and pay the trainee a training allowance in accordance with the collective bargaining agreement in the sector concerned.

The skills and knowledge to be acquired in the course of training at the workplace are set out in the *Ausbildungsordnung* (training regulations) and broken down in terms of content and time in a framework training plan, the particulars of which are specified by the training company in an individual training plan. *Berufsschule* classes cover the material for each recognised occupation requiring formal training as set out in a *Rahmenlehrplan* (framework curriculum).

Training at the Berufsschule
In the context of the dual system of vocational education the *Berufsschule* is an autonomous place of learning. It works together on an equal footing with the companies participating in vocational training. The function of the *Berufsschule* is to provide pupils with general and vocational education, having particular regard for the requirements of vocational training. *Berufsschulen* are also expected to offer courses preparing for vocational education or accompanying professional activities. *Berufsschulen* equip their pupils with basic and specialised vocational training, adding to the general education they have already received. The purpose is to enable them to carry out their occupational duties and to help shape the world of work and society as a whole with a sense of social and ecological responsibility. Education by the *Berufsschulen* is organised very flexible to meet the demands from students and industry, and to reach high attendance rates and to forestall drop-out.

On-the-job training
Vocational training places outside school (on the job) are available in industry and the civil service sector, in independent professions and in private households. Based on the *Ausbildungsordnungen* (training regulations), the training companies impart specific and general technical skills for practical application on the job. The theoretical knowledge acquired at the *Berufsschule* is combined with work experience and applied in specific situations. The binding *Ausbildungsordnungen* have been established to set uniform national standards that are independent of the companies' current operational needs and meet the requirements in the respective occupation. Training may only be provided in training companies in which the skills demanded by the training regulations can be imparted by training personnel with the necessary proven qualification. The qualification of training companies and in-company training personnel is determined and continually reviewed by the competent autonomous organisations (chambers) of the various occupations and branches of industry. The chambers also monitor the training to make sure it is conducted properly.

2.4.2.3 Certificates

The programme at *Berufsfachschulen* (full-time vocational schools) normally concludes with a final examination. A *Mittlerer Schulabschluß* which is equivalent to a *Realschule* certificate, can be obtained at *Berufsfachschulen* where the programme takes two years or more to complete and where a *Hauptschulabschluß* is required for admission. The two-year *Berufsfachschulen* that require a *Realschule* certificate for admission lead up to qualification in various subjects as a ‘state-certified technical assistant’ (e.g. specialising in biochemistry, garment making, information technology, mechanical engineering) or as a ‘state-certified business assistant’ specialising in data processing, foreign languages or secretarial skills.

The programme at the *Fachoberschule* (technical secondary school) concludes with a final examination after the 12th grade. This exam covers three general subjects (German, mathematics, foreign language) and individual specialised subjects (e.g. in engineering, business or administration). On passing the exam, pupils receive the certificate of *Fachhochschulreife* , a higher education entrance qualification qualifying for *Fachhochschulen*.

Satisfactory completion of the *Fachschule* (technical school providing advanced vocational training) confers on a pupil the occupational title of state-certified engineer/business manager/designer, depending on his/her specialisation, as well as other titles for the social work sector.

In the dual system of vocational training, trainees take final examinations administered by the ‘authorities responsible for vocational training’. These finals have a practical and a written part. The boards of examiners are made up of representatives of industry and labour and teachers at *Berufsschulen*. Successful candidates are awarded a certificate showing proficiency as a skilled worker, commercial assistant or journeyman (*Facharbeiterbrief, Kaufmannsgehilfenbrief, Gesellenbrief*). Concomitantly, the *Berufsschule* issues a certificate, which may incorporate a *Hauptschulabschluß* or *Realschulabschluß*, depending on the candidate's achievements.

2.4.3 Other types of secondary education

2.4.3.1 Special programmes at the secondary level

In the endeavour to intensify foreign language education at lower and upper secondary level schools, bilingual sections have grown increasingly important. The first bilingual sections were introduced at Gymnasien in 1969. It is usually characteristic of these programmes (German-English, German-French) that more periods per week are devoted to instruction in the foreign language (English or French) and that at least one other subject is taught in the foreign language.
Bilingual sections are run chiefly at *Gymnasien*, though in some *Länder* these are also offered at *Realschulen*, *Gesamtschulen* and occasionally at *Hauptschulen*. On completion of a German-French programme at a *Gymnasium*, pupils are given a note on their school reports exempting them from language tests for admission to universities in France, provided that they have taken part in a German-French programme for the entire duration of their secondary education, passed their French courses and chosen French as one of the subjects on their *Abitur* examination.

In 2002, there are some 35 international schools in Germany. These have united to form an association of international schools in Germany. The international schools are private schools that are accredited as *Ersatzschulen* (alternative schools) in some *Länder* and as *Ergänzungsschulen* (complementary schools) in others. Some international schools confer an International Baccalaureate Diploma or *Diplôme du Baccalauréat international*, which serves as a preparation for higher education.

2.5 Special education

Particular importance is attached to providing early assistance to pre-school aged children with disabilities. Two types of establishment may fulfil this function: *Sonderkindergärten* (which are sometimes known as *Förderkindergärten*) which care for and support children with disabilities only or *integrative Kindergärten* which accept children both with and without disabilities.
For pupils who are unable to attend an ordinary school on account of a mental or physical disability, various types of special schools have been set up within the organisational framework of general and vocational education, but are geared to providing the specific educational assistance the pupils require. The following forms of special education exist today alongside each other:

1) Special education through preventive measures:
These measures aim to prevent an existing disability having a more far-reaching impact. Children and young people facing the threat of disability receive preventive assistance to help counteract the emergence of a disability. Particular importance is attached to interdisciplinary co-operation in the early stages of assistance.

2) Special education in joint lessons:
Children and young people with special educational needs can attend general schools provided that the required special educational assistance, practical support and the right physical environment are guaranteed. Apart from the external environment, this also requires qualified special education teachers, individualised forms of planning, carrying out and monitoring the teaching process and co-ordinated co-operation between the teaching and specialist staff involved. Special education is provided during class lessons and, if necessary, alongside lessons.

3) Special education at *Sonderschulen*:
Children and young people whose special educational needs cannot be met within a general school receive instruction either at *Sonderschulen*, at *Berufsschulen* with special emphasis on different types of special education or at comparable institutions. These institutions must be able to provide the required technical equipment and special teaching aids. They may turn to external organisations to obtain assistance such as therapy, care and social support. *Sonderschulen* vary according to the type of special education on which they focus and the educational courses they offer. They provide support to pupils in any developments which may lead to their possible transfer to a general school and to training.

4) Special education in the form of co-operative measures:
Many *Sonderschulen* and general schools are in the process of developing close educational co-operation. This can greatly benefit both lessons and the general life of the school. Also, this trend expands the opportunities for changing between school types and educational courses, increases the proportion of joint lessons and encourages the transfer of pupils from *Sonderschulen* to general schools. By holding special school classes and general school classes on the same premises a suitable basis for co-operation can be created.

5) Special education within special education units:
The aim of special education units (*sonderpädagogische Förderzentren*), either as regional or supra-regional institutions, is to meet individual special needs or a range of different needs (e.g. physical and motor development, hearing and sight, and so on) and to guarantee special education in preventive, integrative, in-patient and co-operative forms. This form of education is based as near to the home as possible and provided by specialists.

6) Special education in the vocational training sector and during the transition to a work environment:
Young people with special educational needs should be given the opportunity to receive vocational training in a recognised occupation requiring formal training (*anerkannter Ausbildungsberuf*). Where this does not appear feasible they should be enabled to take up an occupation which is specially designed for the disabled, with the aim of facilitating future permanent integration into a work environment. If this is not practicable either, the young person must be prepared for an occupation that has been adapted to his individual capabilities and skills and will enable him to lead an independent life or be prepared for employment in a workshop for the disabled.

2.6 Further education

Continuing education has become a field of education in its own right. As a continuation or resumption of organised learning on completion of initial training of differing duration, continuing education builds on existing knowledge and skills as well as experience. Continuing education encompasses the general, vocational and socio-political domains in equal measure. While each of these has specific functions, their interactions are on the increase.
In response to the vast range of demands made on continuing education, a structure has been developed which focuses on the principles of a social market economy. Continuing education is provided by municipal institutions, in particular *Volkshochschulen* , as well as by private institutions, church institutions, the trade unions, the various chambers of industry and commerce, political parties and associations, companies and public authorities, family education centres, academies, *Fachschulen*, institutions of higher education and distance learning institutions. Radio and television companies also provide continuing education programmes. In total, some 2000 officially recognised institutions provide *Weiterbildung*. Most of these are *Volkshochschulen* (about half of the institutions), although they ‘only’ contribute 17% of the total costs of further education. Employers and companies contribute the largest share, about 27% in 1997 (Kuwan et al., 2000).

2.7 Higher education

2.7.1 Introduction

The tertiary sector encompasses institutions of higher education and other establishments that offer courses qualifying for entry into a profession to students who have completed the upper secondary level and obtained a higher education entrance qualification.

In 2002 there are a total of 345 higher education institutions spread throughout the Federal Republic of Germany. There are different ways to categorise the institutions, but usually the following types are discerned:
- *183 Fachhochschulen* (including 31 *Verwaltungsfachhochschulen*).

- *92 Universitäten, Technische Universitäten, Universitäten-Gesamthochschulen, 6 Pädagogische Hochschulen,18 Theologische Hochschulen;*
- *46 Kunsthochschulen and Musikhochschulen*

In addition to the types mentioned here, there are special higher education institutions which only admit certain groups (e.g. the higher education institutions of the Federal Armed Forces). Also, *Berufsakademien* (organised in seven *Länder*) are officially part of the tertiary sector, but will not be discussed in detail. The large majority of institutions belong to the public sector, but there are also 'private' institutions. Private should not be taken literally, for these institutions are subject to the same legal provisions as the state institutions. In this respect, the term 'state recognised' (80 institutions) is more appropriate.
In addition to the 345 higher education institutions mentioned above, there are 'real' private institutions (about 70). About 20,000 students are enrolled in these – generally – small and single-discipline institutions.

2.7.2 Fachhochschulen[2]

2.7.2.1 Structure

Fachhochschulen
Fachhochschulen were introduced for the first time in 1970 as a new type of institution in the system of higher education in the Federal Republic of Germany. Studies at *Fachhochschulen* are strongly oriented to the requirements and needs of professional occupations. The *Fachhochschulen* cover usually only a limited number of fields of study. In addition to instruction, the tasks of the *Fachhochschulen* include applied research and development. Since 1992, the "Applied Research and Development at *Fachhochschulen*" programme of the BMBF plays an important role. This programme is designed to improve the capability of third-party funding for applied research and development projects. A third task for *Fachhochschulen* concerns a regional role in technology and knowledge transfer.

The institutions vary considerably in terms of size, number of students and number of courses of studies, and the individual *Fachhochschulen* have a specific regional character or particular area of specialisation. There are also large differences in institutional landscape across the *Länder*. Nowadays, some 25% of higher education students are enrolled in *Fachhochschule* programmes. The share of the *Fachhochschulen* gradually increased in the 1990s. The percentage falls short to the official objectives of the government and the *Wissenschaftsrat* (2002). In 1999, almost 40% of the students are female. About 35% of the *Fachhochschulen* in 1999 (in fact these data relate to *Standorte* of the institutions) have less than 1000 students, and 55% have more than 1000 students and only three have more than 10000 students.

A special role is played by the 31 *Fachhochschulen* for public administration (*Verwaltungsfachhochschulen*), which train civil servants for careers in the so-called higher level of the civil service. They are maintained by various federal and *Land* ministries. Access is only for those who are civil servant employees.

The following subject areas exits, which incorporate some 50 courses of study at *Fachhochschulen*:
1. Engineering
2. Economics
3. Administration and administration of justice
4. Social affairs
5. Health and therapy
6. Religious education
7. Mathematics
8. Computer science

[2] This section is based on a number of sources, of which the Eurydice report, the report "Fachhochschulen in Germany" (Federal Ministry of Education and Research, 2002), and the Wissenschaftsrat (2002) are the most important.

9. Information and communication studies
10. Nutritional and domestic sciences
11. Art, design and restoration

In addition to the courses offered for a first degree, there are further study, supplementary and follow-up courses (*postgraduale Studiengänge*) that either build on the first degree, providing further professional skills, increased specialisation and reinforcement, or are taken in parallel with a different course of studies. In contrast to continuing education, these formal postgraduate courses are usually taken immediately after or even during the first course of studies and lead to the award of a higher education degree.

About one-third of the *Fachhochschulen* offer international degree programmes in which some part of the studies are to be spent at a foreign institution or company. Some of these programmes are supported by the demonstration programme "International degree programmes" of the BMBF, implemented by the *Hochschulrektorenkonferenz* (HRK) and the *Deutsche Akademischer Austauschdienst* (DAAD).

Programme contents
The organisation of studies and examinations at universities essentially apply to *Fachhochschulen* as well. In order to ensure comparable standards of scientific and academic training and degrees, "General Provisions for Diplom Examination Regulations - Fachhochschulen" (*Allgemeine Bestimmungen für Diplomprüfungs-ordnungen - FH*) have been issued for *Fachhochschulen* by the Standing Conference of the Ministers of Education and Cultural Affairs (*Kultursministerkonferenz*) of the *Länder*. These provisions are going to be followed by framework regulations covering each subject.

Programme structure
Each programme is divided up into a basic studies section (*Grundstudium*, up to four semesters), which ends with an intermediate *Diplom* examination (*Diplomvorprüfung*), and an advanced studies section (*Hauptstudium*), which ends with a *Diplom* examination - (*Diplomprüfung* , total duration of studies usually eight semesters). The semesters run from March to August and from September to February. A semester generally lasts 19 weeks, of which most study hours are spent on lectures. The average time to degree in 1999 is 4.8 years, which is higher than in 1988 (4.4 year). Some 15% of the enrolling students change courses.
The examination regulations (*Prüfungsordnungen*) prescribe the objectives of and subject matter covered by examinations, the required standards and the examining procedures for each subject. These examination regulations are drawn up by the *Fachhochschule* and have to be approved by the Ministry of Science of the respective *Land*.
The 1998 *Hochschulrahmengesetz* (HRG) offers institutions to introduce Bachelor and Master programmes, alongside the existing *Diplom* programmes. Bachelor programmes can be three to four years, Master programmes last one to two years. In the case a Bachelor and Master programme are tailored to match one another, the maximum total length can be five years. At the moment, only a quarter of the programmes – in German higher education in general – are indeed organised according to the consecutive model. There is a considerable amount of Bachelor and Master programmes (particularly in mathematics, natural sciences and engineering at the Bachelor level, and engineering at the Master level), but the enrolments are relatively low: overall, 3% of the new entrants in 2001 enrol a Bachelor or Master programme at *Fachhochschulen.* At the moment only a very small percentage of the Bachelor and Master programmes are accredited and many are waiting for accreditation (Klemperer et al., 2002).

Course design
The design of the courses of study and the organisation of teaching and studying at *Fachhochschulen* are specially geared to practical application and professional needs. The semesters spent outside the institutions to gain practical experience (*Praxissemester*) are a vital feature. The teaching staff and course contents at *Fachhochschulen* are linked with applied research and development projects, which are characteristic of this type of institution.

Duales system
In recent years, *Fachhochschulen* have adopted a similar approach as the *Berufsakademien* and, particularly in the fields of engineering and business management, have also introduced courses that combine academic studies

with on-the-job training or employment, along the lines of a dual system (*duales System*). These courses are called "courses of study combined with practice" (*Studiengänge im Praxisverbund*) or "co-operative courses of study" (*kooperative Studiengänge*). The students have training or employment contracts. The periods of study and work experience are distributed according to various models (sandwich or consecutive model) and subject to the *Studienordnung* (study regulations). A *Diplomgrad*, to which the word *Fachhochschule* is added, is awarded upon completion.

2.7.2.2 Access

The prerequisite for admission to a *Fachhochschule* is either the *Allgemeine Hochschulreife* (general higher education entrance qualification) or *Fachgebundene Hochschulreife* (higher education entrance qualification restricted to a specified field of study) on the one hand or the *Fachhochschulreif*e on the other, which as a rule is acquired after 12 ascending grades at a *Fachoberschule*. Usually, those having a Hochschulreife must also complete practical training or a practical internship. However, qualification for *Fachhochschule* can also be obtained by taking additional classes at vocational schools, e.g. *Berufsfachschulen* and *Fachschulen*. In addition, previous related practical experience is required for admission to certain courses of study. In certain subjects (e.g. design) proof of artistic ability is required in addition to a higher education entrance qualification. Nowadays more than half of those entering *Fachhochschulen* have a general higher education entrance qualification, which also entitles them to study at university, in 1975 this was below 20%.

In almost every *Land* there are other ways to obtain admission for vocationally qualified applicants who lack a higher education entrance qualification. These applicants must prove they have the requisite knowledge and skills for higher education by undergoing an admission procedure (e.g. by provisionally enrolling for a probationary period of study) or by taking an entrance examination at the *Fachhochschule* (e.g. assessment or aptitude test, interview). Based on their previous vocational qualifications, they are usually granted a limited right to embark on higher education only in a specified course of studies.

For international applications, the same regulations are in force. They are also accepted at the *Fachhochschulen* if they have an equivalent foreign degree and can prove evidence of sufficient knowledge of the German language.

Almost all *Fachhochschulen* restrict the number of students admitted to certain subjects due to capacity constraints. The places in these subjects are awarded by the *Fachhochschule*, usually on the basis of average marks and waiting periods.

2.7.2.3 Participation

The total number of enrolled students has increased until 1996, dropped until 1998 and then increased again, as can be seen in table 1. The humanities and social sciences and law show, however, a gradual increase in enrolments, whereas the enrolments in engineering dropped considerably.

Table 1: Number of students at *Fachhochschulen* by discipline

	1994	1995	1996	1997	1998	1999
Humanities	5797	6268	6980	7171	7795	8473
Social sciences and law	181823	191876	191513	193724	196249	201423
Sciences	29288	28550	29915	29762	31881	36604
Engineering	200140	194165	185255	176865	170287	163490
Agriculture	13077	13934	14381	14462	14840	14552
Arts	13665	13900	13974	14205	14776	15135
Total	443790	448693	442018	436242	435848	439691

Source: CHEPS Higher Education Monitor, 2002

As a percentage of the 19-26 year old, participation has increased from 1990 to 1998, i.e. from 19.5% to 28.9%. In the year 1999 this percentage decreased somewhat to 28.2% (Nagel & Jaich, 2002).

2.7.2.4 Outflow

Examinations and degrees at Fachhochschulen
A standard period of study (*Regelstudienzeit*) is fixed in the examination regulations (*prüfungsordnung*) for each course of studies. The regulations state the time within which a course of studies with the intended examination can be completed. Eight semesters, including one or two semesters of work experience (*Praxissemester*), are required for most courses of studies at *Fachhochschulen*. On average, however, students take one or two semesters longer to finish. In 1996, the average time to degree was 4,7 years.

Fachhochschulen award a Diplomgrad upon completion of a course of studies. The degree indicates the field of study and that it was awarded by a *Fachhochschule*: e.g. *Diplomingenieur* (*Fachhochschule*), abbreviated Dipl.-Ing. (FH). Some *Fachhochschulen* have agreements with a foreign university or other institution of higher education allowing them to confer a foreign degree in addition to the German *Diplom*.

Further study, supplementary and follow-up courses (*postgraduale Studiengänge*), which generally last three semesters, culminate in the award of a second *Diplom* degree or proof of academic achievement (certificate). It is not possible to obtain a doctoral degree from a *Fachhochschule*, given that only universities and equivalent institutions of higher education are entitled to award doctorates (*Doktorgrad*).

2.7.2.5 Education - Labour market

The declared aim of a *Fachhochschule* education is that it should be closely related to professional practice. This purpose is served chiefly by incorporating one or two semesters of work experience (*Praxissemester*) into the course of studies. In many cases the topics of theses (*Diplomarbeiten,* taking about three months of study) derive from problems that have arisen in practice. In some cases, they are prepared in collaboration with industry and trade. In this way, students can gain an insight into the working world and establish contact with prospective employers before graduating. In trade and industry, the starting salaries of *Fachhochschulen* and university graduates have become largely compatible. Civil service positions, however, are still an exception. Most employers in civil service are recruited among university graduates.

The demand for employees with a degree from *Fachhochschulen* has continued to remain strong. Many companies make no distinctions between degrees from a *Fachhochschule* or a university when hiring (Wissenschaftsrat, 2002). Top and highest level executive positions are open to graduates of *Fachhochschulen*. The lowest level of unemployment for all educational groups is found among graduates of *Fachhochschulen*.

Measures to facilitate the transition from Fachhochschulen to working life
Student counselling offices at *Fachhochschulen* and the career guidance services of the employment offices furnish information and guidance to help graduates move from higher education into the professional world. Their prospects on the employment market may be improved by specialising in appropriate fields of study.

2.7.2.6 Personnel

See section 1.1.3.6

2.7.3 University[3]

[3] Although often treated separately, we include information on the colleges of art and music sector in this section.

2.7.3.1 Structure

In addition to the traditional universities, the technical universities (*Technische Hochschulen* or *Technische Universitäten*), that specialise in natural and engineering sciences also enjoy university status. Created from 1970 onwards, the comprehensive universities (*Gesamthochschulen*) may be considered a special type of university, although their importance has been relatively restricted. The seven remaining *Universität-Gesamthochschulen* are nowadays only found in the Länder of *Hessen* and *Nordrhein-Westfalen*). They provide academic courses of study, but also courses as provided by *Fachhochschulen* and so-called integrated courses which provide qualifications after three or four years. Also equivalent to universities are establishments that only offer a limited range of courses of study, such as *Theologische Hochschulen* and *Pädagogische Hochschulen*.

What all these institutions have in common is the traditional right to award the doctorate (*Doktorgrad*) and a post-doctoral lecturing qualification (*Habilitation*). These rights are termed *Promotionsrecht* and *Habilitationsrecht*, respectively.

According to the *Hochschulrahmengesetz*, teaching and study at the universities are to prepare students for a profession in a certain sphere of activity, imparting to them the particular knowledge, skills and methods required in a way appropriate to each course so as to enable them to perform scientific or artistic work and to act responsibly in a free, democratic and social state governed by the rule of law.

Branches of study at universities

Universities usually offer a range of subjects. The exact subjects vary from institution to institution, together they offer a total of about 330 subjects with over 6,800 different degree courses. The most common branches of study are:

- Languages and the humanities, sport
- Law, economics and social sciences
- Mathematics, natural sciences
- Medicine
- Agronomy, forestry, nutritional science
- Engineering sciences

Branches of study at colleges of art and music

Colleges of art offer courses of studies in the visual, design and performing arts, colleges of music in various music subjects; both, in some cases, also teach the appertaining theoretical disciplines (fine arts and art history, musicology, history and teaching of music, as well as, more recently, the area of the new media). Some colleges teach the entire gamut of artistic subjects, others only certain branches of study.

The courses of studies vary widely from college to college. In general, they may be divided up along the following lines:

- music with such studies as training for solo or orchestra musicians, training in singing, conducting, composition or church music, music teaching at general education schools and technical musical professions (e.g. sound engineering);
- visual arts with such studies as art, design, photography;
- performing arts with such studies as drama, opera, musical, dancing, directing and film-making;
- applied art with courses of studies in architecture, design or the media;
- art education and art therapy as well as courses in art teaching for school teachers;
- the media with such courses as media studies, media art, animation and media management.

Examinations and degrees at universities

A standard period of study (*Regelstudienzeit*) is fixed in the examination regulations (*Prüfungsordnungen*) for each study programme. The regulations state the time in which a course of studies (and the intended examination) can be completed. Most studies take four and a half year, some others take longer (e.g. medicine takes six years and three months). On average, however, many students take one or two years longer to finish.

With regard to academic degrees, a distinction is drawn between academic, state and ecclesiastical examinations. As a rule, professional qualifications are conferred on the basis of these examinations. Institutions

of higher education are authorised by law to administer academic examinations (*Hochschulprüfungen*). A first academic degree is conferred on the basis of the following two kinds of academic examinations:

- *Diplomprüfung* (leading to the award of the *Diplomgrad* , bestowing such titles as, for example, *Diplom - Psychologe*)
- *Magisterprüfung* (leading to the award of the *Magistergrad* , bestowing the title of, for example, *Magister Artium* - MA).

Whereas courses of studies that culminate in a *Diplom* are confined to a single subject, those that lead to a *Magister* degree admit a combination of several subjects (usually one major subject and two minor subjects, or two equally weighted major subjects).

The 1998 *Hochschulrahmengesetz* (HRG) offers universities to introduce Bachelor and Master programmes, alongside the existing *Diplom* and *Magister* programmes. Bachelor programmes can be three to four years, Master programmes last one to two years. In the case a Bachelor and Master programme are tailored to match one another, the maximum total length can be five years. There is a considerable amount of Bachelor and Master programmes (particularly in mathematics, natural sciences and humanities at the Bachelor level, and engineering at the Master level). The *Hochschulkompass* of the *Hochschulrektorenkonferenz* reports the existence of almost thousand Bachelor and Master programmes (www.hrk.de). The enrolments, however, are relatively low: overall, less than 3% of the new entrants in 2001 enrol a Bachelor or Master programme at *Fachhochschulen.* Only 10% of the new programmes (in German higher education) are mainly offered in English. At the moment only a very small percentage of the Bachelor and Master programmes are accredited and many are waiting for accreditation (Klemperer et al., 2002).

A state examination or *Staatsprüfung* has to be taken in some courses of studies that prepare students for professions of particular importance to the public interest. This is the case in medicine, dentistry, veterinary medicine, pharmaceutics, food chemistry, law and education. The standards of performance on state examinations correspond to those of academic examinations. Hence, the difference between state and academic examinations is essentially of a formal nature. In the case of state examinations, representatives of the state examination bodies act as examiners along with university professors. Ecclesiastical examinations are held within the subject of theology and correspond to a certain extent to the state examinations.

After the first state examination, prospective lawyers and teachers, in particular, undergo a second phase of training called preparatory service (*Vorbereitungsdienst*), which is concluded by another state examination. Only this second state examination entitles them to practise the profession concerned.

Examinations and degrees at colleges of art and music

The artistic qualification awarded on completion of a first degree course of study is generally the *Diplom*. Apart from artistic training, art colleges also provide courses of teacher training, which entitle students to teach art or music at schools after passing their state examination (*Staatsprüfung*) and undergoing preparatory service (*Vorbereitungsdienst*). Further study, supplementary and follow-up courses (*postgraduale Studiengänge*) culminate in the awarding of the title of *Meisterschüler* (member of a master class), the *künstlerische Reifeprüfung* (final arts examination), the *Konzertexamen* (concert examination) or a further *Diplom* degree. Finally, on obtaining their first qualification at higher education level for entry into a profession, students can also go on to do a doctorate.

The colleges of art and music (as well as the *Theologische Hochschulen* and *Pädagogische Hochschulen*) have decided not to introduce Bachelor and Master programmes. The music and art colleges consider a degree below the Master level does not make sense in their subject area. The *Theologische Hochschulen* are largely dependent on the expectations of those employing their graduates (e.g. churches, schools). These employers have not (yet) put pressure on the institutions to implement Bachelor and Master programmes (Klemperer et al., 2002).

Course contents at universities

The structure and contents of the courses of studies are specified in the *Studienordnungen* (study regulations) and *Prüfungsordnungen* (examination regulations). They list the individual classes – including the number of

hours – required for successful completion of a course of studies in each stage of higher education (basic and advanced studies, i.e. *Grundstudium* and *Hauptstudium*), and show which subjects are compulsory, elective and optional. The study regulations also indicate which form of certificates are to be earned by taking which specific classes. Study regulations furnish guidance to the students, on the one hand, while serving as the basis for the planning of the curriculum in each department, on the other.

The *Prüfungsordnungen* (examination regulations), on the other hand, specify the standard period of study (*Regelstudienzeit*), requirements for entry to examinations, number of credits awarded for examinations, time allowed for completion of a dissertation, examination standards, procedures and examination subjects.

To ensure that the various institutions of higher education throughout the country have comparable study regulations and examination regulations, the Standing Conference of the Ministers of Education and Cultural Affairs of the *Länder* and the Conference of Rectors and Presidents of Higher Education Institutions (*Hochschulrektorenkonferenz*) set up a "Joint Commission for the Co-ordination of Study and Examination Regulations", which has drawn up general provisions concerning examination regulations and framework regulations on examinations in individual courses of studies leading to a *Magister* or a *Diplom* degree.

The academic year in the university sector
The academic year is divided into semesters, the summer semester runs from April to September, the winter semester from October to March. A period of five months at universities allows students time for private study, as well as time to prepare for classes, complete essays or take part in practical work experience and sit examinations.

Weekly hours of attendance per semester at universities
All courses offered at higher education institutions concluding in equivalent qualifications (*Diplom, Magister, Staatsprüfung*) are governed by framework regulations established by the "Joint Commission for the Coordination of Study and Examination Regulations" of the Standing Conference of the Ministers of Education and Cultural Affairs of the *Länder* and the Conference of Rectors and Presidents of Higher Education Institutions (*Hochschulrektorenkonferenz*). These contain the quantitative reference data for courses of study, in particular the standard period of study (*Regelstudienzeit*), the amount of hours of teaching on compulsory and optional subjects, the number of certificates required for admission to examinations (*Leistungsnachweise*), examination details and the length of time allowed to complete the final thesis.

The required number of hours of classes during the semester is laid down in the higher education institutions' study regulations (*Studienordnunge*n) in the form of hours of weekly attendance during a whole semester (*Semesterwochenstunden*) for the individual subjects. Normally, a university course with a *Regelstudienzeit* or standard study period of 9semesters will entail a workload of 160 hours of weekly attendance (20 hours of weekly attendance x 8 semesters of instruction). This figure may be exceeded in courses involving a larger amount of practical training or laboratory work. These periods, known as "attendance periods" are, however, only one aspect of the time required to complete a course of study. In addition, the student has to spend a considerable amount of time on private study, either preparing for the individual classes or addressing additional topic areas which are not offered in courses. At present it is not usually possible to pursue studies on a part-time basis, though in organising study courses greater attention is now being paid to the needs of working students and students with children.

2.7.3.2 **Access**

Entrance qualification and admission to the university sector
Admission to any course of study at universities and equivalent higher education institutions requires the *Allgemeine Hochschulreife* or the *Fachgebundene Hochschulreife*. The former entitles school-leavers to study at any institution of higher education in any subject or field, while the latter permits entry only into specified courses of studies.

Applicants from EU countries who do not have German higher education entrance qualifications have to submit a secondary school certificate that qualifies them to attend higher education in their country or proof of acceptance at a university in their country. In addition, foreign applicants for study places must prove that they have a sufficient command of the German language. This can be done by taking the German Language Proficiency Examination for Admission to Higher Education for Foreign Applicants (*Deutsche Sprachprüfung für den Hochschulzugang ausländischer Studienbewerber - DSH*) or an equivalent examination.

Selection
For the majority of courses of study there are no nation-wide restrictions on the number of applicants who can be admitted. This ensures that everyone can exercise his or hers right of free choice of occupation, job and place of training as guaranteed in Article 12 of the Constitution. All applicants who meet the above-mentioned entrance requirements are registered at the higher education institution for the course of studies of their choice without having to go through any special admission procedures.

In some courses (e.g. medicine, veterinary medicine, dentistry, architecture, business management and psychology), there are national quotas due to the large numbers of applicants and the insufficient number of places available. Since the 1998 summer semester, places on these courses have been awarded by the Central Office for the Allocation of Study Places (*Zentralstelle für die Vergabe von Studienplätzen*, ZVS) on the basis of a general selection procedure. The legal basis for this procedure is the inter-state agreement of the *Länder* on the allocation of study places. Until the 1997/98 winter semester, applicants for courses in medicine had to go through a special selection procedure which involved taking a test. At present, the liberalisation of access to higher education is discussed, implying the abolishment of the ZVS. However, the debate on the liberalisation is only in its initial stage.

The type and number of courses which are subject to the nation-wide selection procedure may vary from semester to semester. It is quite possible that all the applicants for a course which is, in principal, restricted will be accepted because there are fewer applicants than places available. The criteria for the selection of applicants in subjects with national quotas are the applicant's average mark in the *Abitur* (higher education entrance qualification). In addition, the period a student has had to wait (between sitting for the *Abitur* and applying) is also taken into account.

In some fields of study there are nation-wide allocation procedures in which every applicant receives a place, but not necessarily at the institution of his/her choice. There are local restrictions on admission to a number of higher education institutions for some courses that are not included in the national admission procedure. In these cases, the university then admits applicants based chiefly on the criteria of average marks, the waiting period is taken into consideration.

2.7.3.3 Participation

The total number of enrolled students at universities has decreased between 1995 and 1999. There are small differences between the disciplines, e.g. the humanities show a decrease from 1998 on and in the sciences this decrease is already visible from 1994 on.

Table 2: number of students at universities by discipline

	1994	1995	1996	1997	1998	1999
Humanities	380511	398419	407417	408463	404058	388223
Social sciences and law	369809	372843	370202	371956	366909	361253
Sciences	260910	251904	248385	243877	239237	238339
Engineering	175394	166450	151869	142004	134776	128992
Medicine	102905	99833	97477	95782	95869	93835
Vet. Medicine	8251	8225	8004	8103	8128	7884
Sports	23116	24741	25369	27014	27176	25826
Agriculture	25019	22870	22902	24069	23480	22480
Arts	62149	63453	63761	65032	64757	63494

Total	1408064	1408738	1395386	1386656	1364803	1330798

Source: CHEPS Higher Education Monitor, 2002

2.7.3.4 Outflow

Promotion and premature termination of studies at universities and colleges of art and music
University students are not classified in terms of year groups, but only according to the classes they are required to attend for the basic or advanced studies sections. If a student fails in a course, he must repeat that course only, without falling a semester behind his fellow students. In practice, however, failing classes usually prolongs a student's stay at university. Study and examination regulations lay down the requirements for entry to a certain stage of studies. Ordinarily, intermediate and final examinations may be retaken once. In order to shorten study times in practice, this provision has been partly amended, so that failed attempts at the final examination within the standard period of study (*Regelstudienzei*t) are disregarded ("free attempts" - *Freiversuch*).

In some cases students are prompted by lack of success in their academic endeavours or by other factors to change their course of studies, or they drop out entirely. The drop-out rate is not recorded within the framework of the official higher education statistics in Germany and is, therefore, only ascertainable by means of an indirect empirical investigation and analysis. According to these sources, approximately 28% of all university students give up their studies every year without having completed their examinations successfully. If they need counselling in such critical situations, they can turn to student counselling offices in the departments concerned, the general student counselling service or the psycho-social counselling services of the student welfare service.

It is generally possible to change one's course of studies, though in later semesters only under special circumstances. The proviso is that the student in question obtains a study place for the subject of his choice, via the centralised selection procedure if it is a course of studies with nation-wide restrictions on admission. Years already spent in higher education and the courses and examinations that have been passed will be credited towards a different course of studies, provided they are deemed equivalent.

2.7.3.5 Education - Labour market

The universities' student counselling offices and the employment offices' career guidance services furnish information and guidance to help graduates move from higher education into the professional world. Their prospects on the employment market may be improved by specialising in appropriate fields of study and enrolling in appropriate further study, supplementary and follow-up courses (*postgraduale Studiengänge*). Work placements afford an opportunity to gain an insight into the working world and establish contact with prospective employers. Proof of work experience (for four to six months, in some cases up to a year) acquired before or while studying is demanded in a number of fields, especially in natural and engineering sciences. To improve the employment prospects of arts and social science graduates, some higher education institutions have set up programmes in collaboration with employment offices to place them in industry and equip them with key skills (e.g. a grounding in computing, elementary business skills). Many institutions of higher education offer measures designed to prepare for self-employment and to encourage students to set up their own businesses

Many of those who complete artistic studies have difficulty finding suitable employment or earning an adequate livelihood from their own artistic endeavours. To improve their prospects, subjects have therefore been added to the curricula that qualify them for practical work (teaching, management in the cultural sector). The transition to working life can be eased by a suitable choice of courses and extra qualifications.

2.7.3.6 Personnel

Teaching staff at higher education institutions
Although the adjustments of the HRG in 1998 were quite encompassing, the regulations concerning the academic staff (particularly the *Dienstrecht*) were not changed. Nevertheless, the Federal Government was

aware of the then current and eminent problems and prepared actions to change the HRG. Particular problems were: the long duration of the qualification for scientists, the lack of autonomy for post-doctoral researchers, the age of starting professors, and the lack of (quality and efficiency) incentives in the academic salary structure. (see also Enders, 2001). In 2002, the HRG was adjusted, after a long period of deliberation, for the subject was highly controversial. The most crucial changes relate to the introduction of the *juniorprofessor* (some 3,000 are expected to be appointed in 2002), the abolition of the *Habilitation*, introduction of the doctoral status (*Doktorandenstatus*) and changes in the salary structure and incentives.

Under the new Framework Act, scientific staff can be divided up into the following groups (we abstain from making distinctions between universities, technical universities, colleges and *Fachhochschulen*):
- professors;
- junior professor;
- scientific staff (*wissenschaftliche Mitarbeiter*);
- doctoral staff (*Doktoranden/Doktorandinnen*)

Recruitment requirements
The recruitment requirements for professors are as follows:
- a degree from an institution of higher education,
- teaching ability,
- particular aptitude for academic work which is usually demonstrated by the quality of a doctorate (or a particular aptitude for work in the creative arts),
- (depending on the requirements of the post) additional academic achievements or
- particular achievements in the application or development of academic or scientific knowledge and methods from professional experience of at least five years, of which at least three years must have been spent outside the higher education sector.

The additional academic achievements usually were to be demonstrated by the *Habilitation*, a post-doctoral lecturing qualification. Since the abolishment of this qualification, the achievements are nowadays more neutrally defined in the HRG.

Professors at *Fachhochschulen* must as a rule fulfil the last requirement cited (professional experience) whereas professors at universities and higher education institutions of equal status usually have to show additional academic achievements. There are specific requirements for particular fields of study, e.g. in educational science and subject-related didactics in teacher training only persons with three years experience of teaching in schools should be appointed as professors.

The requirement for an appointment as juniorprofessor are:
- a degree from an institution of higher education,
- teaching ability,
- particular aptitude for academic work which is usually demonstrated by the quality of a doctorate (or a particular aptitude for work in the creative arts),

The recruitment requirement for scientific staff (*wissenschaftliche Mitarbeiter*) is a university degree.

Duties and status of teaching staff
Professors perform the duties relating to science, the arts, research and teaching which are incumbent upon their higher education institution independently in their respective subject areas. Their duties also include participating in study reform activities, academic counselling and the administration of the higher education institution as well as holding examinations. Professors are usually appointed by the Ministry responsible for science in the particular *Land* as civil servants with limited or unlimited tenure, though they can also be taken on as salaried employees.
Scientific staff (*wissenschaftliche Mitarbeiter*) are civil servants or salaried employees who are responsible for academic services. This includes teaching students specialised knowledge and practical skills and instructing them in the use of scientific methods. Scientific staff can also be entrusted with the independent performing of tasks in research and teaching.

In cases where it is necessary to impart mainly practical skills and knowledge, such duties can be delegated to what are known as teaching staff for special tasks (*Lehrkräfte für besondere Aufgaben*).
The extent of teaching commitments of full-time academic staff is expressed in units (*Lehrveranstaltungs-stunde*n). Each unit stands for at least 45 minutes per week for the period when lectures are held during the semester. Under a resolution adopted by the Standing Conference of the Ministers of Education and Cultural Affairs of the *Länder* on 31 January 1992, teaching commitments are specified for different staff categories. The regulations imply that professors and scientific staff at *Fachhochschulen* are generally expected to teach more than those at universities.

Flexibility, salary differentiation
If certain functions and responsibilities are taken on, teaching commitments can be reduced, for example, if managerial functions are performed within the higher education institution or research and development work is undertaken at a *Fachhochschule*.
The recent changes in the *Hochschulrahmengesetz* (HRG) imply a new salary system for staff at the higher education institutions (*Professorenbesoldungsreformgesetz*). The two crucial elements of the new system are: emancipation of salaries at universities and *Fachhochschulen* and performance-related pay (based on policies, to be developed and implemented by the respective higher education institutions).

2.7.4 Distance education

In the previous section a distinction was made between universities and *Fachhochschulen*. It is noteworthy to mention that there are, in addition to the institutions that require the presence of the student, also institutions specialising in distance studies. The *Fernuniversität-Gesamthochschule* (comprehensive university for distance studies) in Hagen (established in 1974), for instance, provides university courses of study leading up to *Diplom* and *Magister* degrees. In various German cities, as well as cities in Austria, Hungary and Switzerland, the *Fernuniversität* has higher education centres that are used for local student counselling and receive students for those periods they are actually required to attend classes.

Several institutions of higher education have joined forces to form a distance learning association with the aim of developing distance learning courses. Distance learning associations have been set up over the last few years at *Fachhochschulen* in eastern Germany, including Berlin, in Nordrhein-Westfalen, as well as in Rheinland-Pfalz together with Hessen and Saarland. A number of co-operative projects are funded by the Distance Education agency. In addition, private organisations offer distance education. The *Akademiker-Gesellschaft für Erwachsenenfortbildung* runs a *Hochschule für Berufstätige*, a private, state-recognised institution offering higher education to those already in employment, in Rendsburg (Schleswig-Holstein) and Stuttgart (Baden-Württemberg). It offers courses in business management, industrial engineering and business computing. The Lahr College of Economics and Sociology is another example of a private organisation.

The Central Authority for Distance Education (ZFU) estimates that in 1995 some 150,000 students were enrolled in distance education programmes. About 50,000 of these students are preparing for a degree.

2.7.5 Post -graduate education

2.7.5.1 Introduction

There are in fact two types of postgraduate education. One concern acquiring additional/new knowledge and/or skills by means of specific courses and programmes (*Zusatz-, Ergänzungs-, Aufbaustudien*). This type has gained more prominence in recent years in the context of the “Knowledge society”. In Germany this has lead to policy initiatives in this area, the *Aktionsprogramm Lebensbegleitendes Lernen für alle* (BMBF, 2001) is an example. In fact, the federal policies boil down to creating encouraging contexts for institutions and persons to continue to offer and undertake learning activities throughout the course of life. Given the autonomy left to the institutions and persons, there is much variety from *Land* to *Land* and institution to institution, what this type of

postgraduate education actually looks like (see also 2.6 on further education). At the higher education institutions, there are some 75 *Weiterbildungszentren* (Wissenschaftsrat, 2002).

The other type of postgraduate education relates to the continuation of academic studies towards the dissertation. The split between first degree and higher studies is not as clear-cut in Germany as in many other countries. Traditionally students continued into advanced (or postgraduate) studies without completing an initial qualification.

2.7.5.2 Structure and access

Following successful completion of a first course of studies at a university or equivalent institution of higher education and conditional on a certain level of academic performance, a doctorate may be embarked upon, a process termed *Promotion*. There are specific regulations for admitting graduates from *Fachhochschulen* to doctoral studies. In addition to their *Fachhochschule* degree, students are also required to complete preparatory academic studies in the subjects to be studied at doctorate level and/or a supplementary period of study at the university in question, or they have to sit an aptitude test for *Fachhochschule* graduates. A doctorate is conferred on the strength of a doctoral thesis, which must be based on independent research, and oral examinations called *Rigorosum*. Oral examinations may be replaced by a defence of the student's PhD thesis (*Disputation*). A doctoral thesis need not be written within any prescribed length of time. The doctorate entitles a graduate to bear the title of *Doktor* (*Doktorgrad*)

Postgraduate students are only required to register for a minimum amount of time, and no one knows how long they usually are working on their (postgraduate) degree. In addition, compared to many other countries, doctoral training in Germany is rather long and loosely structured. It is less seen as a separate educational phase than a combination of professional work and education. The large majority of doctoral students work as staff members at universities. In most cases some advanced seminars or colloquia are offered (average of 1 or 2 per year). These courses are open to advanced undergraduates as well as postgraduate students, but it must be stressed that there are a lot of differences in what is offered from institution to institution. Moreover, because the PhD students are not always formally registered (they are not a specific personnel category), it is difficult to give recent quantitative details. However, the information from the *Wissenschaftsrat* (1995) gives some insight in the composition of the group aiming for the PhD. The *Wissenschaftsrat* estimated that in 1992 there were around 63,000 doctoral students in Germany. About 70% of these are in fact university employees, spending part of their time on the PhD thesis. About 20% work on their PhD, supported by grants or contracts of different organisations or programmes, such as the *Deutsche Forschungsgemeinschaf* (DFG), the *Max-Planck Institute* or the *Graduiertenförderung* programme. Approximately 10% of the doctoral candidates are believed to work on their thesis

In the mid 1980s attention was paid to the problems of the rather informal system of training and the *Deutsche Forschungsgemeinschaft* introduced (in the beginning of 1990) *Graduiertenkollegs*. This new type of postgraduate training is judged fairly successful, in 2002 there are almost 300 of these graduate schools, but the number of PhD students involved is relatively low (given the total amount of 63,000 PhD students in 1992). In 2001, there were slightly more than 4800 students enrolled. The *Kolleg* is designed for 15-25 PhD students at one university, or a combination of (neighbouring) universities, some internationally linked. A university proposal for a *Graduiertenkolleg* (including a research and study programme) should be endorsed – content-related and financially – by the *Land*. The *Deutsche Forschungsgemeinschaft* judges the proposal. The *Graduiertenkolleg* – if accepted – is funded for three years, the maximum duration is nine years.

3 RESEARCH INFRASTRUCTURE[4]

3.1 Introduction

There are three main sectors which perform research in Germany:
a) higher education institutions;
b) private non-profit institutions;
c) industry
In total, research is carried out by about 750 institutions. The types of performers are discussed in section 3.2.

3.2 Performers

3.2.1 Higher education institutions

Nearly all of the research carried out in this sector is performed by universities (*Fachhochschulen* conduct some research, but not a lot). Universities account for the largest share of the publicly financed R&D activities. A wide range of research is covered in universities, and projects are often undertaken by relatively small groups. A trend toward differentiation and specialisation can be seen. Large scale and other projects that cannot be easily handled within the framework of universities may be undertaken by non-university institutions (such as MPG, HGF, etc.).

3.2.2 Private non-profit and governmental institutions

Max Plank Gesellschaft (MPG): The MPG provides funding for a number of Max Plank institutes. These 80 institutions focus mainly on basic science, particularly in promising new areas. Traditionally these institutes have been established around an individual leading scientist who, as Director, has considerable independence. MPG institutes are mostly funded jointly by the *Bund* and the *Länder* (governmental funding: 50% *Bund* and 50% *Länder*). Some funding also comes from other sources, such as individual members and associated organisations, gifts from private individuals, project funds by the BMBF and other "third parties".

Fraunhofer Gesellschaft (FhG): Similarly to the MPG, this organisation provides funding for a number of own institutes. The main focus of these 56 institutes is on technological innovation and applied forms of research. The instruments and areas of expertise of these institutes should therefore correspond to the needs of industry. Fraunhofer institutes receive basic funding from public sources, and are paid by both public and private sources for particular projects. Governmental support is provided by both the *Bund* and the *Länder*, 90% and 10%, respectively. FhG institutes have become important in the process of technology transfer from publicly financed research institutions to industry.

Helmholtz Zentren (HGF): These centres were created in order to support research in fields requiring interdisciplinary co-operation and large concentrations of personnel, funds and equipment. Both basic and applied research are carried out by these 15 centres. They were originally set up for research in nuclear science, but many have moved into other areas (for example the environment and information technology). The HGF centres have a central association (the *Arbeitsgemeinschaft der Helmholtz Zentren*), but the BMBF is the main "co-ordinator" of the work of the centres (and has a strong influence through its priority programmes on the process of priority setting within each centre). The centres are mainly financed through the government (the governmental funding is 90% from the *Bund* and 10% from the *Länder*).

Wissenschaftsgemeinschaft Gottfried Wilhelm Leipniz (formerly known as *Blaue Liste-Einrichtungen*, BLE): These institutes (there are 79 in total) are funded by the *Bund* and one *Land*, and either conduct mission-oriented research or are service institutions. Examples of this type of institution are the Information Centre for Chemistry

[4] This chapter is based on: OECD, *Thematic review of the first years of tertiary education, country note Germany*, Paris, 1997; Diederen et al., 1999 and BMBF 2002.

in Berlin, and the Library of Technical Information in Hannover. These institutions must meet the following criteria: the annual budget must exceed 1million Euro (or .75 million Euro if the institute is mainly a service institute), and the work must be of importance above the regional level and should be in the interest of the Federal Republic of Germany as a whole. They may be funded (mainly) through public or private sources. Some of the private institutes are closely associated with universities. There has been considerable growth of this type of institute since the 1980s, due to the restructuring of the research system in the new *Länder*. Governmental funding is provided 50% by the *Bund* and 50% by the *Länder.*

Other institutes: In addition to the institutes listed above, there are various types of institutions which perform research and are the responsibility of one of the federal or *Land* ministries. One category of these includes institutions with research responsibilities which are funded by the *Bund* (*Bundeseinrichtung mit Forschungsaufgaben*). The percentage of the budget spent on research activities varies from institute to institute, but has been estimated to average around 10%. Other institutions which may perform research include information centres and libraries.

3.2.3 Industry

About two-thirds of all research in Germany is financed by industry, and more than two thirds of all research activities are carried out in industrial laboratories. The percentage of research funded by the business enterprise sector fell between 1991 and 1995, due to the unification of Germany. In 1995 this sector accounted for 66% of total expenditure on R&D within Germany, as opposed to 70% in 1991. An increase, however, is shown since then. The government wants to find additional ways of encouraging private sector investment in R&D (BMBF, 1998).

3.2.4 Expenditure on R&D

The percentage of the total R&D expenditure in the three sectors described above (for 1991-1995) is shown below

Table 3: Percentage of the total Research and Development expenditure in Germany, by sector, 1991-2000

Sector	1991	1993	1995	1997	1999	2000
Higher education institutions	16%	18%	18%	18%	17%	16%
Non-higher education institutions*	14%	15%	15%	15%	14%	14%
Business enterprises	70%	67%	66%	68%	69%	70%

*governmental institutions and private non-profit organisations
Source: BMBF, 2002

As can be seen from table 3, the relative percentages of expenditure on R&D changed between 1991 and 2000. While the higher education sector grew by 2% and decreased again, the non-higher education sector grew by 1% and increased again, and the industrial share of R&D expenditure decreased by 4% and grew again. These changes are mainly due to the unification process , including the restructuring of the research system in the new *Länder.*

Table 4 : Expenditure on Research and Development (in million Euro) performed in Germany, 1991-2000, by sector

	1991	1993	1995	1997	1999	2000
Business enterprises	26.4	26.2	27.0	28.9	33.6	35.1
Higher education sector	6.1	6.8	7.4	7.7	7.9	8.0
non-higher education institutions*	5.5	5.9	6.3	6.3	6.6	6.7
Total	38.0	38.9	40.7	42.9	48.2	49.8

*governmental institutions and private non-profit organisations
source: BMBF, 2002

3.2.5 Providers

In 1993, the government funded 38% of all research performed in Germany, and the private sector funded 60%. Both the central (*Bund*) and regional (*Länder*) government provide funding for research. The *Bund* provides the larger share of public funding for research. In the second half of the 1990s, the private source for research increased more than those from public sources.

Table 5 : National sources of research funding by sector (in million Euro), 1991-2000

	1991	1993	1995	1997	1999	2000
Business enterprise	23.5	24.1	24.9	26.3	31.3	32.7
State	13.6	14.0	15.0	15.4	15.7	15.9
Private non-profit	.2	.1	.1	.1	.2	.2
Foreign sources	.7	.6	.7	1.0	1.0	1.0
Total	38.0	38.9	40.7	42.9	48.2	49.8

source: BMBF, 2002

As can be seen in table 6, total expenditure on R&D activities as a percentage of the GDP shows a growth up to the late 1980s followed by a slight decrease (partly due to the unification). Since the mid 1990s, there is again a growth.

Table 6 : Expenditure on Research and Development as a percentage of GDP

1981	1983	1985	1987	1990	1991	1993	1995	1997	1999	2000
2.5%	2.6%	2.8%	2.9%	2.8%	2.6%	2.4%	2.3%	2.3%	2.5	2.5

Source: BMBF, 1998 (data until 1990); 2002

The 2000 state budget (public funding) for non-higher education institutions was divided up in this way: *Max-Planck-Gesellschaft* (MPG) 0.9 million Euro, *Fraunhofer-Gesellschaft* (FhG) .3 million Euro, *Helmholtz Zentren* (HGF) 1.5 million Euro. The *Blaue Liste-Einrichtungen* (BLE) received .7 million Euro in 1996.

The great majority of the research undertaken in universities is financed through public sources. The main sources of support are the general university funds (mostly from the relevant *Land*), and highly selective funding from the *Deutsche Forschungsgemeinschaft* (DFG). Intermediate organisations

The research system in Germany is highly decentralised, and consists of many subsystems. One of the factors that contributes to the complexity of the system is the way in which authority over research policy and funding are split between the *Bund* and the *Länder*, and the involvement of various ministries. The Ministry of Education and Science is the most important, but also the Ministry of Economic Affairs and Technology (in particular through the *Arbeitsgemeinschaft Industrieller Froschungsvereinigungen*, AiF) contributes to the funding of research. The Ministry of Education and Science (BMBF) is responsible for determining the general principals governing the publicly financed areas of R&D. In addition, there are some intermediate bodies, such as the Federal-State-Commission for Educational Planning and Research Promotion (BLK) and the Science Council (*Wissenschaftsrat*), which take some responsibility for co-ordinating research policy matters across the Federal Republic. In 1995 the *Rat für Forschung, Technologie und Innovation* was founded, an influential parliamentary committee. This organisation was founded in order to contribute to national debates concerning the future of new technologies. In addition, the *Deutsche Forschungsgemeinschaft* (DFG) is an important intermediate organisation in terms of research funding.

The DFG is funded jointly by the *Bund* and the *Länder*, and provides a nation-wide selective umbrella for university research. The role of DFG (with a 2000 budget of 1.1 million Euro) is very much to provide funding for relatively small projects of excellence. The DFG prides itself on its independence in supporting research projects or programmes submitted to it on the basis of the quality of the science, rather than on a perceived "national priority". The DFG consider that their dispersed system of policy making, and emphasis on "reactive" funding, enables excellent science to flourish. Through its competitive funding, the DFG is able to act as a

quality control body for German research. In addition to general university and DFG funds, a variety of other "third party" sources (including Federal ministries, foundations and industry) also support university research. The total "third party funds" in the higher education sector in 1995 amounted to 4.5 billion DM. This amount accounted for 31% of the total higher education sector expenditure on research and development (BMBF, 1998).

3.3 Policy/developments

Research policy
The state's budget for research and development decreased in the beginning of the 1990s. Alongside with recent increasing investments, R&D is seen as a high priority in the country. The priority given to research and development must, however, be seen within its social context. In 1995, 3.6 million people in Germany were unemployed, and therefore the first priority of the state has been to create jobs (BMBF, 1996). The economic climate has in recent years been more favourable.

There is a continuing interest in supporting interdisciplinary research. The Ministry of Education, Science, Research and Technology believes that the higher education sector could play a larger role with regard to interdisciplinary research. This has been stressed with the emergence of *Graduiertenkollegs*: an interdisciplinary focus was very much welcomed. Another priority is to increase the co-operation between applied and basic research, and between the private and public sectors. With regard to the latter, the state supports the close co-operation which is currently taking place between FhG institutes and private industry, and would like to further increase the interaction between the private sector and the *Helmholtz Zentren* (BMBF, 1996). A similar approach is taken in the recent programme *Anwendungsorientierte Forschung und Entwicklung an Fachhochschulen*, which supports initiatives at these institutions to participate in applied research and development.
Whereas most of the policies above are meant to support co-operative initiatives regarding research and development, the government at the same time has an eye for the danger of fragmentation. In 2001, a debate started on the downsides of the decentralised and differentiated research infrastructure. Not only the national organisation, but also the European call for research co-operation and scale-enlargement is an element in the debate. It was suggested that many of the private, non-profit organisations should co-operate more intensively or even merge.

A lot of progress has been made since the reunification (1990) in building up the R&D capacity in the new *Länder* of Germany. The BMBF has reserved an annual amount of 3 million DM for rebuilding the research system in the new *Länder*. The money goes toward research in all three sectors: higher education, non-higher education and business enterprise. The BMBF estimates that the research capacity (measured per capita) in the higher education and non-higher education sectors of the new *Länder* has reached the level of the old *Länder*. In the new *Länder* there are currently a total of 50 higher education institutions (universities, *Hochschulen*, and *Fachhochschulen*) and more than 140 non-higher education research institutions. The current industrial R&D capacity in the new *Länder* is very low. There are therefore fewer regional industrial partners with which the government-funded institutions can co-operate. The BMBF is continuing to encourage private investment in this part of the country.

4 FINANCIAL ASPECTS[5]

4.1 *Introduction*

The budget of the institutions
In table 7, data are presented for the total expenditure of all German institutions of higher education from 1980 through 1998, which show a considerable increase in expenditure. It has to be kept in mind that the expenditures are in real prizes and that the enrolments in the higher education system grew considerably. The federal government provides 17% of the (public) funds, while the *Länder* finance the residual and major share of the public expenditure on higher education.

Table 7: Expenditure of German institutions of higher education (in million DM)

	Universities		Fachhochschulen		Total
	Current exp	Investment	Current exp	Investment	
1980	8192	1394	1174	192	18412
1985	10038	1482	1534	276	23326
1990	12955	1800	1980	376	30675
1995	19524	2640	3700	923	48888
1998	20219	2734	4146	1149	51564
1999	20593	2772	4403	1072	52894

Note: Universities, academic hospitals excluded; total regards all institutions.
Note: until 1990, DDR excluded
Source: Statistisches Bundesamt 2001.

The sources of income of the higher education institutions (1994 – 1998) are presented in table 8. Of the funds devoted to the higher education institutions 1998, 82% was considered to be basic subsidies and 15% was additional research income (research councils). Furthermore, 2% originated from private sources (contract research and education). There are differences between the (types of) institutions: universities (15%), for example, have more additional research income (*Drittmittel*) than the *Fachhochschulen* (4%).

Table 8 : Sources of income of German higher education institutions, 1985 - 1998 (in million DM)

	1993	1994	1995	1996	1997	1998
Grundmittel	17283	17751	18684	18844	18589	18865
Drittmittel	2817	2977	2979	3306	3440	3520
Verwaltungseinnahmen	451	505	501	498	535	569
Total	20551	21233	22164	22648	22564	22954

Note: until 1990, DDR excluded
Source: CHEPS Higher Education Monitor 2001.

4.2 Institutional finance

4.2.1 State

Grundmittel
German higher education is publicly funded, and institutions have to follow the budgeting and accounting laws of German public administration. These laws, although set by the individual states, are more or less similar across the country. The main restrictions derive from rules such as:
- the line item budgets (representing expenditure categories) are fixed prior to the fiscal year;
- the budget may not be spent "across" line items;

[5] This chapter is based on Kaiser et al., 2002.

- institutions do not get lump sum funding for staff expenditure, rather it is - according to the *Stellenplan* - allocated on a position by position basis; thus, institutions cannot spend personnel funds for other purposes, even if this is deemed to be necessary and appropriate;
- funds (unspent balances) may not be transferred to the following fiscal year.

However, during the last few years in a number of German *Länder* substantial changes took place. Some *Länder* stick to the line-item budgeting, whereas others enable their institutions to spend across line items, and some have even created real lump sum budgets (Ziegele, 2000).

The annual budget, in which the state subsidies for the individual institution are presented, is included in the state law. The budget is subdivided into expenditure categories (line items) and positions (for personnel, described in the so-called *Stellenplan*). The budget is an integrated budget for education and research. Teaching and research are not funded separately. Usually the budget is already subdivided according to the institutional structure, and the positions are already assigned to the departments and institutes. The budget thus pre-determines the total expenditure process for the fiscal year.

The public (basic) funding of institutions of higher education is – apart from some exceptions – not the result of using a formula for calculating budget components. The funding is based on institutional budget requests, each approved – in a process of budget negotiations – by the authorities on the basis of institutional assessments (allowances by reimbursement). The starting point is the *Stellenplan* of the last year. Therefore, the budgeting process can be characterised as incremental and input-oriented. The amount of *Grundmittel* received by a university or *Fachhochschule* is not so much influenced by the actual number of students. In some *Länder*, recently formula funding has been introduced for increasing parts of the available budget, but until now it still relates to a small part of the budget (1-7%).

Investments
Financial investments in new buildings, equipment for new buildings, and equipment above a certain threshold level (about 75,000 Euro) is financed jointly by the *Länder* and the federal Minister of Education. The *Länder* ministers may decide to contribute the total amount to these investments. However, if they want to receive federal money, they have to process the project through the national planning procedure (*Rahmenplan*), in which the *Wissenschaftsrat* evaluates the application and a joint national body of the *Länder* and the federal government makes the decision on whether or not to allocate funds. Construction and maintenance of buildings is neither decided nor administered by the institutions themselves. Special *Länder* administration "offices" (*Staatshochbauverwaltung*) are in charge of these tasks. Only the operating of the buildings is budgeted and administered by the institutions. For example in Niedersachsen, a bill has been drafted to enable higher education institutions to become a *Stiftung* which is allowed to be owner of buildings and land.

Developments
There are clear signs that state governments (*Länder*) are willing to give institutions more flexibility with regard to the (internal) allocation of funds according to their own discretion, and with fewer limitations fixed in advance. In many *Länder*, experiments have been carried out with block grant (lump sum) funding (*Globalhaushalt*) as a replacement for the traditional and rather inflexible allocation mechanisms. In 2001, there are eleven *Länder* that have introduced block grant funding in all higher education institutions, many have done so after experiments in a number of higher education institutions. There are considerable differences between the *Länder* regarding the way the mechanisms are implemented (unabridged or step by step), the degree of actual spending freedom (from small to considerable), and the way in which the block grant system is connected to other steering instruments, such as covenants and quality assurance mechanisms (Federkeil and Ziegele, 2001). The covenants (*Zielvereinbarungen*) play an important role in the so-called *Stadtstaaten* (e.g. Bremen). The fact that the *Stadtstaaten* only have one or two universities makes it more efficient for them to introduce contract management than to develop a sophisticated formula. Some *Stadtstaaten*, e.g. Hamburg, have combined contract management with formula funding (Kaiser et al., 1999).

Allocation of additional research grants
Academics compete for *Drittmittel*, which – as mentioned above – on average account for 13% of the universities' budgets. The total amount of money available is limited, and those who want to benefit from these funds have to apply. Applications are usually scrutinised by peers, before the respective foundation or the

Deutsche Forschungsgemeinschaft (DFG) funds projects. This is, however, not a competition between institutions but rather between individual researchers or research groups.
Higher education institutions' main competitors for both public and private research funding are, without any doubt, the private, non-profit and governmental institutions. Contrasting the research budget of these institutions against research money spent at universities, the *Wissenschaftsrat* came to the conclusion that, indeed, the proportions changed exactly at the time when universities had to accommodate a large increase in the number of students. The balance between university research and research at private, non-profit and governmental research institutions is shifting more and more in favour of the latter. One of the main reasons for this development is that, in recent years, a large number of these institutions have been set up in Germany as part of the reunification.

University income from other activities

Contract research and contract teaching
There is no reliable information available about contract teaching. It can be stated, however, that institutions of higher education do not earn much in the field of contract teaching. Individual academics may receive supplementary funds from external sources for large-scale research projects and programmes. They have to apply for these funds, which predominantly come from public budgets (approximately 80 per cent) and which are granted for a limited period of time. External funding is predominantly provided by state-financed funding institutions (above all the *Deutsche Forschungsgemeinschaft),* federal and *Land* ministries, foundations and funding societies, industry, associations and international organisations.

4.2.2 Intermediate organisations
The most important institution involved in promoting research in higher education, particularly basic research, is the *Deutsche Forschungsgemeinschaft*. It promotes research by, for example, providing individuals or institutions with financial assistance. In 2000, the state and the *Länder* supplied funds of 1.16 billion Euro for this purpose (DFG, 2001).

4.2.3 Private sector/industry
External funding to complement basic endowments is becoming increasingly important. In 1980, the basic funding for research and teaching was six times higher than the external funding. In 1990, the share of basic funding in total funding had decreased to four and a half times higher than external funding. By raising external funds, institutions of higher education have managed to mitigate, but not compensate for, the effects of the shortage of funds. Between 1970 and 1993, the volume of external funding of higher education increased from 630 million DM to 3,355 million DM, but in the late 1990s it's still 'only' 2-3 percent of the total sources of income.

4.3 Student support and tuition fees

4.3.1 Student support
Students in the tertiary sector who have no other means (mainly from their parents' income) of maintenance and financing a course of study can receive financial assistance (*BaFög*) under the terms of the Federal Training Assistance Act (*Bundesausbildungsförderungsgesetz*).

The duration for which such assistance is payable (*Förderungshöchstdauer*) varies according to the nominal duration of the study programmes. The limits are specified either in the Federal Training Assistance Act or in the form of an ordinance. After their fourth subject-related semester, students only continue to receive funding if they have achieved the study results usually attained by that time. The monthly amount depends on the student's own income and financial means as well as those of his or her parents and spouse.

The financial assistance is also provided during non-lecture periods. Since 1st July 1996, the full assistance available to students in higher education not living with their parents has been up to Euro 509 per month (made up of Euro 424 for their maintenance plus Euro 38 health insurance allowance, Euro 8 for long-term care insurance allowance and up to Euro 38 rent allowance) in the original Federal Republic. The highest rate of assistance in the new *Länder* in eastern Germany has been adjusted to match that in the original *Länder* of the Federal Republic and for students not living with their parents is now Euro 501 per month. Half of the amount is provided over the maximum period for which assistance is payable as a non-repayable grant, while the other half takes the form of an interest-free state loan. Repayment terms for this state loan depend on social considerations and income. Once the maximum period during which assistance is payable has been exceeded, students, as a rule, only receive funding in the form of a bank loan, which is subject to interest.

In addition to financial assistance provided under the Federal Training Assistance Act, there are other sources of funding available to students. In some *Länder*, for example, the student associations at the institutions of higher education provide loans of varying amounts in cases of extreme social need. Several smaller, predominantly regional foundations, which usually have private funds at their disposal, also provide needy students with assistance.

Particularly gifted students may receive a grant from relevant foundations (*Begabtenförderungswerke*). These foundations generally maintain close links with churches, political parties, trade unions or industry. One exception, however, is the *Studienstiftung des deutschen Volkes* (German National Scholarship Foundation), which does not adhere to any particular ideology and which is also Germany's largest foundation of its kind. Both the state and the *Länder* support the work of these foundations by providing substantial funding, the greater part of which is provided by the State. The German Academic Exchange Service (*Deutscher Akademischer Austauschdienst* - DAAD) offers grants for foreign students and young academics to pursue studies or further education of limited duration at a German higher education institution. In addition the DAAD, some *Länder* also have special funds for providing assistance to foreign students at the local institutions of higher education.

On completion of a first degree, students may also receive scholarships to support their further studies in line with the post-graduate assistance acts (*Graduiertenförderungsgesetze*) of the *Länder*. The foundations for gifted students (*Begabtenförderungswerke*) also provide students who have already completed a first degree with grants to enable them to study for a doctorate.

In addition to the direct financial support available to students from low-income families, all students under the age of 27 benefit through the tax allowances to which their families are entitled and which are laid down in the German Income Tax and Child Benefit Acts. If students finish studying before their 27th birthday, the financial benefits enjoyed through their family come to an end with the end of the course of study. It is the parents and not the students themselves who are entitled to this form of support. Further indirect forms of financial assistance for students include reduced health insurance rates and the fact that time spent studying is partially acknowledged by the pension insurance authorities.

Recent developments
In 1998, the reform of the *Bafög* was announced. The objectives were to enhance social justice, to remove existing differences between the old and new *Länder*, to adjust the system to internationalisation and, to make the system more transparent and to shorten the time to degree and reduce drop-out.
In 2001, the system was implemented. The main features of the system are (www.das-neue-bafoeg.de):

- maximum amounts of support for students living on their own (466 Euro) or with their parents (377 Euro), this maximum can be higher dependent on eligibility for e.g. health insurance and accommodation subsidies;
- the level of support is dependent on the income of the student, her/his partner and/or parents;
- in principle the length of the support coincides with the nominal length of study; eligibility for support after the fifth semester is dependent on the performances of the student;
- the grant is interest-free and should be repaid from five after graduation on, the amount will be 105 Euro per month given the graduate has a certain level of income. The maximum number of years of repayment is 20 years, the maximum amount is 10,000 Euro.

- Students are eligible for the grant system if they take up courses in other higher education systems, dependent on the length of the stay, the country involved and whether the foreign courses are related to the study in Germany. They are only entitled to do so if they commence their studies in Germany.

Although the reform was announced to be a major one, only minor improvements have been reached as compared to the previous system. This is mainly due to the limited amount of extra money targeted for the *Bafög* system and because there was not the political will to integrate different forms of subsidies (*Kindergeld*, *Steuerfreibeträge*, *Bafög*) into a more coherent system. It should also be noted that in the former and present system tax deduction mechanisms are as important as the grant scheme (e.g. about 15% of the students made use of the old *Bafög* system).

4.3.2 Tuition fees

Generally, no registration fees, semester fees or examination fees are imposed for first degree courses in higher education, either for German or for non-German students. However, all students have to pay a minor contribution for the use of the institution's social facilities. If the institution has an organisation of student self-administration (a General Student Committee - *Allgemeiner Studentenausschuß*), students also pay an additional contribution.

Some states have implemented or intend to implement fees for long-term students. For example, in Baden-Würtenberg students who study longer than the *Regelstudienzeit* plus four semesters must pay 511 Euro per semester. In Bayern, students starting a second study (on top of a finalised first study), have to pay a fee of 409 – 511 Euro. Public and private institutions may charge fees for enrolment in *Weiterbildung* programmes, the level of the fees for public institutions is to some extent regulated (e.g. 60% of the total costs). Private higher education institutions are free to set fees for all their programmes. Consequently, fees are no barrier for access to initial public higher education. Although recently there has been a fierce debate regarding tuition fees at public higher education institutions, until now it is not yet allowed to collect fees for initial programmes.

5 GOVERNANCE STRUCTURES[6]

5.1 Introduction

The tradition of higher education in Germany is marked by a number of basic principles including the internal autonomy of institutions of higher education (despite their being maintained by the state), freedom of teaching and research, and the unity of teaching and research. According to the principle of cultural sovereignty (*Kulturhoheit*), the reconstruction of the higher education system is a matter for the *Länder*. Their policy on higher education is co-ordinated by the Standing Conference of the Ministers of Education and Cultural Affairs of the *Länder* in the Federal Republic of Germany, whereas the Federal Government initially exerted no influence whatsoever on the development.

The expansion of higher education made national planning more and more imperative; concomitantly, financial requirements began growing beyond the means of the individual *Länder*. As a result, the Federal Government became increasingly involved in matters of higher education. In 1969, the constitution (*Grundgesetz*) of the Federal Republic of Germany was amended to take this development into account. Under articles 91a and 91b of the constitution, the expansion and construction of higher education institutions including university clinics, as well as educational planning and the promotion of research activities are now among the so-called “joint tasks” of the Federal Government and *Länder*. The Federal Government was also thereby empowered to enact framework legislation concerning the general principles of higher education, a right that resulted in the *Hochschulrahmengesetz* (HRG) or Framework Act for Higher Education, in 1976. This HRG has been adapted rather drastically in 1985, 1998 and 2002.

Apart from rising enrolment figures and the increased involvement of the Federal Government, one widespread debate over reform had a particularly formative influence on the development of higher education in the 1960s and 1970s. Among other things, it concerned the organisation of university studies (structure of the basic and advanced sections of studies, intermediate examinations, limits on the duration of studies, practical orientation and the like), the constitutions of higher education institutions (above all, the participation of students and research assistants along with professors in self-administration), university entrance and admission to courses of studies with limited capacity. The Framework Act for Higher Education of 1976 put an end to much of the public debate about reform. For the first time, a uniform nation-wide legal framework had been created for higher education, which the *Länder* subsequently fleshed out with their own legislation (even as late as the 1960s, many had no legal provisions, only institutional statutes).

GDR
Higher education in the former GDR evolved under completely different conditions. It was based on a unitary and centrally controlled concept in the service of Marxist-Leninist party ideology and committed to serving the ends of a planned economy (supplying “cadres”). Higher education there did not see unchecked expansion: the enrolment figures peaked in 1972 after the universities had been opened expressly for the "sons and daughters of workers and peasants" in the first years after the war, and distance learning courses had been introduced to reach many working people.

In 1989, following the peaceful revolution in the GDR, a number of reforms in higher education were launched there even before its unification with West Germany: viz. higher education came within the remit of the newly established *Länder*, the autonomy of institutions of higher education was restored along with freedom of research and teaching. Ideologically encumbered faculties were overhauled, and wider access to institutions of higher education was introduced. Under the Unification Treaty (*Einigungsvertrag*), the Science Council (*Wissenschaftsrat*) was given a mandate to examine the state of non-university research and draw up recommendations for a reorganisation of higher education.

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[6] This chapter is based on: Eurydice European Unit of the European Commission.

About ten years after German unification, higher education in eastern Germany has changed fundamentally. As part of an institutional restructuring plan, some institutions of higher education were closed or integrated into universities, new faculties were set up in the fields of law, economics and business and social sciences, *Fachhochschulen* were established as a new type of institution there. As part of a staff renewal plan, new teachers were appointed and programmes were initiated to promote young academics; concurrently, however, about a third of the posts in higher education were eliminated.

Developments since the 1990s
Since the beginning of the 1990s, the state and the *Länder* have intensified their efforts to introduce higher education reforms throughout Germany in view of inadequate financial resources and staffing levels and the need to strengthen the management of higher education (see also Kehm, 1999). The aim of reforming the German system of higher education is to create scope for competition and differentiation, as well as to safeguard the international competitiveness of German institutions of higher education by means of deregulation, a performance-oriented approach and the creation of performance incentives. Most recently these objectives have been mentioned or reiterated in the *Hochschulsonderprogramm* 2001-2003, the overall state policy plan for higher education.

In order to implement these goals, the structure of higher education study and the internal organisation of institutions of higher education have been the subject of reform. This has involved, for example, a review of *Regelstudienzeiten* (standard periods of study) and examination requirements in conjunction with improvements in teaching and a separation of study aimed at preparing students for the practice of a profession and the qualification of a new generation of academics and scientists. One priority is to expand *Fachhochschulen* and to make them even more attractive, e.g. by consolidating applied research work and technology transfer. Furthermore, institutions of higher education are to be made more efficient by according them further autonomy, allowing them to build an individual profile in a particular area and encouraging more competition. Part of these objectives have been integrated in the 1998 HRG.

5.2 Federal and regional governance

Ministries of Education, Cultural Affairs and Science
The Ministries of Education, Cultural Affairs and the Ministries of Science of the *Länder* (which have different titles in the various *Länder*) in their capacity as highest authorities of a Land were until 1994 responsible for education, science and culture. The Ministries of Education, Cultural Affairs and Science develop policy guidelines in the fields of education, science and the arts, adopt legal provisions and administrative regulations, co-operate with the highest authorities at national and *Land* level and supervise the work of authorities under their purview and of subordinated bodies, institutions and foundations. In order to assist the ministries in their work, the *Länder* have established their own research institutes for school education, higher and continuing education.

Co-operation between the Ministries of Education, Cultural Affairs and Science
Following the founding of the Federal Republic of Germany it soon became clear that there was a basic public need for education to be co-ordinated and harmonised throughout the country if people were to be provided with the opportunity of mobility in their professional and private lives. The main aim of the co-operation entered into by the *Länder* in 1948 with the founding of the Standing Conference of the Ministers of Education and Cultural Affairs of the *Länder* in the Federal Republic of Germany (*Kultursministerkonferenz*) was to guarantee by means of co-ordination the necessary measure of shared characteristics and comparability in the Federal Republic of Germany's education system, an aim that is still pursued to this day. In 1994, the two ministries were integrated to form the *Bundesministerium für Wissenschaft, Forschung und Technologie*. In 1998, the organisation was renamed into *Bundesministerium für Bildung und Forschung*.

The Standing Conference of the Ministers of Education and Cultural Affairs of the *Länder* in the Federal Republic of Germany brings together the ministers and senators of the *Länder* responsible for education and training, higher education and research, and also cultural affairs. Resolutions of the Standing Conference can

only be adopted unanimously. They have the status of recommendations - with the political commitment of the competent Ministers to transform the recommendations into law, however - until they are enacted as binding legislation by the parliaments in the *Länder*. The resolutions are implemented in the individual *Länder* in the form of administrative action, ordinances or laws, with the Land parliaments playing a role in the legislative procedure. Co-operation within the Standing Conference has led to uniform and comparable developments in many areas of the school and higher education system.

Collaboration between state and Länder
The constitution provides for special forms of co-operation between the state and the *Länder*. Under art. 91b, the state and the *Länder* can co-operate, on the basis of agreements, in educational planning and in the promotion of institutions and projects of scientific research which are of supra-regional importance. The body responsible for joint educational planning and research promotion, in which the Federal Government and the governments of all the *Länder* are represented, is the *Bund-Länder-Kommission für Bildungsplanung und Forschungsförderung* (BLK), established under an agreement in 1970 as a permanent forum for the discussion of all questions of education and research promotion which are of common interest to state and *Länder* and for the presentation of recommendations to the heads of the federal and *Länder* governments.

5.3 Intermediary organisations

Under an administrative agreement between the state and the *Länder*, the Science Council (*Wissenschaftsrat*) was established in 1957. Its tasks include the drawing up of recommendations on the content and structural development of higher education, science and research. The Science Council is made up of scientists, recognised public figures and representatives from the federal and *Länder* governments.

Under the Higher Education Institutions Construction Act (*Hochschulbauförderungsgesetz*) of 1969 the Planning Committee for the Construction of Higher Education Institutions was set up to regulate co-operation between the state and the *Länder* in the joint task of the “Expansion and construction of institutions of higher education, including university clinics” as stipulated in Article 91a of the constitution. The committee is responsible for the medium-term planning of construction measures in the higher education sector. The Federal Minister for Education and Science, the Federal Minister of Finance and one minister or senator per *Land* sit on the committee.

Other important intermediate bodies, not so much in terms of legal powers, but important in decision-making and advising the Minister in German higher education are the *Hochschulrektorenkonferenz* (HRK), and the *Deutsche Hochschulverband* (the professional association of university professors).

5.4 Institutional governance

The principles of public (state) maintenance of higher education, the (constitutional) freedom of teaching and research as well as the unity of teaching and research are particular relevant discussing the institutional governance structures. Schimank et al. (1999) nicely summarise the steering and governance development in Germany from a combination of political guidance of universities by state authorities and the self-regulation of oligarchic academic communities towards competition between and with universities for strategic resources and for customers of their services and hierarchical self-guidance of universities by their leaders.

The combination of political guidance and academic self-regulation, has particular consequences for decision-making. The universities, for instance, are considered as parts of the public administration. The *Länd* decides on issues like the organisational allocation of posts, the appointment of professors, the establishment or elimination of departments, and the internal decision-making procedures. On the other hand, academics (particularly professors, that have life-time appointments) decide on most academic matters. Professor can be considered

(Schimank et al., 1999, p. 185) as "… small businessmen with a number of subordinates … who cannot go bankrupt".

Decentral level
The chair-based organisation is an essential characteristic of the university. The basic organisational unit at higher education institutions is the department (*Fachbereich*), in some *Länder* also known as faculty (*Fakultät*). Although the 1998 HRG disposed of the department as an organisational unit, in many *Land* regulations and universities the situation in practice remained unchanged. The *Fachbereich* is responsible for ensuring that its members and scientific establishments are able to carry out the functions entrusted to them. The *Fachbereich* council is responsible for all research and teaching issues. It is chaired by the *Dekan*, who must be a professor from among the council members.

Central level
Higher education institutions are governed either by a rector (*Rektor* or *Rektorat*) or else by a president (or presidential body). The rector is elected from among the group of professors belonging to the institution. His/her term of office, during which time he/she carries out the relevant duties on a full time basis, is at least two years. As regards the office of president, anyone who has completed higher education and has the necessary career experience, notably in academic affairs or administration, may be nominated. The president's term of office, which is exercised in a full time capacity, is at least four years. Apart from a rector or president, higher education institutions have a chancellor who is the senior administrative officer and is responsible for the budget. Although rectors, presidents and deans have formal legal powers, their powers are fragmented by the power of the professors in the chair-based system. In addition, the leaders are often only in charge for a short period of time, they hardly have the time to become – if they want to – experienced professional managers.
A second composite central body for the whole institution, the *Senate* is responsible for taking decisions of general importance (e.g. the distribution of personnel and material resources among the various departments). The composition of the bodies and the voting rights of the groups depend on the qualifications, functions and responsibilities of the parties involved and on who the decisions affect. It is the professors who have the majority of seats and votes in all bodies with the power of decision-making concerning research and teaching matters and concerning the appointment of professors.

Higher education institutions adopt their own statutes, or basic constitutions (*Grundordnungen*) which are subject to the approval of the Ministry of Education and Science or the Ministry of the *Land* in which they are situated. A composite central body representative of the entire institution and including members of staff and students (called *Konzil* - council, *Konvent* - convention or *Versammlung* - assembly) is formed to pass the basic constitution and to elect the principal or governing board of the institution. For the purpose of their representation in governance bodies, the following each form a group of their own: the professors, other academic staff, the students, and other staff members (support staff).

Although the 1998 HRG implied some changes in the governance structure, to be implemented at the *Land* level, at present there are no signs of significant changes. Within the universities, there are tendencies of change regarding the involvement of external actors in university decision-making, more leeway and power for the institutional administrative level and less involvement in decision-making by the academics at the lower levels of the organisation. But it is too early to conclude that change is marginal or very incremental: the relatively uncoordinated approach of the government (i.e. new developments within traditional frameworks) may show surprising outcomes in due time.

6 QUALITY ASSURANCE[7]

6.1 Introduction

Germany does not yet have a national quality assessment system for the evaluation of teaching in higher education. However, in 1997 consultations on assessment systems took place in all *Länder*, as well as at the interregional level. In July 1995, the *Hochschulrektorenkonferenz* adopted a resolution 'on the evaluation in the field of higher education, with particular reference to the assessment of teaching'.

6.2 Internal assessment

In its resolution, the HRK not only recognised the need for assessment and evaluation, but also recommend that such a system should comprise three components. First, an assessment and evaluation system should be based on *internal assessment*. A self-evaluation of a department should aim to present the views with respect to the strengths and weaknesses from the points of view of the academic and teaching staff, and of the students. It should include corrective measures and adaptation within the basic units in view of the demands of research, teaching and promoting young academics.
An internal assessment should build up, therefore, from *teaching reports* from the dean, *formal interviews* with teaching staff and students and other appropriate sources of information, e.g. structured group interviews, interviews with graduates, or labour market analyses. This would allow for comparison with the requirements and the goals that the department had had laid down in its decisions on, for example, study regulations and study programmes. The result of an internal assessment should be an assessment report, submitted approximately every five years. In the HRK's views, such an internal assessment report should include:

- a description of the data used in the teaching reports, and the results obtained from surveys among students and possibly also among graduates;
- an outline of the goals and expectations held by the department with respect to study programmes and the inclusion of research in teaching;
- a critical self-assessment, using various information sources, of the extent to which the goals and tasks set by the basic unit or department have been or could be achieved, which—if any—obstacles exist, and what measures are taken to achieve the goals;
- the self-assessment should also address the evaluation of internal initiatives for the improvement of teaching and teaching success, for the adaptation of the curriculum contents to academic and professional demands, as well as for continuing education, revealing shortcomings and describing means for remedying these in research and in the promotion of young scientists and academics;
- evaluation of the organisation of studies with regard to study programmes, guidance for students, organisation of examinations, graduate services, career success of graduates, etc.;
- suggestions for safeguarding and improving the quality of teaching as well as the organisation of teaching and examinations and for the allocation of resources for teaching and research.

6.3 External assessment

In addition an assessment and evaluation system should incorporate *external assessment*. Based on the results of the internal assessment, and taking into account the particular characteristics of the subject area and the duration of the study programme, external consultation should be offered and judgements provided. External assessment should examine the internal assessment critically, especially its effectiveness as a system for quality assurance. It should set an example of opening up the possibility of comparing similar institutions with one another on the basis of particular subjects and on the level of institutions.

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[7] This chapter is bases on J.P. Scheele, P.A.M. Maassen and D.F. Westerheijden (eds), To Be Continued…, Follow up of Quality Assurance in Higher Education, 1998

The external assessments should be carried out through *assessment groups* (peer groups) with academic credentials, to provide a specialist judgement on the study programmes, departments and institutions. In the selection of review groups, an interdisciplinary approach must be taken. As a rule, the members of the review group should not come from the *Land* in which the institution being assessed is located. Students or junior academic staff members, foreign experts and representatives of employers of graduates may also be members of the review group. The individual members should be appointed with the approval of the higher education institutions, while specialist associations and academic societies should be involved in nominating review group members. The review groups analyse the situation in a site visit, using the internal assessment report as well as responses to additional questions. The most important areas to be assessed for comparison include:

- curriculum content (including options, level, links with other academic areas);
- construction and structure of teaching (relationships between forms of teaching, availability of written teaching materials);
- organisation of teaching (avoidance of time clashes, compatibility of major and minor subjects, organisation of examinations, support by the department's head);
- problems in the transition from secondary school to higher education, and possible solutions;
- general and subject-related counselling for students;
- incorporation of research in teaching;
- fostering the next generation of scientists and academics.

The review group should discuss the situation in these areas with various groups in the department, e.g., the dean, professors, junior academic staff and students. At the end of the visit, the review group prepares a report to be discussed with the departmental council and the governing body of the higher education institution.

Finally the HRK proposed the establishment of a *national and consulting agency* (assessment agency), independent from state intervention. This agency should guarantee the exchange of information between higher education institutions. Apart from exchange of information and experiences, the tasks of the agency could be to provide a forum for the further development of assessment procedures leading to international standards, and to act as an umbrella organisation for regional associations in the area of quality assessment. Such an agency could take on, however, a far greater number of tasks, including support for internal and external assessment on request by a higher education institution.

6.4 Present situation of external assessment and recent developments

There are several different developments in the *Länder* concerning quality assurance. Despite this, there still is not a system-wide quality assurance system. In addition, the quality 'control' does not have consequences, either in terms of budget-cuts or closing down of departments or programmes. On the other hand, the experience in Germany shows that after an initial period of doubt and mistrust, departments and universities are working with different systems, once they have become involved in issues of quality assurance.

Some examples of evaluation practices

There are different evaluation agencies are active in German higher education. An example is the Central Evaluation Agency of Lower Saxony. Another is the so-called *Nordverbund*. Six universities from different *Länder* in Northern Germany have joined in a 'Northern Association for the Evaluation of Teaching' (*Nordverbund zur Evaluation der Lehre*) and have agreed on an assessment procedure that they have implemented in some subjects and departments. After initial, widespread scepticism, the procedure has met with approval in the higher education institutions concerned as well as beyond.

In most of the other *Länder* of Germany, the higher education laws oblige the universities to present reports on the quality of teaching (often called *Lehrberichte*) every two or three years. The departments are responsible for preparing these reports. In some *Länder* the universities have to present a report for the institution as a whole. The content of these reports differs according to the laws of the *Länder*. In all cases, however, the reports have to include quantitative and qualitative indicators. Normally the reports are not published, in order to avoid strategic behaviour of the departments. In other *Länder*, for example Bavaria, assessment has been achieved against the background of a disciplinary and organisational reorganisation of the departments.

The *Hochschulrektorenkonferenz* has been rather active in promoting experiments with quality assurance and organising seminars and training sessions in the area. An example of a multi-year project is the project Q (project *Qualitätssicherung*), financially supported by the KMK.

The introduction of Bachelor and Master programmes in German higher education has given an impetus to quality assurance. Whereas traditional study programmes are registered, the new Bachelor and Master programmes need to be accredited. At present the system is in a transition phase, where unaccredited programmes are funded, but this soon has to change into a situation in which accreditation precedes funding. From 2001 to June 2002, there are almost 100 Bachelor and Master programmes accredited by the *Akkreditierungsrat* (Akkreditierungsrat, 2002) which is about 10% of the total amount of programmes. Accreditation is a costly (about 30.000-50.000 DM per programme) and lengthy procedure. It is therefore yet an open debate in Germany whether programme accreditation will be the compulsory and regular form of quality control for all B/M programmes. The *Akkreditieringsrat* has also accepted five agencies (two regional and three national) to take care of accreditation of Bachelor and Master programmes (Krüger, 2001). Debates are taking place within the *Akkreditierungsrat* regarding the criteria to judge different types of Masters. These types (*anwendungsorientiert* versus *theorieorientiert*) should lead to different Bachelor and Master degrees (Akkreditierungsrat, 2001).

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List of CHEPS Higher Education Monitor publications

Thematic reports

Thematic report I
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Nr. 1, Regulations regarding the introduction of new higher education study programmes
Nr. 2, Length of biology programmes