Federal Ministry
of Education
and Research

Education and Research in Figures 2012

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Preliminary Note

Education and qualifications are the keys to Germany's future. A good education and solid qualifications allow individuals to participate in society while enabling talented young people to become more involved in Germany's development. Education and qualifications are essential for ensuring that there are sufficient qualified people to meet current needs. They are also the prerequisites for research, innovation and the development of technological products, thus securing and enhancing Germany's economic strength and growth. Internationally competitive research establishments and outstanding researchers strengthen Germany as a key science location.

That is why the Federal Government has made education and research its priorities. It is providing an additional €12 billion for this area in the current legislative period. Reliable data is needed for sound policy-making in the areas of education, research and innovation. As well as specific information about the various areas of education and research, this includes data on the expenditure of the Federal Government and the *Länder*. The data and facts about education and research contained in this brochure provide the basic information needed to get a quick overview of education and research policy.

More detailed, up-to-date information covering long time series is available on the website of the Federal Ministry of Education and Research:

www.datenportal.bmbf.de

You can search the site by entering keywords or use the available navigational aids. Various output formats are available.

Contents

0 General overviews and structural data

To allow a better understanding of the detailed tables and graphs included in the chapters "Research and Innovation" and "Education", three general tables are provided at the beginning of the brochure. This structural data includes general information on population development for all of Germany and for each of the 16 *Länder*. The budget for education, research and science provides a general overview about national expenditure in these areas.

Fig. 1 Structural data of Germany (2006-2010)

		2006	2007	2008	2009	2010
Population	in 1,000	82,315	82,218	82,002	81,802	81,752
	f	*51.0%*	*51.0%*	*51.0%*	*51.0%*	*50.9%*
Employed persons[1]	in 1,000	37,343	38,163	38,734	38,662	38,938
	f	*45.2%*	*45.3%*	*43.5%*	*45.8%*	*45.9%*
Unemployed persons	in 1,000	4,487	3,760	3,258	3,415	3,238
	r	*10.8%*	*9.0%*	*7.8%*	*8.1%*	7.7%
of which[2]						
without completed vocational training	in 1,000	1,804	1,534	1,337	1,453	m
	r	*24.0%*	*22.1%*	*20.1%*	*21.9%*	m
with in-company/ school training[3]	in 1,000	2,209	1,817	1,569	1,714	m
	r	*8.5%*	*7.0%*	*6.0%*	*6.6%*	m
with university of applied sciences degree	in 1,000	76	62	56	75	m
	r	*3.3%*	*2.6%*	*2.1%*	*2.8%*	m
with university degree	in 1,000	148	131	119	105	m
	r	*3.6%*	*3.1%*	*2.7%*	*2.3%*	m
Pupils[4]	in 1,000	12,138	11,987	11,830	11,675	11,485
	f	*48.2%*	*48.2%*	*48.2%*	*48.2%*	*48.1%*
Apprentices	in 1,000	1,571	1,594	1,613	1,571	1,508
	f	*39.5%*	*39.2%*	*39.6%*	*39.9%*	*39.8%*
Students at higher education	in 1,000	1,979	1,941	2,025	2,121	2,217
	f	*47.8%*	*47.7%*	*47.8%*	*47.9%*	*47.8%*
Gross domestic product (in billions of euros)		2,325	2,429	2,474	2,375	2,477

Explanation of abbreviations/symbols: in 1,000 = in thousands; f = share of females; r = unemployment rate; m = data not available.
1) Findings of the Microcensus.
2) According to calculations of the Institute for Employment Research. The figures differ from the unemployment statistics of the Federal Employment Agency because different basic values have been used.
3) In-company training and training at full-time vocational schools *(Berufsfachschulen)* plus continuing education at trade, technical and master schools *(Fach-, Techniker- und Meisterschulen)*.
4) Pupils at general and vocational schools.
Source: Federal Statistical Office (Statistisches Jahrbuch, Fachserie 1: Reihe 4.1.1, Fachserie 11: Reihen 1, 2, 3, 4.1, Fachserie 18: Reihe 1.4), Federal Employment Agency (Arbeitslosigkeit im Zeitverlauf and calculations of the Institute for Employment Research)

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Additional data: www.datenportal.bmbf.de/**0.1**

Fig. 2 Structural data of the Länder (2010) – [1/2]

		BW	BY	BE	BB	HB	HH	HE	MV
Population	in 1,000	10,754	12,539	3,461	2,503	661	1,786	6,067	1,642
	f	*50.8%*	*50.9%*	*51.0%*	*50.4%*	*51.3%*	*51.1%*	*50.9%*	*50.5%*
Employed persons[1]	in 1,000	5,357	6,358	1,569	1,239	294	884	2,902	780
	f	*45.9%*	*45.7%*	*47.7%*	*47.1%*	*48.0%*	*47.1%*	*45.9%*	*46.8%*
Unemployed persons	in 1,000	273	299	231	149	39	75	198	110
	r	*4.9%*	*4.5%*	*13.6%*	*11.1%*	*12.0%*	*8.2%*	*6.4%*	*12.7%*
of which[2]									
without completed vocational training	in 1,000	120	122	111	25	23	40	68	22
	f	*48.5%*	*48.4%*	*43.1%*	*45.3%*	*45.1%*	*43.2%*	*46.8%*	*42.9%*
with in-company/ school training[3]	in 1,000	122	152	96	84	13	28	63	78
	f	*45.2%*	*44.6%*	*41.5%*	*45.2%*	*40.7%*	*42.6%*	*44.0%*	*43.7%*
with university of applied sciences degree	in 1,000	7	7	7	4	1	2	4	3
	f	*39.2%*	*39.5%*	*45.5%*	*45.9%*	*44.2%*	*46.6%*	*38.4%*	*47.7%*
with university degree	in 1,000	10	12	15	3	2	5	7	2
	f	*50.5%*	*50.4%*	*51.4%*	*48.9%*	*52.8%*	*51.3%*	*49.1%*	*50.9%*
Pupils[4]	in 1,000	1,643	1,780	417	272	95	240	857	174
	f	*47.9%*	*47.9%*	*49.1%*	*48.3%*	*47.9%*	*48.5%*	*48.0%*	*48.4%*
Apprentices	in 1,000	205	257	49	39	16	35	106	29
	f	*40.5%*	*40.2%*	*45.3%*	*37.4%*	*43.5%*	*43.9%*	*40.6%*	*40.0%*
Students at higher education	in 1,000	290	287	147	51	32	80	197	40
	f	*47.1%*	*48.9%*	*49.3%*	*50.9%*	*47.7%*	*47.7%*	*46.6%*	*50.5%*
Gross domestic product (in billions of euros)		362	442	95	56	28	88	225	36

Explanation of abbreviations/symbols: in 1,000 = in thousands; f = share of females; r = unemployment rate; for abbreviations of the *Länder* see glossary.
1) Findings of the Microcensus.
2) According to calculations of the Institute for Employment Research. The figures differ from the unemployment statistics of the Federal Employment Agency because different basic values have been used.
3) In-company training at full-time vocational schools *(Berufsfachschulen)* plus continuing education at trade, technical and master schools *(Fach-, Techniker- und Meisterschulen)*.
4) Pupils at general and vocational schools.
Source: Federal Statistical Office (Statistisches Jahrbuch, Fachserie 1: Reihe 4.1.1, Fachserie 11: Reihen 1, 2, 3, 4.1), Federal Statistical Office and the statistical Offices of the Länder (Regional Accounts provided at www.vgrdl.de), Federal Employment Agency (Arbeitslosigkeit im Zeitverlauf and calculations of the Institute for Employment Research)

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Additional data: www.datenportal.bmbf.de/**0.2**

Fig. 2 Structural data of the Länder (2010) – [2/2]

		NI	NW	RP	SL	SN	ST	SH	TH
Population	in 1,000	7,918	17,845	4,004	1,018	4,149	2,335	2,834	2,235
	f	*50.8%*	*51.2%*	*50.9%*	*51.3%*	*51.0%*	*51.0%*	*51.0%*	*50.6%*
Employed persons[1]	in 1,000	3,676	8,045	1,921	455	1,940	1,090	1,329	1,100
	f	*45.6%*	*45.2%*	*45.4%*	*45.5%*	*46.8%*	*46.7%*	*46.4%*	*46.3%*
Unemployed persons	in 1,000	299	779	120	38	253	151	107	117
	r	*7.5%*	*8.7%*	*5.7%*	*7.5%*	*11.8%*	*12.5%*	*7.5%*	*9.8%*
of which[2]									
without completed vocational training	in 1,000	118	394	58	19	42	30	43	19
	f	*46.5%*	*46.5%*	*48.6%*	*48.1%*	*41.9%*	*44.0%*	*44.9%*	*43.7%*
with in-company/ school training[3]	in 1,000	126	288	55	16	165	102	50	86
	f	*44.1%*	*43.2%*	*43.3%*	*42.5%*	*46.6%*	*46.5%*	*44.2%*	*47.7%*
with university of applied sciences degree	in 1,000	5	13	2	1	7	4	2	3
	f	*41.1%*	*40.0%*	*39.5%*	*33.7%*	*48.1%*	*47.7%*	*39.0%*	*46.0%*
with university degree	in 1,000	8	20	3	1	8	3	3	3
	f	*52.2%*	*48.5%*	*49.1%*	*48.0%*	*49.5%*	*48.5%*	*51.4%*	*49.3%*
Pupils[4]	in 1,000	1,210	2,754	580	136	436	236	417	238
	f	*48.2%*	*48.1%*	*47.7%*	*48.0%*	*49.3%*	*48.1%*	*48.1%*	*48.6%*
Apprentices	in 1,000	151	332	76	21	63	40	54	36
	f	*39.7%*	*39.0%*	*38.3%*	*39.5%*	*37.8%*	*36.1%*	*40.5%*	*35.7%*
Students at higher education	in 1,000	150	535	113	25	110	55	52	54
	f	*48.3%*	*46.5%*	*50.8%*	*49.2%*	*45.7%*	*49.3%*	*47.2%*	*49.0%*
Gross domestic product (in billions of euros)		214	543	108	30	95	52	76	50

Explanation of abbreviations/symbols: in 1,000 = in thousands; f = share of females; r = unemployment rate; for abbreviations of the *Länder* see glossary.
1) Findings of the Microcensus.
2) According to calculations of the Institute for Employment Research. The figures differ from the unemployment statistics of the Federal Employment Agency because different basic values have been used.
3) In-company training at full-time vocational schools *(Berufsfachschulen)* plus continuing education at trade, technical and master schools *(Fach-, Techniker- und Meisterschulen)*.
4) Pupils at general and vocational schools.
Source: Federal Statistical Office (Statistisches Jahrbuch, Fachserie 1: Reihe 4.1.1, Fachserie 11: Reihen 1, 2, 3, 4.1), Federal Statistical Office and the statistical Offices of the Länder (Regional Accounts provided at www.vgrdl.de), Federal Employment Agency (Arbeitslosigkeit im Zeitverlauf and calculations of the Institute for Employment Research)

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Additional data: www.datenportal.bmbf.de/**0.2**

Fig. 3 Budget for education, research and science[1], by expenditure areas, in billions of euros and by share of GDP (1995/2008-2010)

Expenditure Area			1995	2008	2009	2010
A+B	Education[2]	billions of euros	125.4	153.9	164.6	172.3
		share of GDP	*6.8%*	*6.2%*	*6.9%*	*7.0%*
C	Research and development[3]	billions of euros	40.5	66.5	67.0	69.9
		share of GDP	*2.2%*	*2.7%*	*2.8%*	*2.8%*
D	Other education and science infrastructure	billions of euros	4.0	4.9	5.1	4.9
		share of GDP	*0.2%*	*0.2%*	*0.2%*	*0.2%*
A+B+ C+D	**Total expenditure for education, research and science[4]**	**billions of euros**	**162.5**	**214.2**	**224.8**	**234.5**
		share of GDP	***8.8%***	***8.6%***	***9.5%***	***9.5%***

Explanation of abbreviations/symbols: GDP = gross domestic product; OECD = Organisation for Economic Co-operation and Development.
1) Expenditure pursuant to the performance concept. 2009 figures reflect actual expenditure. 2010 figures are preliminary calculations.
2) For a more detailed overview of the education area see figure 19.
3) Calculated using research and development (R&D) statistical methods (Frascati Manual/OECD report).
4) The budget for education, research and science has been consolidated by the higher education expenditure on research and development, because this position is included in both, A and C.
Source: Federal Statistical Office, Budget für Bildung, Forschung und Wissenschaft

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Additional data: www.datenportal.bmbf.de/**1.9.1**

1 Research and innovation

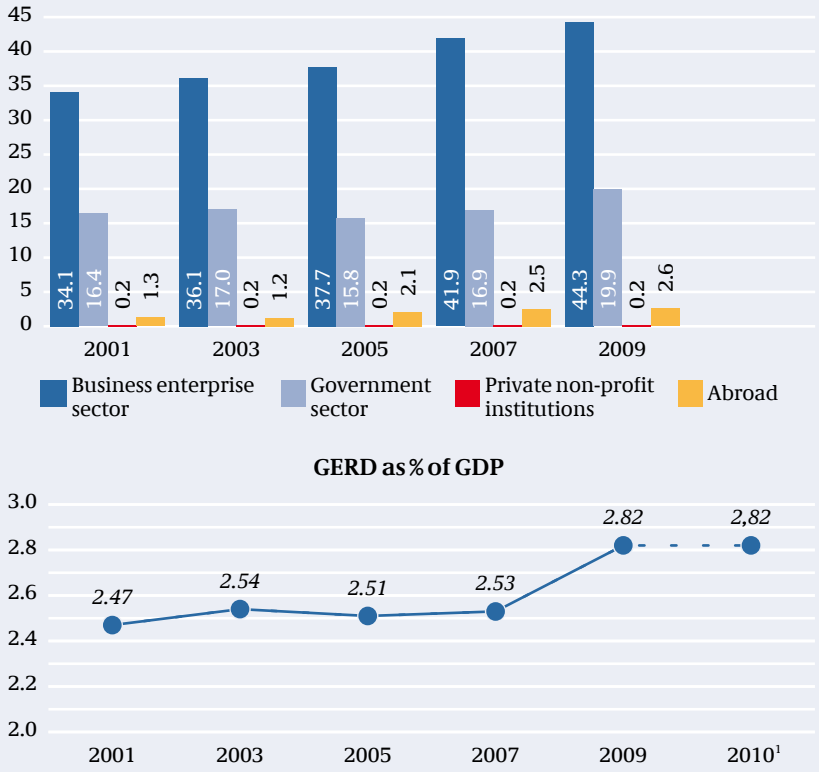
Research, development and innovation form the basis for Germany's economic strength. The export of technology products accounts for a fifth of our country's economic performance. Global challenges in the areas of climate/energy, health, security, mobility and communication cannot be solved without advances in science and technology. Spending on research and development in Germany has increased significantly since the financial and economic crisis. Businesses provide about two thirds of these funds, making a significant contribution to research and development. In 2010, Germany spent about 2.8% of its GDP on research and development, according to figures of the BMBF. Once again, Germany is among the countries leading the field with a very high R&D intensity.

The high level of spending pays off: Research-intensive products and services account for a particularly high percentage of added value in Germany. To maintain Germany's excellent international position, the Federal Government has decided to expand the structural reforms in the research and innovation system, such as the Pact for Research and Innovation, and to continue the Excellence Initiative. The High-Tech Strategy for Germany and the Internationalization Strategy are further steps in the right direction.

Further information:

Publications:
- 2012 Federal Report on Research and Innovation (www.bmbf.de/de/12210.php)
- High-Tech Strategy 2020 (www.hightech-strategie.de)

Fig. 4 Gross domestic expenditure on research and development (GERD), by funding sectors, in billions of euros (implementation view) and GERD as percentage of the gross domestic product (2001-2010)



Explanation of abbreviations/symbols: GDP = gross domestic product.
1) Data for 2010 was not available when going to press. GERD figure estimated.
Source: Bundesbericht Forschung und Innovation 2012, table 1 / figure 2; **Data:** Stifterverband Wissenschaftsstatistik, Federal Statistical Office, Federal Ministry of Education and Research

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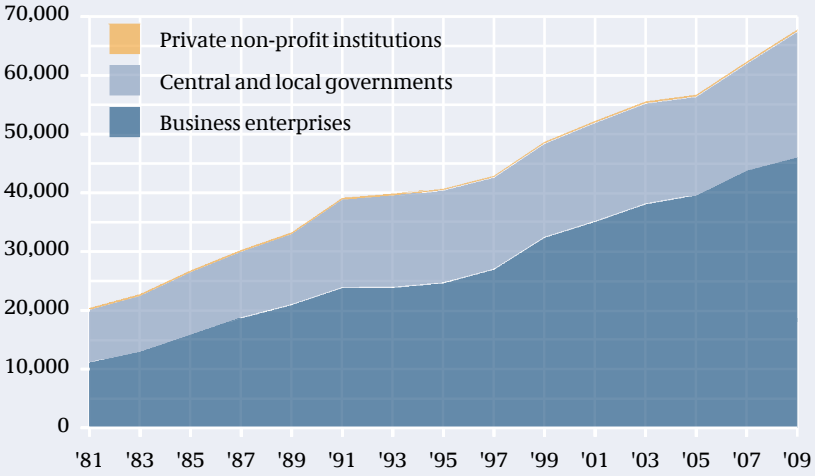
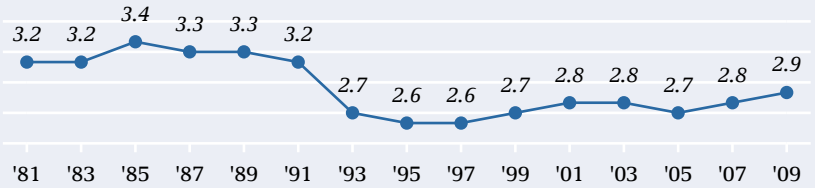
Additional data: www.datenportal.bmbf.de/**1.1.1**

Continuing to expand research and innovation is vital for Germany's future economic prosperity. The Federal Government has consistently prioritized education, research and innovation. Spending on these areas increased by €11.3 billion between 2005 and 2009.

Fig. 5 R&D expenditure of the Federal Republic of Germany and funding thereof, in millions of euros (1981-2009)



Share of the funding by central and local governments in % of the overall government budget



Explanation of abbreviations/symbols: R&D = research and development.
Source: Bundesbericht Forschung und Innovation 2012, table 2; **Data:** Federal Statistical Office, Stifterverband Wissenschaftsstatistik, Federal Ministry of Education and Research

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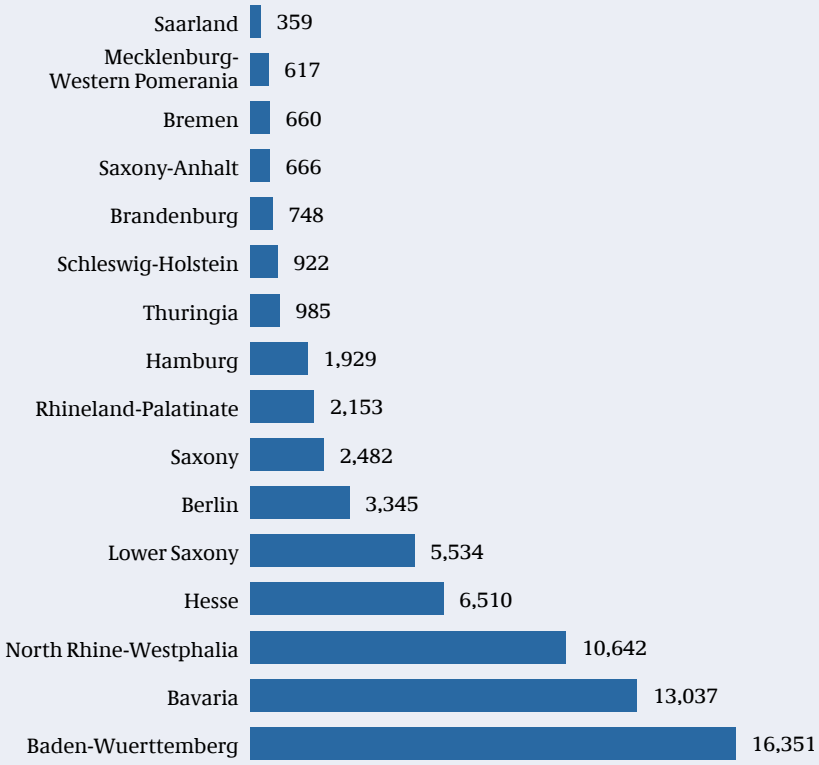
Additional data: www.datenportal.bmbf.de/**1.1.2**

Fig. 6 Regional distribution of the R&D expenditure of the Federal Republic of Germany as a whole (performing of R&D), in millions of euros (2009)



Explanation of abbreviations/symbols: R&D = research and development.
Source: Bundesbericht Forschung und Innovation 2012, table 3; **Data:** Federal Statistical Office, Stifterverband Wissenschaftsstatistik, Federal Ministry of Education and Research

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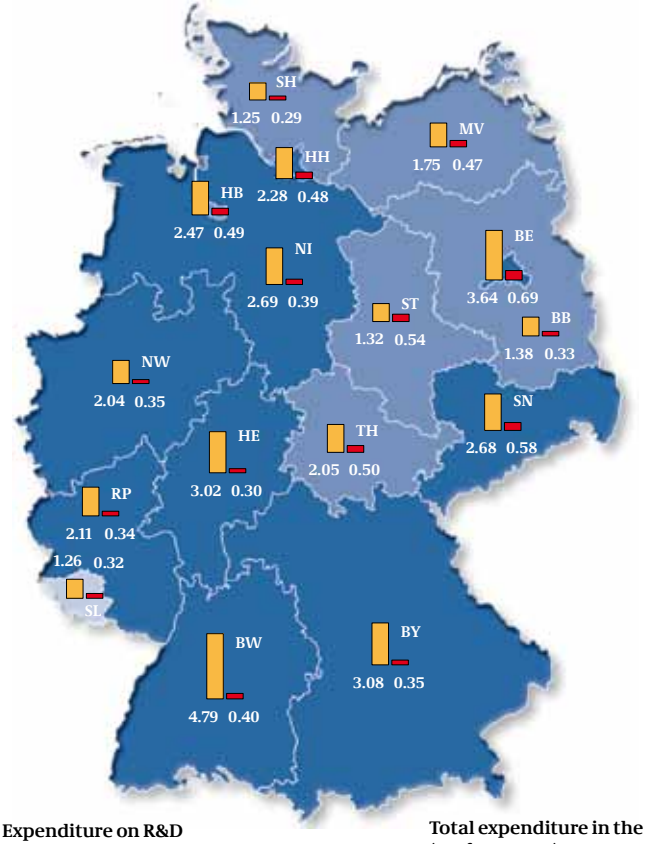
Additional data: www.datenportal.bmbf.de/**1.1.3**

Fig. 7 Regional expenditure on research and development (2009)



Explanation of abbreviations/symbols: R&D = research and development; GDP = gross domestic product; for abbreviations of the *Länder* see glossary.
Source: Bundesbericht Forschung und Innovation 2012, figure 24; **Data:** Stifterverband Wissenschaftsstatistik, Federal Statistical Office, calculations of the Federal Ministry of Education and Research

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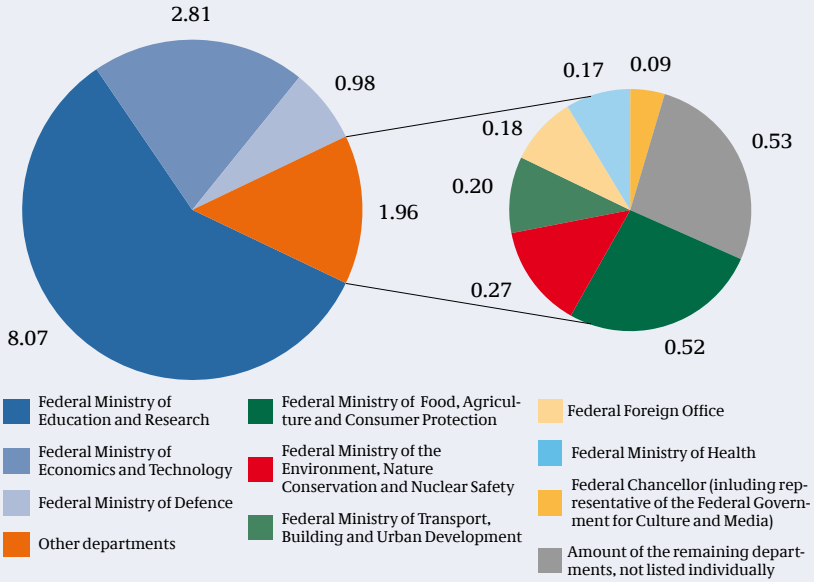
Additional data: www.datenportal.bmbf.de/**1.1.11**

In addition to the activities carried out by the Federal Government, the *Länder* also run a large number of specific funding measures in the areas of research policy, technology policy and innovation policy. They build on the specific strengths of the individual regions in technology, business and innovation as well as on existing geographical structures and characteristics. Such regional differences make a significant contribution to strengthening the German research and innovation system as a whole.

Fig. 8 Federal Government expenditure on R&D, by departments, in billions of euros[1] (2012 PLANNED[2])



Explanation of abbreviations/symbols: R&D = research and development.
1) Differences in the calculation may arise due to sums in billions being rounded up or down.
2) Draft law of the Federal Government dated 12 August 2011.
Source: Bundesbericht Forschung und Innovation 2012, table 4 / figure 11; **Data:** Federal Ministry of Education and Research

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Additional data: www.datenportal.bmbf.de/**1.1.4**

Fig. 9 Federal Government expenditure on science, research and development, by funding areas, in millions of euros (2011/2012)

Funding area[1]		2011 (TARGET)[2]		2012 (PLANNED)[2,3]	
		Total	R&D	Total	R&D
A	Health research and medical technology	1,038.7	872.3	1,287.0	1,100.3
B	Biotechnology	390.9	390.8	253.9	253.8
C	Civil security research	88.2	83.3	91.4	86.3
D	Food, agriculture and consumer protection	645.2	545.9	652.2	550.9
E	Energy research and energy technology	1,138.7	772.6	1,181.0	824.2
F	Climate, environment, sustainability	980.3	802.0	1,042.8	858.4
G	Information and communications technology	632.1	600.3	604.1	574.3
H	Automotive and traffic technologies including marine technology	642.9	555.4	603.1	528.6
I	Aerospace	1,273.5	1,271.6	1,308.5	1,306.3
J	Research and development to improve working conditions and research and development in the services sector	118.0	75.1	84.1	39.5
K	Nanotechnology and materials technology	240.9	213.3	216.2	187.3
L	Optical technologies	112.4	108.7	121.7	117.5
M	Production technology	76.3	74.6	92.9	91.0
N	Regional planning and urban development; building research	58.1	54.5	73.7	69.9
O	Innovations in education	859.8	448.3	954.0	474.1
P	Humanities; economics and social sciences	910.4	660.8	980.2	708.5
Q	Promotion of innovation at SMEs	1,367.2	1,356.1	1,016.9	1,007.5
R	Innovation related basic conditions and other generic activities	123.6	90.4	129.6	94.4
T	Funding organisations, restructuring of research in the acceding territory; construction of universities and predominantly university-related special programmes	4,390.8	2,974.1	5,044.0	3,084.9
U	Large-scale equipment for basic research	935.2	935.0	1,091.9	1,091.6
Z	Total expenditure reduction; planning reserve	-155.9	-155.9	-183.6	-183.6
A-Z	**Total of civil funding areas**	**15,867.7**	**12,729.4**	**16,645.6**	**12,865.7**
S	Research on military science	1,016.2	950.7	1,019.4	952.5
Total expenditure[4]		**16,883.9**	**13,680.1**	**17,665.0**	**13,818.2**

Explanation of abbreviations/symbols: R&D = (of which) research and development; SMEs = Small and medium-sized enterprises.
1) According to the federal performance plan system from 2009.
2) Including "Investment and redumption fund" *(Investitions- und Tilgungsfonds ITF)* excluding allocations to the *Länder* (economy stimulus package – *Konjunkturpaket II*) and including "Energy and climate fund" *(Energie- und Klimafonds)* (2012 including electromobility). Distribution among funding areas/priorities partly estimated.
3) PLANNED 2012: draft law of the German Federal Government dated 12 August 2011.
4) Minor discrepancies with regard to earlier publications are due to retroactive revision of the allocation to funding areas/priorities and to the draft budget 2011.
Source: Bundesbericht Forschung und Innovation 2012, table 5; **Data:** Federal Ministry of Education and Research

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Additional data: www.datenportal.bmbf.de/**1.1.5**

The Federal Government's activities make up the lion's share of government funding for research, development and innovation. The focus is the High-Tech Strategy, which was launched in 2006, and its updated version (the High-Tech Strategy 2020), which addresses the areas of climate/energy, health/nutrition, mobility, security and communication. Activities that are important to society – such as educational research and research in the humanities – are also supported. The method applied here shows the R&D expenditure of the Federal Government as a whole, regardless of the Ministry which provided the funding, classified according to research subject.

Fig. 10 BMBF expenditure on science, research and development, by funding areas and funding priorities, in millions of euros (2011/2012)

Funding area[1] Funding priority[1]		2011 (TARGET)[2]		2012 (PLANNED)[2,3]	
		Total	R&D	Total	R&D
A	Health research and medical technology	684.0	684.0	897.0	897.0
B	Biotechnology	390.7	390.7	253.7	253.7
C	Civil security research	58.0	58.0	59.9	59.9
E	Energy research and energy technology	580.9	347.9	592.9	383.4
F	Climate, environment, sustainability	623.2	623.2	680.0	680.0
G	Information and communications technology	533.5	523.2	519.0	507.1
J	Research and development to improve working conditions and in the services sector	40.6	40.6	0.0	0.0
K	Nanotechnology and materials technology	184.3	184.3	155.9	155.9
L	Optical technologies	104.1	104.1	112.3	112.3
M	Production technology	70.0	70.0	85.6	85.6
N	Regional planning and urban development; building research	0.0	0.0	0.0	0.0
O	Innovations in education	647.0	308.1	741.3	334.2
P	Humanities; economics and social sciences	450.5	418.2	485.0	449.8
Q	Promotion of innovation at SMEs	131.3	131.3	147.5	147.5
R	Innovation related basic conditions and other generic activities	37.0	37.0	40.7	40.7
T	Funding organisations, restructuring of research in the acceding territory; construction of universities and predominantly university-related special programmes	4,253.2	2,950.4	4,895.6	3,059.2
TA	Basic funding of research funding organisations[4]	2,023.2	2,023.2	2,442.4	2,442.4
U	Large-scale equipment for basic research	934.7	934.7	1,091.3	1,091.3
Z	Total expenditure reduction; planning reserve	-155.9	-155.9	-183.6	-183.6
Total expenditure[5]		**9,567.3**	**7,649.8**	**10,574.1**	**8,074.0**

Explanation of abbreviations/symbols: BMBF = Federal Ministry of Education and Research; R&D = (of which) research and development; SMEs = Small and medium-sized enterprises.
1) According to the federal performance plan system from 2009.
2) Including "Investment and redumption fund" *(Investitions- und Tilgungsfonds ITF)* excluding allocations to the *Länder* (economy stimulus package – *Konjunkturpaket II*) and including "Energy and climate fund" *(Energie- und Klimafonds)* (2012 including electromobility). Distribution among funding areas/priorities partly estimated.
3) PLANNED 2012: draft law of the German Federal Government dated 12 August 2011.
4) Basic funding of the Max Planck Society (MPG), the *Deutsche Forschungsgemeinschaft (DFG)* and the *Fraunhofer-Gesellschaft (FhG)*.
5) Minor discrepancies with regard to earlier publications are due to retroactive revision of the allocation to funding areas/priorities and to the draft budget 2011.
Source: Bundesbericht Forschung und Innovation 2012, table 6; **Data:** Federal Ministry of Education and Research

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Additional data: www.datenportal.bmbf.de/**1.1.6**

Fig. 11 Federal Government expenditure on science, research and development, by recipient groups, in millions of euros (2009/2010)

Recipient group		2009 (ACTUAL)[1]		2010 (ACTUAL)[1]	
		Total	R&D	Total	R&D
1.	**Territorial authorities**	**4,084.0**	**2,240.6**	**4,322.9**	**2,323.1**
1.1	Federal Government	1,871.5	926.2	1,929.6	925.3
1.1.1	Federal Government-owned research institutions	1,631.2	869.1	1,680.3	866.2
1.1.2	Other institutions of Federal administration	240.3	57.2	249.4	59.1
1.2	*Länder* and communities	2,212.5	1,314.4	2,393.2	1,397.8
1.2.1	Research institutions of the *Länder*	103.0	98.6	109.6	104.3
1.2.2	Universities and university hospitals	2,043.5	1,156.5	2,195.6	1,224.2
1.2.3	Research institutions of the *Länder*	36.3	32.8	49.8	40.2
1.2.4	Communities, local authority and special-purpose associations	29.6	26.5	38.3	29.2
2.	**Private non-profit organisations**	**6,858.8**	**6,344.2**	**7,192.6**	**6,665.8**
2.1	Research funding organisations (e.g. MPG, FhG, DFG)	3,315.1	3,147.8	3,591.1	3,395.4
2.2	Hermann von Helmholtz Association of National Research Centres (HGF)	2,504.1	2,333.0	2,503.4	2,343.0
2.3	Other non-profit science organisations	946.1	788.0	985.4	840.2
2.4	Other non-profit organisations	93.5	75.4	112.7	87.2
3.	**Business enterprise sector**	**2,338.6**	**2,296.3**	**2,667.3**	**2,618.7**
3.1	Business enterprises	1,617.4	1,595.7	1,862.3	1,840.7
3.2	Services if rendered by companies and the professions	721.2	700.7	804.9	777.9
4.	**Abroad**	**1,188.8**	**1,138.3**	**1,235.1**	**1,182.7**
4.1	Payments to business enterprises abroad	150.6	146.9	154.5	149.1
4.2	Contributions to international organisations and other payments to recipients abroad	1,038.2	991.4	1,080.6	1,033.6
5.	**Cross-group positions**	**3.5**	**2.5**	**4.0**	**2.2**
Total expenditure		**14,473.7**	**12,022.0**	**15,421.8**	**12,792.5**

Explanation of abbreviations/symbols: R&D = of which research and development; MPG = Max Planck Society; FhG = *Fraunhofer-Gesellschaft*; DFG = *Deutsche Forschungsgemeinschaft*.
1) Including "Investment and redumption fund" *(Investitions- und Tilgungsfonds ITF)* excluding allocations to the *Länder* (economy stimulus package – *Konjunkturpaket II*).
Source: Bundesbericht Forschung und Innovation 2012, table 8; **Data:** Federal Ministry of Education and Research

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Additional data: www.datenportal.bmbf.de/**1.1.8**

Fig. 12 R&D expenditure of the Federal Government and the Länder, by research objectives, budget appropriations in millions of euros (2007-2011)

Research objective[1]		2007	2008	2009	2010	2011[2]
1.	Exploration and exploitation of the earth	320.5	378.4	384,6	384.8	416,3
2.	Control of environmental pollution	589.6	597.6	637.6	635.6	636.6
3.	Exploration and exploitation of space	902.6	966.4	1,061.1	1,086.4	1,128.0
4.	Transport, telecommunications and other infrastructure measures	341.8	328.8	367.8	362.9	318.2
5.	Energy	662.1	727.4	871.4	883.1	1,022.9
6.	Industrial production and technology	2,262.4	2,330.1	2,646.7	3,326.8	3,733.6
7.	Health	882.4	857.1	1,002.5	997.4	1,044.3
8.	Agriculture	489.2	559.8	634.2	770.7	687.6
9.	Education	189.7	185.9	193.5	238.6	230.8
10.	Culture, recreation, religion and mass media	212.0	214.5	222.8	316.8	339.4
11.	Political and social systems, structures and processes	311.7	347.2	398.5	403.8	348.1
9.-11.	**Total of education, culture, recreation, religion, mass media, political and social systems, structures and processes**	**713.4**	**747.6**	**814.8**	**959.2**	**918.3**
12.	Research financed from general university funds	7,448.2	7,680.0	7,789.8	8,874.0	8,894.0
13.	General non-oriented research	3,074.0	3,446.6	3,568.0	3,723.7	3,855.9
Funds that cannot be broken down[3]		-116.0	-115.1	-127.4	-142.6	-155.9
Total civil R&D expenditure		**17,570.2**	**18,619.8**	**19,651.2**	**21,862.0**	**22,499.7**
14.	Defence	1,131.0	1,187.0	1,181.4	1,153.6	937.2
Total		**18,701.2**	**19,806.8**	**20,832.6**	**23,015.6**	**23,436.9**

Explanation of abbreviations/symbols: R&D = research and development.
1) In keeping with the nomenclature for the analysis and comparison of scientific programmes and budgets (NABS) – edition 2007. Revised in 2009. 2009-2011 including "Investment and redumption fund" *(Investitions- und Tilgungsfonds ITF)* (economy stimulus package – *Konjunkturpaket II*). 2011 on the part of the Federal Government including energy and climate funds.
2) Provisional figures for 2011.
3) Global reduction in the expenditure of the Federal Ministry of Education and Research (BMBF) which cannot be assigned to research objectives 1 to 13 until ACTUAL figures are available as well as competition funds for the Leibniz Association (WGL) from the Federal Government and the *Länder*.
Source: Bundesbericht Forschung und Innovation 2012, table 13; **Data:** Federal Ministry of Education and Research, Federal Statistical Office

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Additional data: www.datenportal.bmbf.de/**1.2.3**

Fig. 13 Employees, turnover and intramural R&D expenditure of companies, by economic activities (2009)

Economic activity[2]			Em-ploy-ees[3]	Turn-over[3]	Intramural R&D expend.		
					total	per em-ployee	share of turn-over
			1,000	€ m	€ m	€ '000	in %
A	**01-03**	**Agriculture, forestry and fishing**	**5**	**1,030**	**131**	**26.2**	***12.7***
B	**05-09**	**Mining and quarrying**	**31**	**15,284**	**13**	**0.4**	***0.1***
C	**10-33**	**Manufacturing**	**3,147**	**903,031**	**38,711**	**12.3**	***4.3***
	10-12	Food products, beverages and tobacco	120	48,784	318	2.7	*0.7*
	13-15	Textiles, apparel, leather	29	5,914	126	4.3	*2.1*
	16-18	Wood products, paper products, printing	56	15,074	176	3.1	*1.2*
	19	Coke and refined petroleum products	9	38,975	93	10.3	*0.2*
	20	Chemicals and chemical products	246	84,595	3,198	13.0	*3.8*
	21	Pharmaceutical industries	114	42,812	3,896	34.2	*9.1*
	22	Rubber and plastic products	144	29,690	847	5.9	*2.9*
	23	Glass, ceramics and non-metallic minerals	68	13,021	288	4.2	*2.2*
	24	Basic metals	152	52,279	495	3.3	*0.9*
	25	Fabricated metal products	187	34,266	712	3.8	*2.1*
	26	Computer, electronic and optical products	382	75,357	5,815	15.2	*7.7*
	27	Electrical equipment	161	33,294	1,333	8.3	*4.0*
	28	Machinery and equipment	551	116,632	4,499	8.2	*3.9*
	29	Motor vehicles, trailers and semi-trailers	718	263,035	13,821	19.2	*5.3*
	30	Other transport equipment	104	26,741	2,056	19.8	*7.7*
	31-33	Other manufacturing of products	105	22,562	1,039	9.9	*4.6*
D; E	**35-39**	**Electricity supply; water supply, waste management**	**148**	**139,235**	**216**	**1.5**	***0.2***
F	**41-43**	**Construction**	**71**	**13,124**	**69**	**1.0**	***0.5***
J	**58-63**	**Information and communication**	**229**	**50,241**	**2,564**	**11.2**	***5.1***
K	**64-66**	**Financial and insurance activities**	**72**	**57,671**	**335**	**4.7**	***0.6***
M	**69-75**	**Professional, scientific and technical activities**	**196**	**27,224**	**2,629**	**13.4**	***9.7***
Remaining categories			**160**	**72,022**	**313**	**2.0**	***0.4***
Total			**4,058**	**1,278,862**	**44,983**	**11.1**	***3.5***

Explanation of abbreviations/symbols: R&D = research and development; € m = millions of euros; € '000 = thousands of euros.
1) Not including institutions for cooperative industrial research and experimental development.
2) Classification of industry sectors, 2008 edition.
3) Employees and turnover of companies with internal and/or external R&D expenditure.
Source: Bundesbericht Forschung und Innovation 2012, table 23; **Data:** Stifterverband Wissenschaftsstatistik

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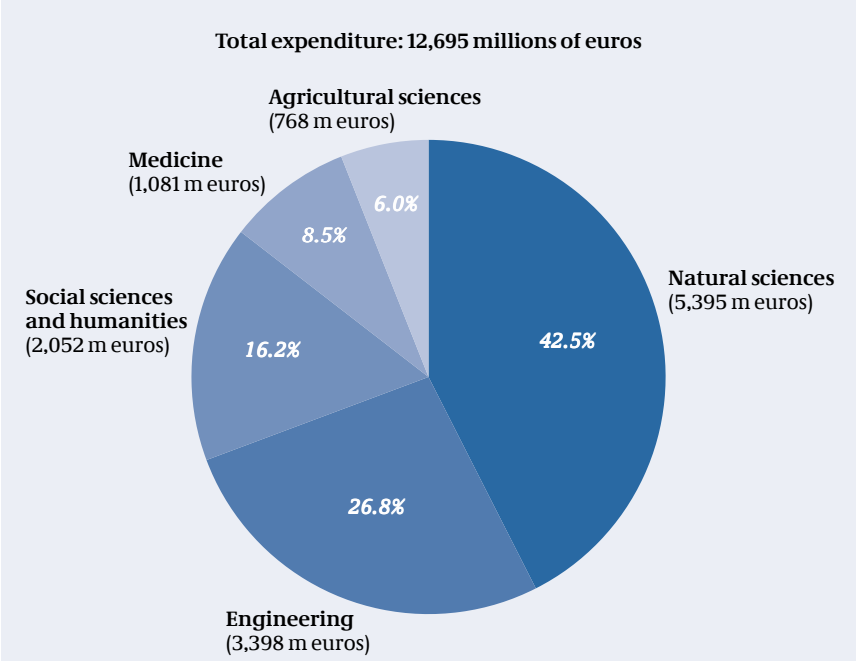
Additional data: www.datenportal.bmbf.de/**1.5.2**

Fig. 14 Expenditure of non-university science institutions, by fields of science (2009)



Explanation of abbreviations/symbols: m euros = millions of euros.
Source: Bundesbericht Forschung und Innovation 2012, table 29; **Data:** Federal Statistical Office

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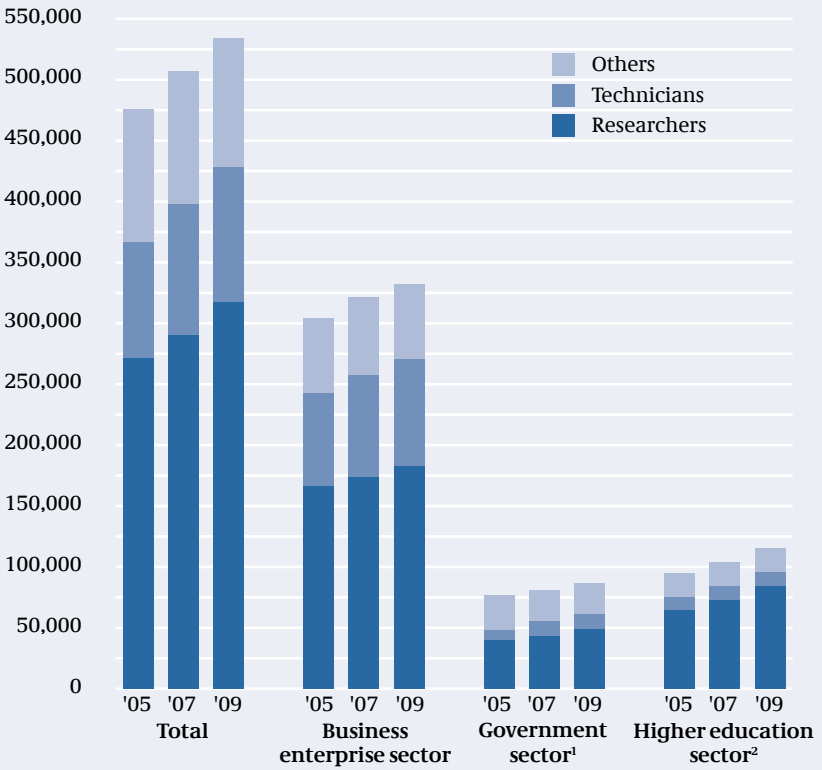
Additional data: www.datenportal.bmbf.de/**1.6.5**

Alongside R&D expenditure, the number of people working in R&D is the most important indicator of R&D resources. More than half a million people work in this area in Germany – in business, in research institutions and at universities. The significant rise in R&D personnel since 2005 makes it clear that R&D has risen considerably in importance. In total, there were almost 60,000 more full-time R&D positions in 2009 than in 2005. The present figures include people who conduct actual research work, but also groups of people who carry out technical or other supporting activities.

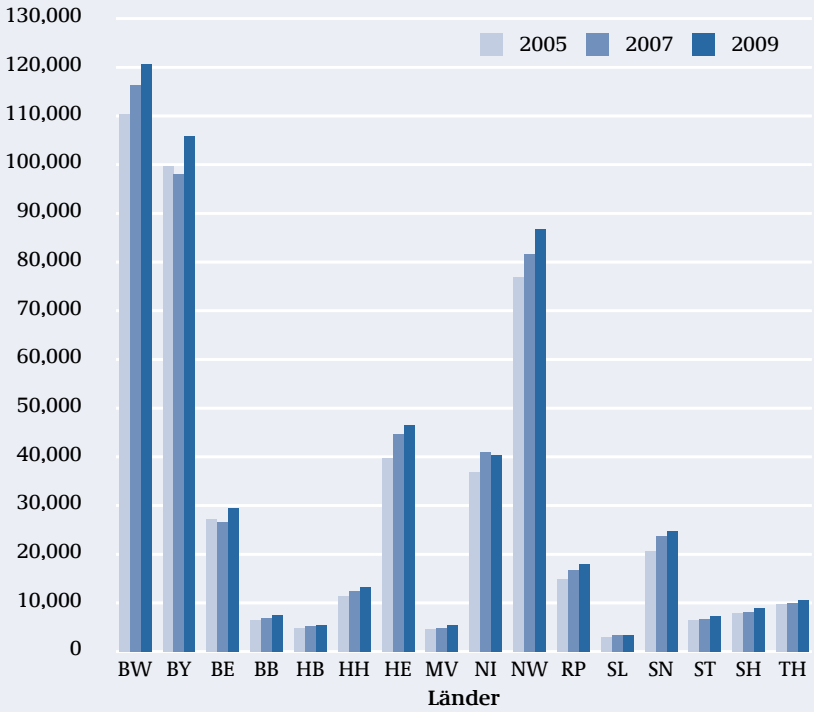
Fig. 15 R&D personnel, by occupations and sectors of employment, based on full-time equivalents (2005/2007/2009)



Explanation of abbreviations/symbols: R&D = research and development.
1) Government institutions and private non-profit organisations financed primarily by the government.
2) Figures for the higher education sector refer to full-time staff of private and state universities (ACTUAL), calculated in accordance with the procedure agreed on by the Standing Conference of Ministers of Education and Cultural Affairs of the *Länder* in the Federal Republic of Germany, the German Council of Science and Humanities, the Federal Ministry of Education and Research (BMBF) and the Federal Statistical Office.
Source: Bundesbericht Forschung und Innovation 2012, table 31; **Data:** Stifterverband Wissenschaftsstatistik, Federal Statistical Office

BMBF's Data Portal (German language only): Figure link: www.datenportal.bmbf.de/**bild-15**
Additional data: www.datenportal.bmbf.de/**1.7.1**

Fig. 16 Regional breakdown of R&D personnel, based on full-time equivalents (2005/2007/2009)



Explanation of abbreviations/symbols: R&D = research and development; for abbreviations of the *Länder* see glossary.
Source: Bundesbericht Forschung und Innovation 2012, table 33; **Data:** Federal Statistical Office, Stifterverband Wissenschaftsstatistik, Federal Ministry of Education and Research

BMBF's Data Portal (German language only): Figure link: www.datenportal.bmbf.de/**bild-16**
Additional data: www.datenportal.bmbf.de/**1.7.3**

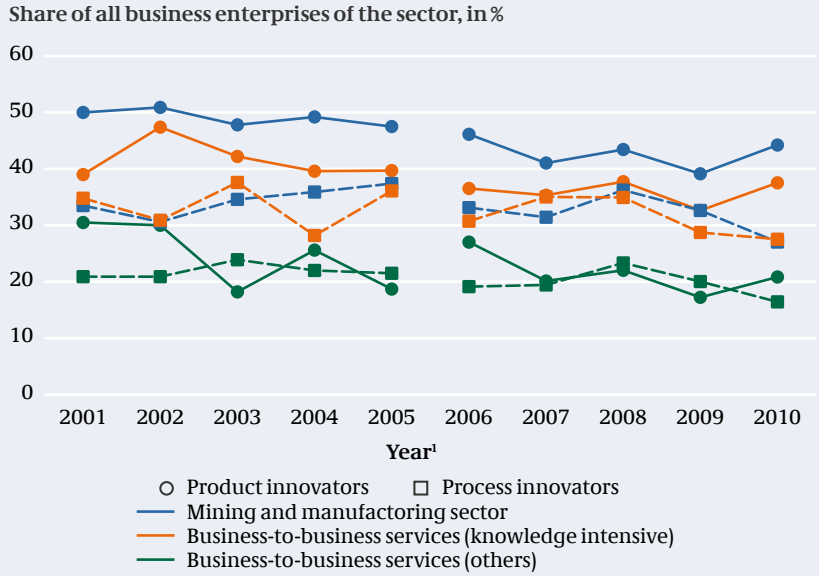
Fig. 17 Higher education expenditure on teaching and research, by types of higher education institution, in millions of euros (2007-2009 ACTUAL)

Expenditure[1] on	Year	Total higher education expenditure	Universities[2], colleges of education, theology and art	Medical facilities[3]	Universities of applied sciences and colleges of public administration
Central institutions	2007	**6,524.1**	5,128.7	-	1,395.4
	2008	**6,929.0**	5,498.1	-	1,430.9
	2009	**7,754.1**	6,039.0	-	1,715.1
Natural sciences	2007	**3,711.7**	3,473.4	-	238.4
	2008	**4,140.4**	3,876.5	-	263.9
	2009	**4,256.3**	4,004.2	-	252.1
Engineering	2007	**2,912.6**	1,992.0	-	920.6
	2008	**3,157.4**	2,171.7	-	985.7
	2009	**3,374.1**	2,353.0	-	1,021.0
Medicine[4]	2007	**4,537.0**	0.5	4,524.8	11.6
	2008	**4,614.1**	0.4	4,597.9	15.8
	2009	**4,628.9**	0.8	4,603.4	24.7
Agricultural sciences	2007	**546.9**	474.6	-	72.3
	2008	**613.7**	523.4	-	90.3
	2009	**463.3**	372.6	-	90.7
Social sciences and humanities	2007	**4,631.1**	3,566.3	-	1,064.8
	2008	**4,871.7**	3,771.1	-	1,100.6
	2009	**4,988.9**	3,928.3	-	1,060.6
Total	**2007**	**22,863.4**	**14,635.5**	**4,524.8**	**3,703.1**
	2008	**24,326.1**	**15,841.1**	**4,597.9**	**3,887.1**
	2009	**25,465.5**	**16,697.9**	**4,603.4**	**4,164.2**

Explanation of abbreviations/symbols: - = no figures or magnitude zero.
1) University expenditures, minus income for activities other than teaching and research (such as for treatment of patients in university clinics), and calculated on basis of university financial statistics (*Hochschulfinanzstatistik*).
2) Including comprehensive universities (excluding medical facilites).
3) University clinics including the "human medicine" subject group at universities.
4) Including central institutions of university clinics.
Source: Bundesbericht Forschung und Innovation 2012, table 25; **Data:** Federal Statistical Office

BMBF's Data Portal (German language only): Figure link: www.datenportal.bmbf.de/**bild-17**
Additional data: www.datenportal.bmbf.de/**1.6.1**

Fig. 18 Product and process innovators (2001-2010)



1) Break in time series due to changes in the survey method, respectively the definition of basic total. 2010 figures are provisional.
Source: Bundesbericht Forschung und Innovation 2012, figure 40; **Data:** Centre for European Economic Research (indicator report relative to German innovation survey)

BMBF's Data Portal (German language only): Figure link: www.datenportal.bmbf.de/**bild-18**
Additional data: www.datenportal.bmbf.de/**1.8.1**
www.datenportal.bmbf.de/**1.8.2**

Important types of innovations include product and process innovations. The figure shows that the highest product and process innovation rates are found in the manufacturing sector. Between 2006 and 2010, about 40–50% of all companies in the manufacturing sector have introduced at least one market innovation or a product that was new to them at some point in the previous three years. About 30–40% of these companies had introduced a process innovation at some point in the previous three years.

2 Education

Access to educational opportunities is a decisive factor in the life of each individual and for the future and the prosperity of our society as a whole. That is why the Federal Government and the *Länder* have launched the Qualification Initiative for Germany, the first initiative that pools the activities undertaken by the Federal Government and the *Länder* to improve equality, performance and transfer opportunities in the education system.

The joint initiatives agreed by the Federal Government and the *Länder* include the further development of the Federal Training Assistance Act (BAföG), the Germany Scholarship, the third pillar of the Higher Education Pact, the competition "Advancement through Education: Open Universities", the support of early childhood education, the initiative "Qualify and Connect – educational chains leading up to qualifications", and the recognition of vocational qualifi-

cations acquired abroad. Cooperation between the Federal Government and the *Länder* in the Qualification Initiative is complemented by the "Alliance for Education", a partnership between the Federal Government and civil society organizations.

These education policy efforts are proving to be effective:

- There are significantly more childcare facilities for children under the age of three.
- The student-teacher ratio has improved.
- Educational attainment has risen: the number of secondary school graduates who are eligible to enter higher education is increasing; the number of students who drop out of school without a secondary general school certificate *(Hauptschulabschluss)* is falling.
- About one in two people of an age group take up a course of study.
- Spending on education rose from about €154 billion in 2008 to about €172 billion in 2010.
- The situation on the training market has improved; the number of young people in the transition system (e.g. courses that provide basic or prevocational training) is going down.

Further information:

Web-Portal:
- German Education Server – the central directory for educational information on the Internet (www.bildungsserver.de)

Publications:
- Education in Germany 2010 – an indicator-based report including an in-depth analysis on education in times of demographic change (www.bildungsbericht.de)
- 2012 Report on Vocational Education and Training (www.bmbf.de/de/berufsbildungsbericht.php)
- Data report of the Federal Institute for Vocational Education and Training on the 2012 Report on Vocational Education and Training (http://datenreport.bibb.de)
- 2011 Report on Education Financing (www.destatis.de)

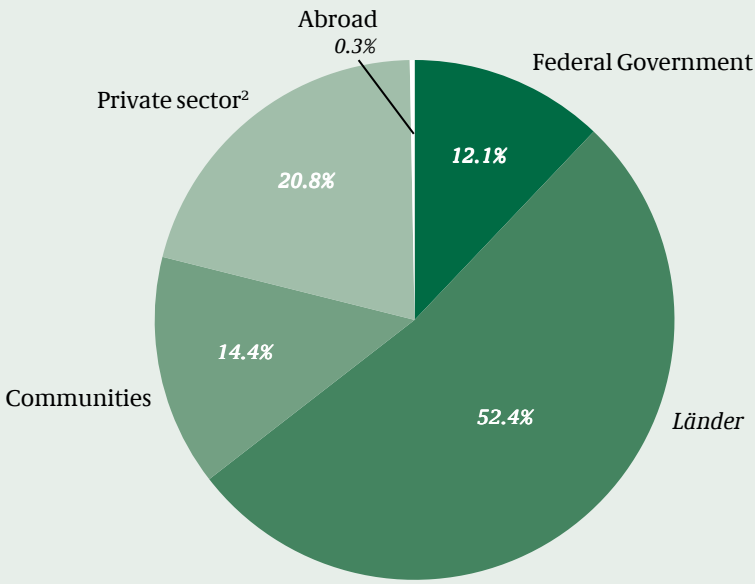
Fig. 19 Budget for education, by expenditure areas, in billions of euros (1995/2008-2010)

Expenditure area		1995	2008	2009	2010
A	**Education budget[1] in international demarcation**	**103.9**	**136.3**	**145.0**	**152.6**
	- Share of GDP	***5.6%***	***5.5%***	***6.1%***	***6.2%***
A30	**Expenditure on education institutions (state and private funded)**	**94.8**	**119.1**	**126.4**	**133.1**
	- Share of GDP	***5.1%***	***4.8%***	***5.3%***	***5.4%***
A31	ISCED 0 – pre-primary level	9.1	13.4	15.0	b
A32	ISCED 1-4 – school and close to school levels	63.2	74.1	78.5	b
	of which: general programmes	45.9	53.5	57.5	b
	vocational programmes	5.4	7.6	8.0	b
	in-firm training under the dual system	10.4	11.1	10.9	b
A33	ISCED 5/6 – tertiary level	20.5	29.1	30.3	b
	of which: R&D at higher education institutions	7.4	11.1	11.8	b
A34	Others (without ISCED classification)	1.9	2.5	2.5	b
A40/ A50	**Remaining expenditure in international demarcation**	**9.2**	**17.2**	**18.6**	**19.5**
	- Share of GDP	***0.5%***	***0.7%***	***0.8%***	***0.8%***
B	**Additional education-relevant expenditure in national demarcation**	**21.5**	**17.6**	**19.5**	**19.7**
	- Share of GDP	***1.2%***	***0.7%***	***0.8%***	***0.8%***
B10	Continuing vocational education	8.9	8.5	8.5	8.6
B20	Expenditure on other educational opportunities	7.3	8.2	9.7	10.0
B30	Assistance to participants in continuing education	5.3	0.9	1.4	1.1
A+B	**Education budget total**	**125.4**	**153.9**	**164.6**	**172.3**
	- Share of GDP	***6.8%***	***6.2%***	***6.9%***	***7.0%***

Explanation of abbreviations/symbols: GDP = gross domestic product; ISCED = International Standard Classification for Education; R&D = research and development; b = no data because of preliminary calculations.
1) Expenditure pursuant to the performance concept. 2009 figures reflect actual expenditure. 2010 figures are preliminary calculations.
Source: Federal Statistical Office, Budget für Bildung, Forschung und Wissenschaft

BMBF's Data Portal (German language only): Figure link: www.datenportal.bmbf.de/**bild-19**
Additional data: www.datenportal.bmbf.de/**1.9.1**

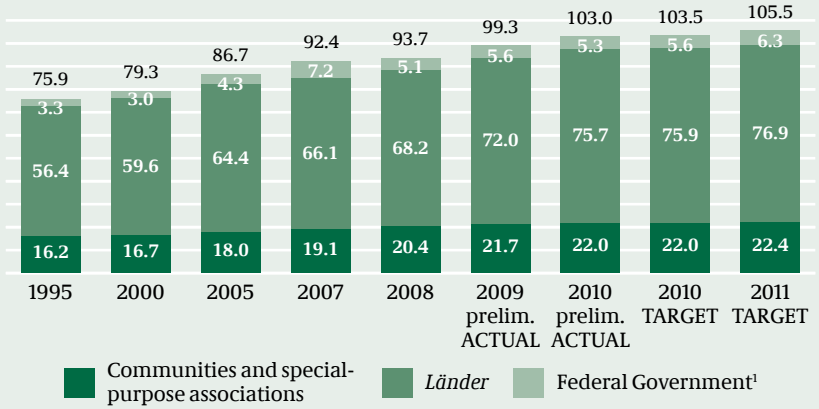
Fig. 20 Education budget for all education areas, by funding sectors, in share of total expenditure[1] (2009)



1) Financial statement (funder), in consideration of payment transactions between federal, *Länder* and local governments (initial funds), defined due to concept 2009. The concept of initial funds follows up the direct spendings on education of the federal, *Länder* and local governments, including transfers to other public budgets. The federal funding contribution (initial fund) thus comprises direct federal expenditure plus net transfers to the *Länder* and local government level.
2) Private households, businesses, private non-profit institutions.
Source: Federal Statistical Office, Budget für Bildung, Forschung und Wissenschaft

BMBF's Data Portal (German language only): Figure link: www.datenportal.bmbf.de/**bild-20**
Additional data: www.datenportal.bmbf.de/**1.9.2**

Fig. 21 Development of public spending on education, in billions of euros (1995-2011)

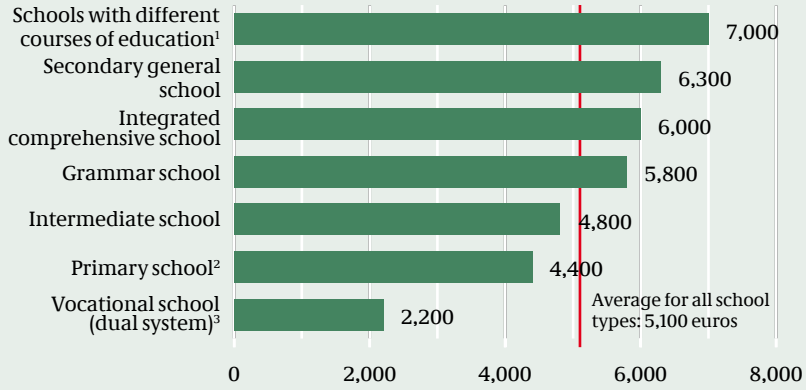


1) Special fund for the enhancement of childcare facilities (€2.15 billion) in 2007.
Source: Bildungsfinanzbericht 2011, table 3.0-1 / figure 3.0-1 (current calculations by the Federal Ministry of Education and Research); **Data:** Federal Statistical Office

BMBF's Data Portal (German language only): Figure link: www.datenportal.bmbf.de/**bild-21**
Additional data: www.datenportal.bmbf.de/**2.1.13**

Public spending on education has risen steadily since 1995 (from €75.9 billion in 1995 to €105.5 billion in 2011). Federal Government spending on education rose more than usual in 2007 as a result of the establishment of the special fund for the enhancement of childcare facilities for under-3-year-olds. According to current calculations of the Federal Ministry of Education and Research, in 2012 the basic funds of the Federal Government amount to nearly €7.5 billion. Since 2005 this is an increase by 70%. Among other things, this strong growth results from the Federal Government's €12 billion package for education and research as well as the enhancements of the Higher Education Pact and the Teaching Quality Pact.

Fig. 22 Expenditure on public schools per pupil, by school types, in euros (2008)



1) Integrated classes for pupils at secondary general and intermediate schools.
2) Berlin and Brandenburg without 5th and 6th grade.
3) Part-time lessons.
Source: Bildungsfinanzbericht 2011, tables 4.2.4-1, 4.2.4-2 / figure 4.2.4-1; **Data:** Federal Statistical Office

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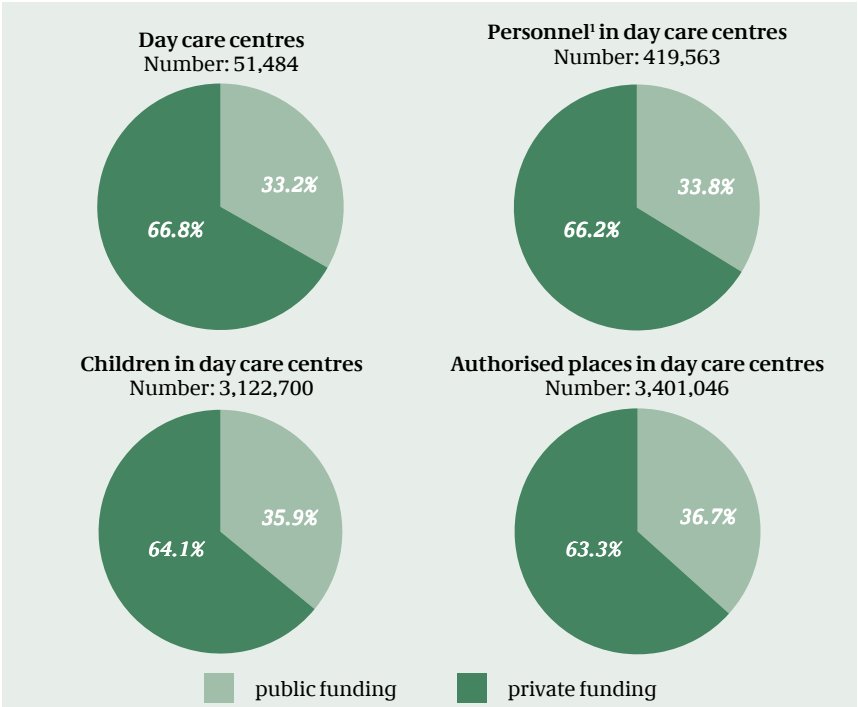
Additional data: www.datenportal.bmbf.de/**2.1.14**

This graph shows the average annual expenditure per pupil. There are great differences between the different school types. The low expenditure on vocational schools under the dual system is mainly due to the part-time nature of teaching at vocational schools. Company spending on training under the dual system is not included here.

Fig. 23 Day care centres, personnel, number of children and number of authorised places (at 01 March 2011)



1) Educational staff (excluding exempted center management, administration, housekeeping and building services).
Source: Federal Statistical Office, Statistics on child and youth welfare

BMBF's Data Portal (German language only): Figure link: www.datenportal.bmbf.de/**bild-23**
Additional data: www.datenportal.bmbf.de/**2.2.1**

Unlike general schools and higher education institutions, a majority of childcare facilities are run by independent, non-state organizations (such as churches, charities, and parent associations).

Fig. 24 School enrolments, pupils and school-leavers at general schools (2006-2010)

At general schools		2006	2007	2008	2009	2010
School enrolments	t	**793,227**	**772,819**	**735,316**	**726,384**	**707,458**
	f	***48.4%***	***48.4%***	***48.5%***	***48.5%***	***48.5%***
Pupils	t	**9,355,857**	**9,183,811**	**9,023,572**	**8,905,800**	**8,796,894**
	f	***49.2%***	***49.2%***	***49.2%***	***49.1%***	***49.1%***
at primary schools including orientation stage	t	3,256,069	3,184,063	3,101,626	3,026,018	2,948,936
	f	*49.1%*	*49.0%*	*49.1%*	*49.1%*	*49.0%*
at secondary general schools	t	953,401	889,132	825,730	767,258	703,525
	f	*43.8%*	*44.0%*	*44.0%*	*43.9%*	*43.9%*
at schools with different courses of education[1]	t	311,987	299,919	302,269	329,827	370,852
	f	*46.5%*	*46.7%*	*46.8%*	*46.8%*	*46.8%*
at intermediate schools	t	1,300,537	1,278,092	1,262,545	1,221,053	1,166,509
	f	*49.9%*	*49.7%*	*49.5%*	*49.4%*	*49.3%*
at integrated comprehensive schools and free Waldorf schools	t	585,848	578,624	582,794	610,947	665,613
	f	*49.9%*	*50.1%*	*50.1%*	*50.1%*	*49.9%*
at grammar schools	t	2,449,752	2,466,041	2,468,949	2,475,371	2,475,174
	f	*53.5%*	*53.3%*	*53.1%*	*52.9%*	*52.7%*
School-leavers	**t**	**969,598**	**965,044**	**929,531**	**893,561**	**865,316**
	f	***48.9%***	***49.1%***	***49.3%***	***49.6%***	***49.4%***
without secondary general school certificate	t	75,897	70,547	64,918	58,354	53,058
	f	*36.9%*	*37.3%*	*38.6%*	*39.2%*	*39.0%*
with secondary general school certificate	t	237,247	228,616	210,381	191,957	179,753
	f	*42.3%*	*42.6%*	*42.7%*	*42.7%*	*42.2%*
with intermediate school certificate	t	398,176	392,637	373,503	361,380	350,856
	f	*50.6%*	*50.2%*	*50.0%*	*50.2%*	*49.7%*
with entrance qualification for universities of applied sciences	t	14,260	14,068	14,179	13,312	13,455
	f	*53.2%*	*53.4%*	*53.9%*	*52.1%*	*52.4%*
with university entrance qualification	t	244,018	259,176	266,550	268,558	268,194
	f	*56.1%*	*56.3%*	*56.0%*	*55.7%*	*55.6%*

Explanation of abbreviations/symbols: t = total; f = share of females.
1) Integrated classes for pupils at secondary general and intermediate schools.
Source: Federal Statistical Office, Fachserie 11, Reihe 1

BMBF's Data Portal (German language only): Figure link: www.datenportal.bmbf.de/**bild-24**
Additional data: www.datenportal.bmbf.de/**2.3.30**

The number of school students in Germany is decreasing due to demographic developments. The number of students is falling particularly sharply at secondary general schools *(Hauptschulen)* and intermediate schools *(Realschulen)*, but is remaining more or less the same at grammar schools *(Gymnasien)*, at about 2.4 million students (figure 24). The student-teacher ratio (figure 25) has improved across all school types during the period under review.

Fig. 25 Student-teacher ratio[1] at general schools (2006-2010)

School type	2006	2007	2008	2009	2010
Primary school	19.4	19.0	18.5	17.8	17.4
Orientation stage independent of school type[2]	14.2	14.3	14.2	14.1	13.9
Secondary general school	13.5	13.1	12.9	12.4	12.1
Schools with different courses of education[3]	12.0	11.5	11.5	11.7	11.8
Intermediate school	18.9	18.7	18.6	18.0	17.6
Grammar school					
Secondary level I	17.8	17.5	17.3	16.7	16.2
Secondary level II	13.5	13.5	13.7	13.4	13.2
Integrated comprehensive school					
Primary level	17.1	16.1	15.6	16.4	15.2
Secondary level I	14.7	14.5	14.6	14.2	13.9
Secondary level II	13.0	13.1	12.8	13.4	12.8
Free Waldorf school					
Primary level	19.0	18.6	19.0	19.0	18.3
Secondary level I	13.7	13.7	13.8	13.4	13.3
Secondary level II	11.8	12.2	13.2	12.8	13.2
Special needs school	6.4	6.2	6.1	5.8	5.7
Evening secondary general school	18.0	15.1	17.1	16.3	16.9
Evening intermediate school	23.7	22.0	21.8	22.6	22.0
Evening grammar school	15.6	14.8	14.9	16.4	16.3
Adult education college	12.2	12.1	11.9	12.6	12.2
Total	**15.7**	**15.4**	**15.1**	**14.6**	**14.3**

Explanation of abbreviations/symbols: KMK = Standing Conference of the Ministers of Education and Cultural Affairs of the *Länder* in the Federal Republic of Germany.
1) The student-teacher ratio is related to the total number of pupils and the total number of teachers, thus to the comprehensive teachers, e.g. music or physical education teachers. This ratio cannot be equated with the respective average class size, because frequently several teachers supervise a class.
2) Orientation stages independent of school type are comprehensive institutions of grades 5 and 6. If the orientation stages are integrated in particular school types for organisational reasons, they are disclosed with them and cannot be separated.
3) Integrated classes for pupils at secondary general and intermediate schools.
Source: KMK, Dokumentation Nr. 195, table 6.1

BMBF's Data Portal (German language only): Figure link: www.datenportal.bmbf.de/**bild-25**
Additional data: www.datenportal.bmbf.de/**2.3.25**

Fig. 26 General schools, by school types (2006-2010)

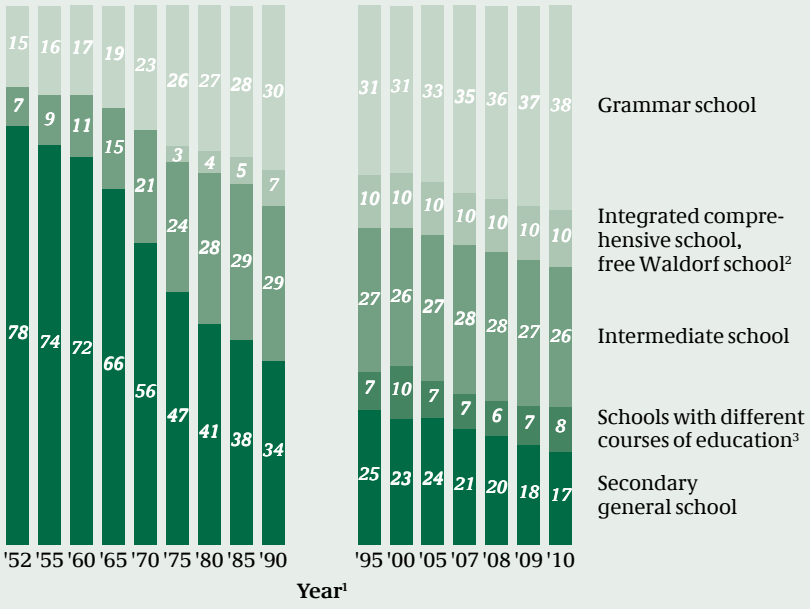
School type	2006	2007	2008	2009	2010
Pre-school class	259	264	267	273	280
School kindergarten	1,468	1,334	1,341	1,295	1,247
Primary school	16,743	16,649	16,391	16,305	16,290
Orientation stage independent of school type[1]	1,080	1,062	1,059	1,063	1,083
Secondary general school	4,812	4,578	4,283	4,042	3,730
Schools with different courses of education[2]	1,322	1,288	1,363	1,438	1,483
Intermediate school	2,939	2,775	2,625	2,509	2,440
Grammar school	3,097	3,078	3,070	3,094	3,099
Integrated comprehensive school	692	670	705	793	1,019
Free Waldorf school	192	199	204	206	207
Special needs school	3,395	3,360	3,302	3,306	3,283
Evening school and adult education college	306	309	307	318	325
Total	**36,305**	**35,566**	**34,917**	**34,642**	**34,486**

1) Orientation stages independent of school type are comprehensive institutions of grades 5 and 6. If the orientation stages are integrated in particular school types for organisational reasons, they are disclosed with them and cannot be separated.
2) Integrated classes for pupils at secondary general and intermediate schools.
Source: Federal Statistical Office, Fachserie 11, Reihe 1

BMBF's Data Portal (German language only): Figure link: www.datenportal.bmbf.de/**bild-26**
Additional data: www.datenportal.bmbf.de/**2.3.1**

Because of the fall in student numbers resulting from demographic developments, the number of general schools went down by almost 2,000 between 2006 and 2010. Only the number of grammar schools *(Gymnasien)* remained unchanged, at about 3,100.

Fig. 27 Pupils in class 8, by school types, in % (1952-2010)

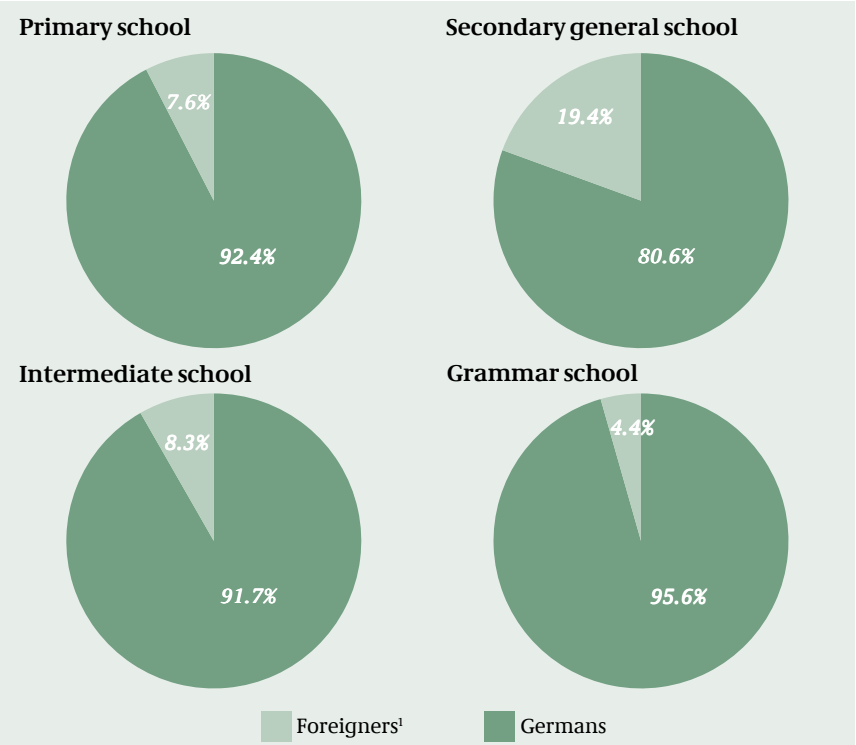


1) Not including special needs school. Since 1995 including new *Länder*.
2) Since 1975 included separately in official statistics.
3) Combined classes for pupils in courses at secondary general school and intermediate school.
Source: Federal Statistical Office, Fachserie 11, Reihe 1

BMBF's Data Portal (German language only): Figure link: www.datenportal.bmbf.de/**bild-27**
Additional data: www.datenportal.bmbf.de/**2.3.34**

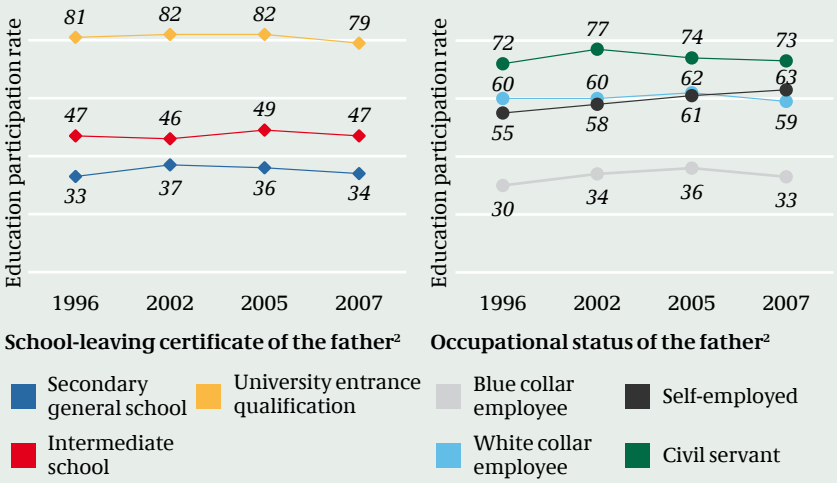
While the number of secondary general school *(Hauptschule)* students has been falling constantly over the last sixty years, the percentage of grammar school *(Gymnasium)* students has increased considerably. More than a third of all students have attended this type of school since the 1990s.

Fig. 28 Share of foreign pupils at general schools, by selected school types (2010)



1) Pupils with foreign passport.
Source: Federal Statistical Office, Fachserie 11, Reihe 1
BMBF's Data Portal (German language only): Figure link: www.datenportal.bmbf.de/**bild-28**
Additional data: www.datenportal.bmbf.de/**2.3.32**

Fig. 29 Participation of 17 & 18-year-olds in an upper secondary level school, by the father's level of education and his occupational status, in % (1996-2007)[1]

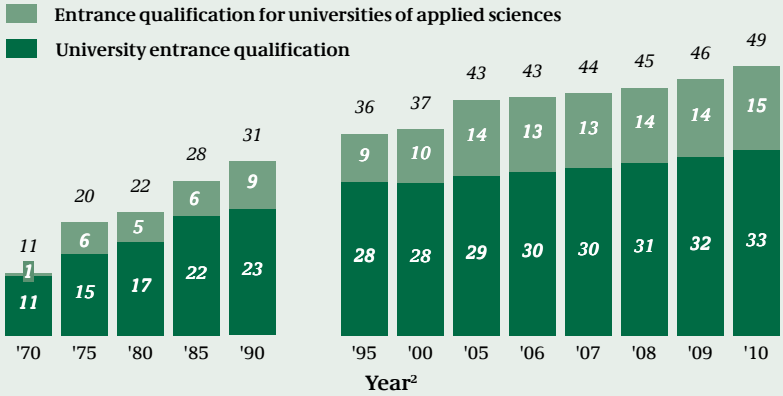


1) Participation in upper secondary level at grammar school.
2) For methodological reasons, assessments of education participation rates among specific social groups continue to use the concept of a family provider as an indicator of the social status of a student's family of origin. For the most part, the family provider is the father. In single-parent families, the family provider is the single parent.
Source: 19. Sozialerhebung des Deutschen Studentenwerks, figures 3.3 and 3.4; **Data:** Federal Statistical Office, special findings from different years of Microcensus

BMBF's Data Portal (German language only): Figure link: www.datenportal.bmbf.de/**bild-29**
Additional data: www.datenportal.bmbf.de/**2.3.33**

There is a correlation between going to a upper secondary level school and the father's level of education. While 79% of all young people whose fathers obtained an *Abitur* (university entrance qualification) went to upper secondary school in 2007, the same is true of only about a third of young people whose fathers only completed the secondary general school *(Hauptschule)*.

Fig. 30 Share[1] of people qualified to enter higher education in the 18 to 20 age group, by types of qualification, in % (1970-2010)



1) In *Länder* with 12 school years the share of people qualified to enter higher education is related to the average 17 to 20 age group on the 31st of December of the previous year. In *Länder* with 13 school years the average 18 to 21 age group is taken as a basis. Since 2007 the average 18 to 21 age group is uniformly taken as a basis. Rounding differences are possible.
2) Since 1995 including new *Länder*. Since 2007 the figures are adjusted considering the double *Abitur* graduation classes.
Source: Federal Statistical Office, Fachserie 11, Reihe 4.3.1

BMBF's Data Portal (German language only): Figure link: www.datenportal.bmbf.de/**bild-30**
Additional data: www.datenportal.bmbf.de/**2.5.85**

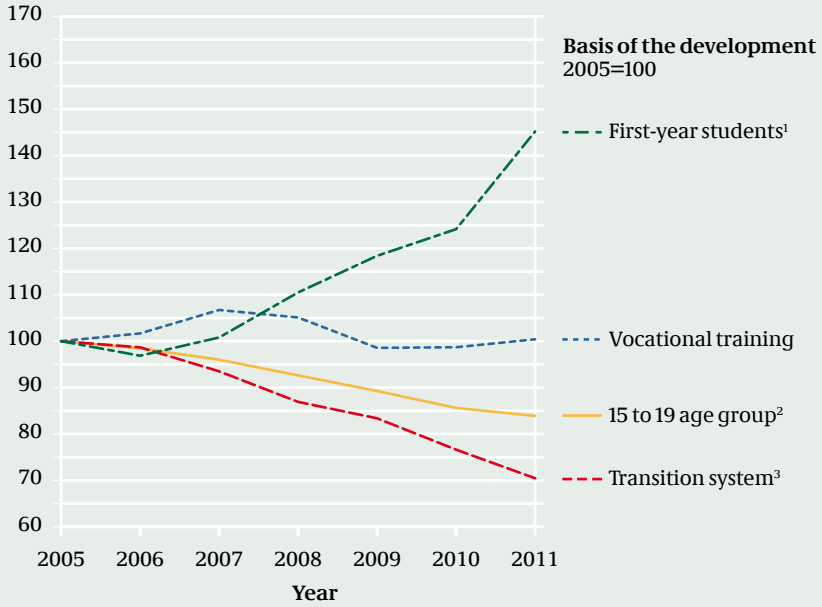
Fig. 31 Pupils at vocational schools, by school types (2006-2010)

School type		2006	2007	2008	2009	2010
Part-time vocational school (dual system)	t	1,669,362	1,709,936	1,726,703	1,681,641	1,613,579
	f	*39.5%*	*39.5%*	*39.8%*	*40.0%*	*39.8%*
Pre-vocational training year	t	71,907	62,077	55,302	54,716	51,811
	f	*39.1%*	*38.9%*	*39.6%*	*39.8%*	*40.0%*
Basic vocational training year at full-time school	t	47,937	46,031	44,358	34,328	32,478
	f	*29.1%*	*30.3%*	*31.9%*	*36.7%*	*37.2%*
Vocational extension school	t	630	551	493	596	533
	f	*25.4%*	*27.2%*	*26.8%*	*25.2%*	*26.8%*
Full-time vocational school	t	566,219	530,272	510,855	499,524	478,426
	f	*58.5%*	*58.8%*	*58.9%*	*58.0%*	*57.6%*
Specialised upper secondary school	t	130,253	129,802	134,303	140,228	139,808
	f	*52.2%*	*52.8%*	*53.1%*	*52.2%*	*52.1%*
Specialised grammar school	t	124,085	151,854	154,074	158,876	163,294
	f	*50.3%*	*50.7%*	*50.8%*	*50.9%*	*51.2%*
Two-year full-time vocational school	t	19,372	19,252	20,385	23,662	24,666
	f	*41.9%*	*41.6%*	*40.9%*	*41.4%*	*42.0%*
Trade and technical school	t	144,507	145,473	152,268	167,554	175,569
	f	*51.0%*	*50.7%*	*49.7%*	*49.8%*	*49.9%*
Specialised academy	t	7,603	7,528	7,199	7,646	7,810
	f	*82.6%*	*82.8%*	*84.5%*	*83.8%*	*83.4%*
Total	**t**	**2,781,875**	**2,802,776**	**2,805,940**	**2,768,771**	**2,687,974**
	f	***45.0%***	***44.9%***	***45.0%***	***45.2%***	***45.1%***

Explanation of abbreviations/symbols: t = total; f = share of females.
Source: Federal Statistical Office, Fachserie 11, Reihe 2

BMBF's Data Portal (German language only): Figure link: www.datenportal.bmbf.de/**bild-31**
Additional data: www.datenportal.bmbf.de/**2.4.4**
www.datenportal.bmbf.de/**2.4.6**

Fig. 32 Transition from school to post-school careers – development of new entrants in selected iABE sectors and first-year students, in % (2005-2011)

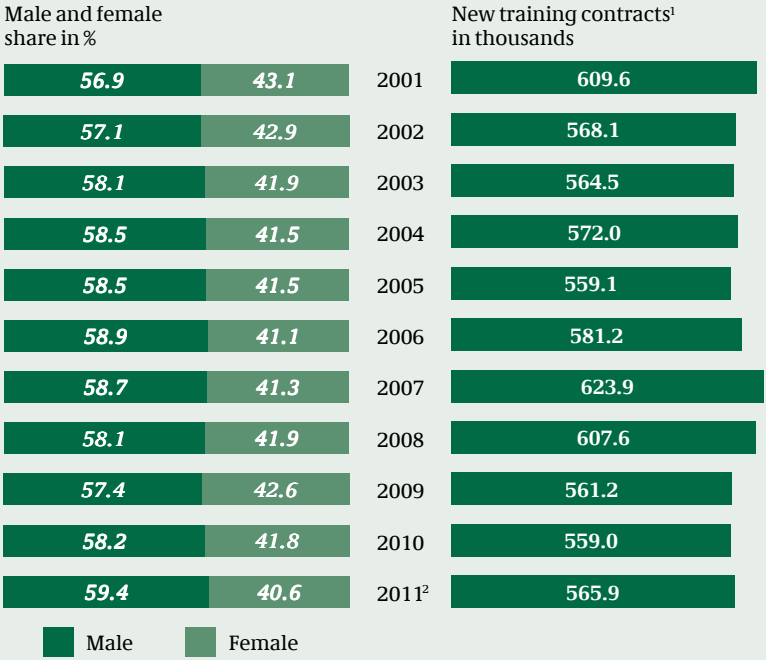


Explanation of abbreviations/symbols: iABE = integrated reporting on vocational training (see glossary).
1) Since 2007 the figures are adjusted considering the double *Abitur* graduation classes. 2011 figures are preliminary and unadjusted, source: Fachserie 11, Reihe 4.1 – Vorbericht.
2) 2011 figures estimated, source: Federal Statistical Office, 12th coordinated population projection.
3) Integration into training.
Source: Berufsbildungsbericht 2011, figure 12; Schnellmeldung Integrierte Ausbildungsberichterstattung; Fachserie 1, Reihe 3.1; Fachserie 11, Reihe 4.3.1; **Data:** Federal Institute for Vocational Education and Training based on a special evaluation by the Federal Statistical Office, the statistical Offices of the Länder, and the Federal Employment Agency; Federal Statistical Office

BMBF's Data Portal (German language only): Figure link: www.datenportal.bmbf.de/**bild-32**
Additional data: www.datenportal.bmbf.de/**2.3.43**

This graph shows how young people's educational careers have changed over time. The number of young people who entered the transition system fell by about 30% between 2005 and 2011, while the number remained unchanged in the area of vocational training. The number of first-year students in higher education increased by about 15% in 2011 over the previous year.

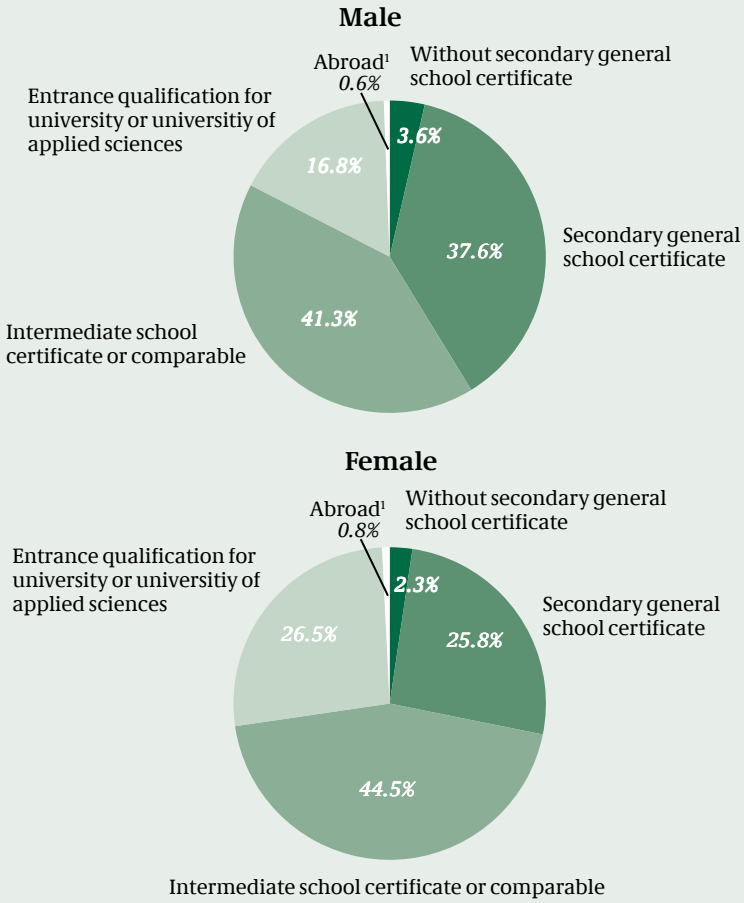
Fig. 33 New concluded training contracts (2001-2011)



1) Due to the new statistics concept in 2007, the results before and after the adjustment are comparable to a limited extent.
2) Preliminary results.
Source: Federal Statistical Office, Fachserie 11, Reihe 3

BMBF's Data Portal (German language only): Figure link: www.datenportal.bmbf.de/**bild-33**
Additional data: www.datenportal.bmbf.de/**2.4.34**

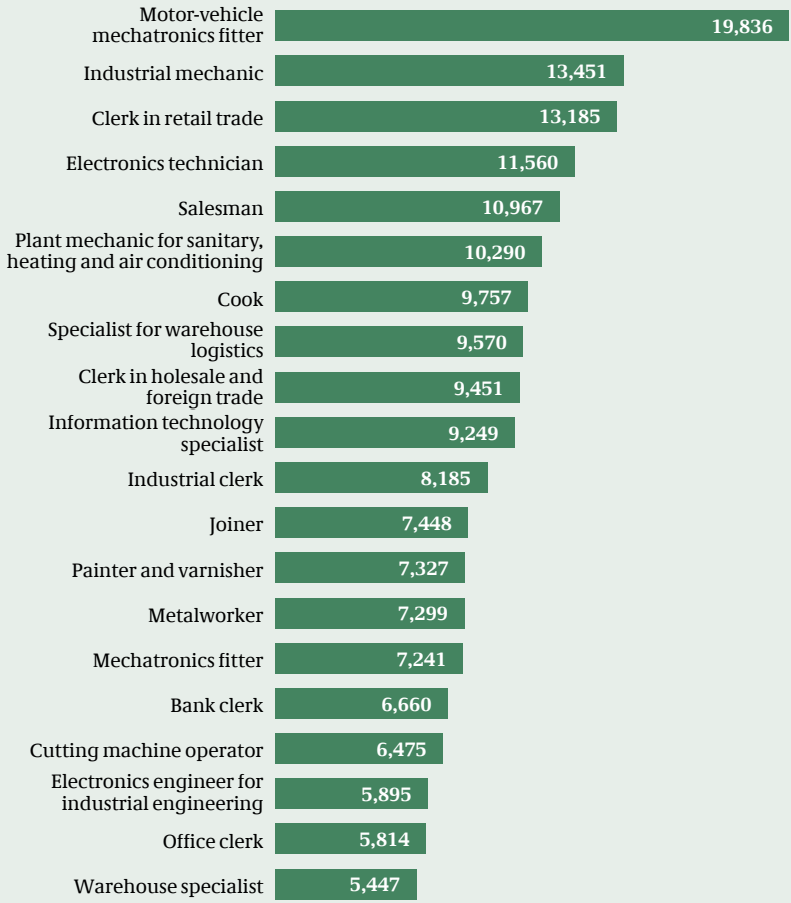
Fig. 34 New concluded training contracts, by educational background (2010)



1) School-leaving certificates acquired abroad that are not assignable.
Source: Federal Statistical Office, Fachserie 11, Reihe 3

BMBF's Data Portal (German language only): Figure link: www.datenportal.bmbf.de/**bild-34**
Additional data: www.datenportal.bmbf.de/**2.4.36**

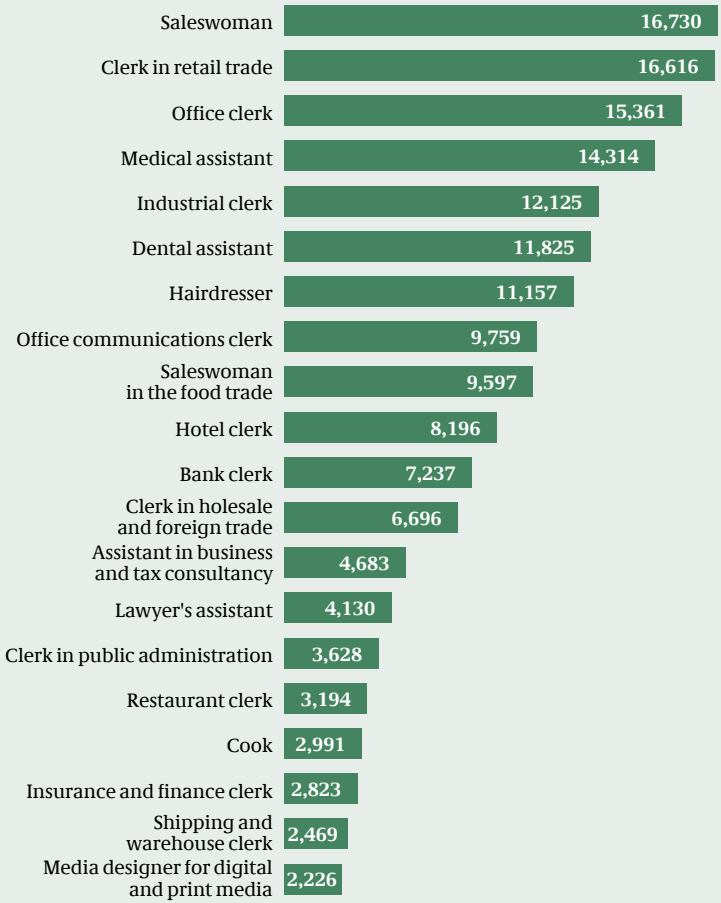
Fig. 35 Male apprentices in the 20 most popular occupations, by new concluded contracts (2011)



Remark: 54.8% of the male apprentices are in these 20 occupations.
Source: Federal Institute for Vocational Education and Training, survey as of 30 Sept. 2011

BMBF's Data Portal (German language only): Figure link: www.datenportal.bmbf.de/**bild-35**
Additional data: www.datenportal.bmbf.de/**2.4.38**

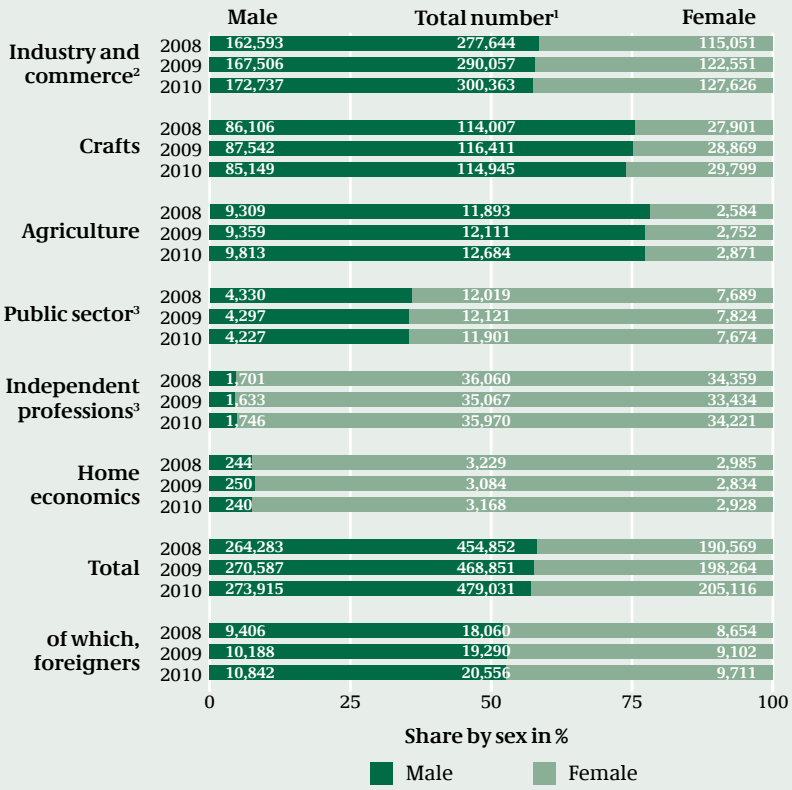
Fig. 36 Female apprentices in the 20 most popular occupations, by new concluded contracts (2011)



Note: 71.4% of the female apprentices are in these 20 occupations.
Source: Federal Institute for Vocational Education and Training, survey as of 30 Sept. 2011

BMBF's Data Portal (German language only): Figure link: www.datenportal.bmbf.de/**bild-36**
Additional data: www.datenportal.bmbf.de/**2.4.39**

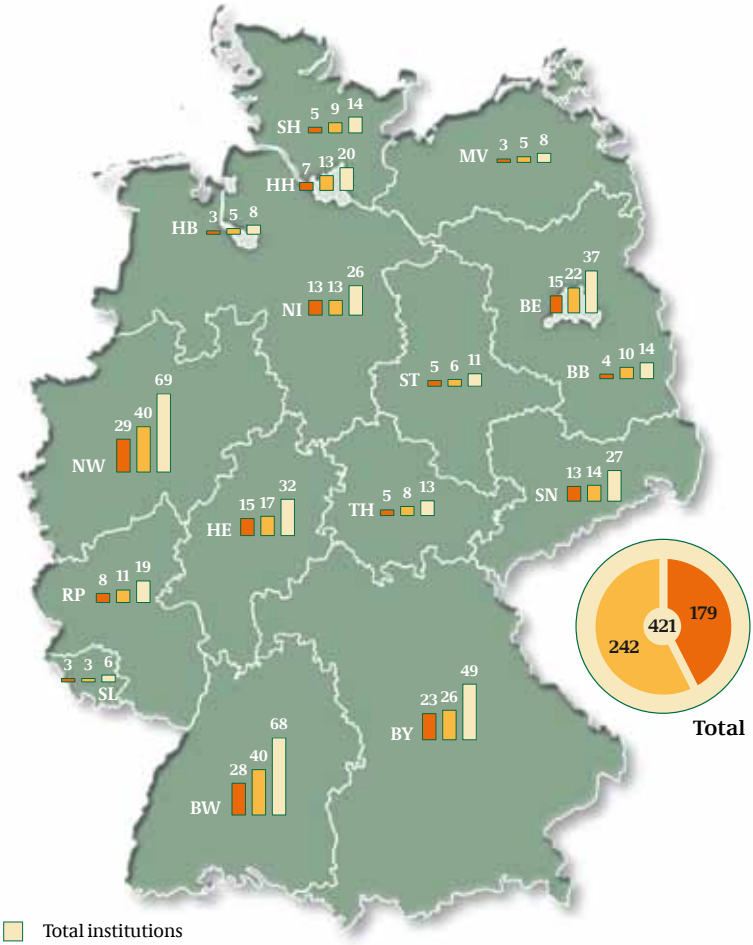
Fig. 37 Successful qualifying examinations, by sex and training sectors (2008-2010)



1) Differences in sums possible, due to the rounding procedure to ensure confidentiality in vocational education statistics. For further information see source.
2) Including banking, insurance, hotels and restaurants, transport.
3) Excluding training contracts registered at other competent authorities (chambers) outside this trainig sector, according to the vocational training act *(Berufsbildungsgesetz)*.
Source: Federal Statistical Office, Fachserie 11, Reihe 3

BMBF's Data Portal (German language only): Figure link: www.datenportal.bmbf.de/**bild-37**
Additional data: www.datenportal.bmbf.de/**2.4.31**
www.datenportal.bmbf.de/**2.4.32**
www.datenportal.bmbf.de/**2.4.37**

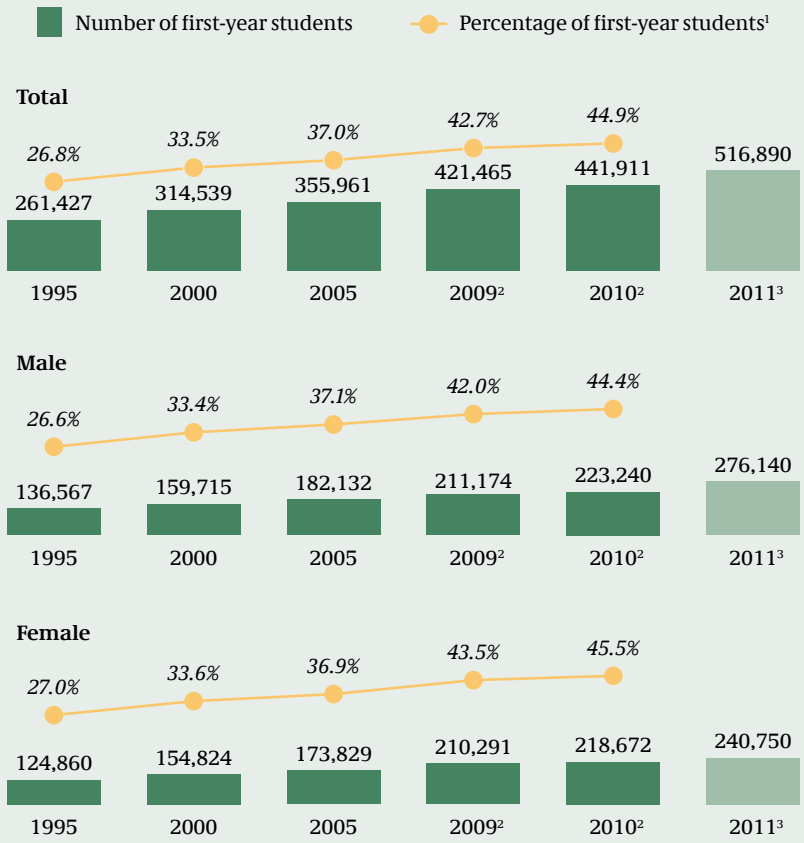
Fig. 38 Higher education institutions[1], by types and Länder (2010)



Explanation of abbreviations/symbols: for abbreviations of the *Länder* see glossary.
1) Including private institutions.
Source: Federal Statistical Office, Fachserie 11, Reihe 4.1

BMBF's Data Portal (German language only): Figure link: www.datenportal.bmbf.de/**bild-38**
Additional data: www.datenportal.bmbf.de/**2.5.1**

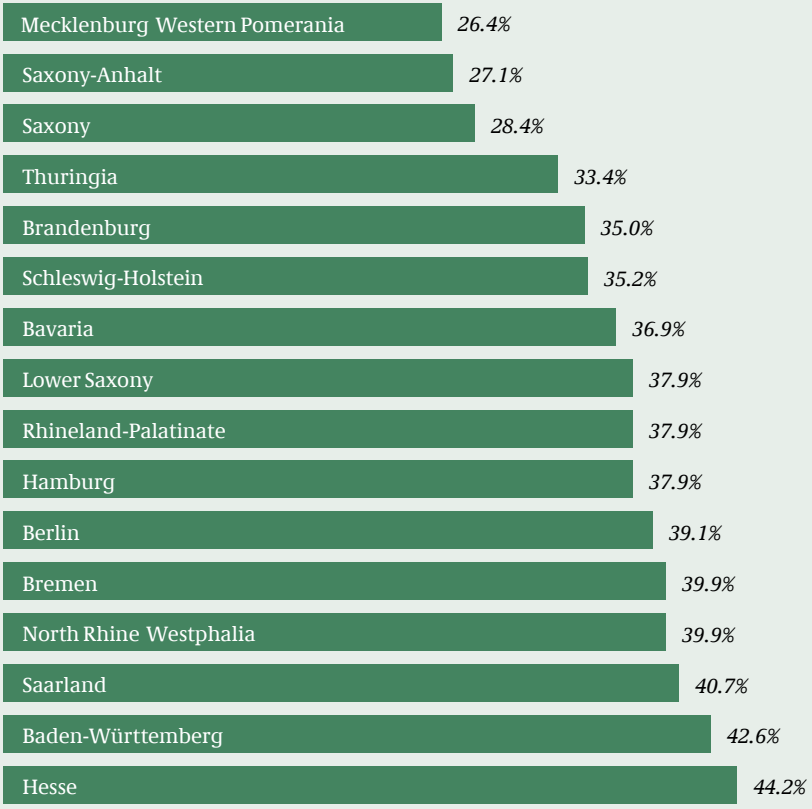
Fig. 39 First-year students and percentage of first-year students, by sex (1995-2011)



1) Share of students in their first semester (first enrolment) in the specific age group of the population.
2) Data are adjusted considering the double *Abitur* graduation classes.
3) Data are preliminary and unadjusted (considering the double *Abitur* graduation classes), source: Fachserie 11, Reihe 4.1 – Vorbericht. The adjusted percentage of first-year students will be available in autumn 2012.
Source: Federal Statistical Office, Fachserie 11, Reihe 4.3.1

BMBF's Data Portal (German language only): Figure link: www.datenportal.bmbf.de/**bild-39**
Additional data: www.datenportal.bmbf.de/**2.5.73**

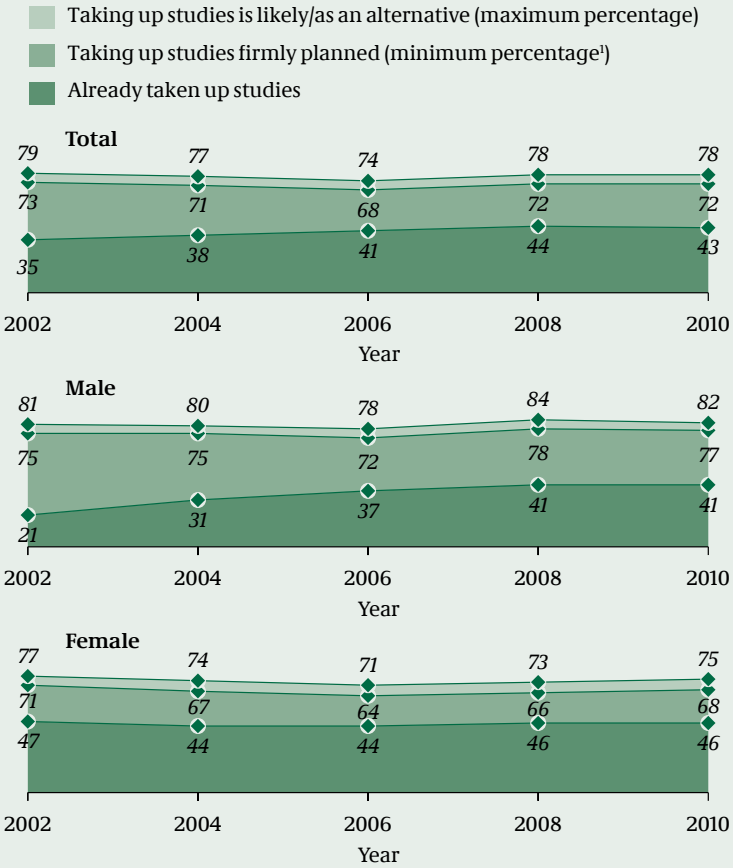
Fig. 40 Percentage of first-year students[1], by Land in which the university entrance qualification has been acquired (2010)



1) Share of students in their first semester (first enrolment) in the specific age group of the population. Data are adjusted considering the double *Abitur* graduation classes.
Source: Federal Statistical Office, Fachserie 11, Reihe 4.3.1

BMBF's Data Portal (German language only): Figure link: www.datenportal.bmbf.de/**bild-40**
Additional data: www.datenportal.bmbf.de/**2.5.73**

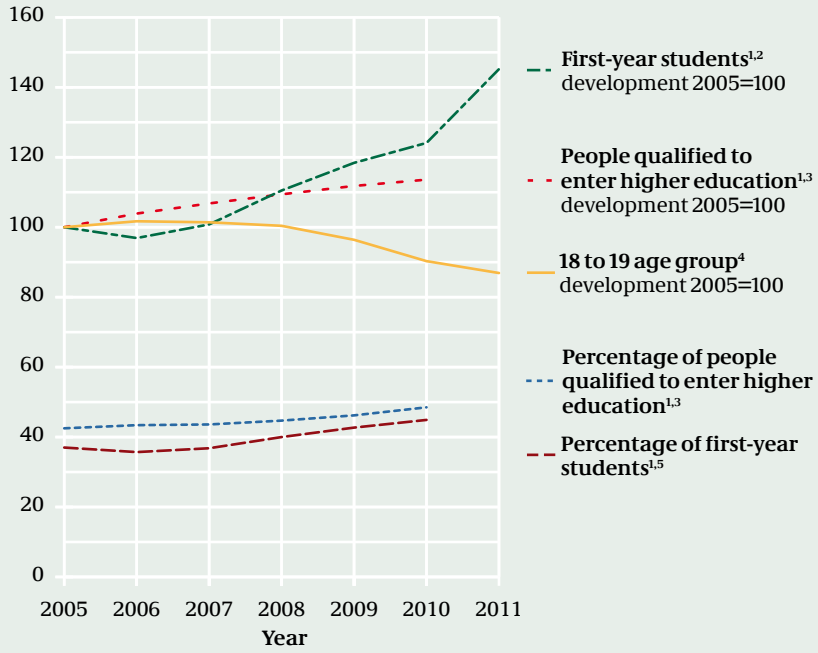
Fig. 41 Percentage range of people who pursue higher education, by sex, in % (2002-2010)



Remark: For explanations of the percentage range of people who pursue higher education see glossary.
1) Excluding colleges of public administration and colleges of the armed forces. Since 2008 including vocational academies *(Berufsakademien)* and Baden-Württemberg Cooperative State University.
Source: Hochschul-Informations-System GmbH, HIS Forum Hochschule 5/2012, Studienberechtigte 2010 ein halbes Jahr nach Schulabgang, table A4.2

BMBF's Data Portal (German language only): Figure link: www.datenportal.bmbf.de/**bild-41**
Additional data: www.datenportal.bmbf.de/**2.5.74**

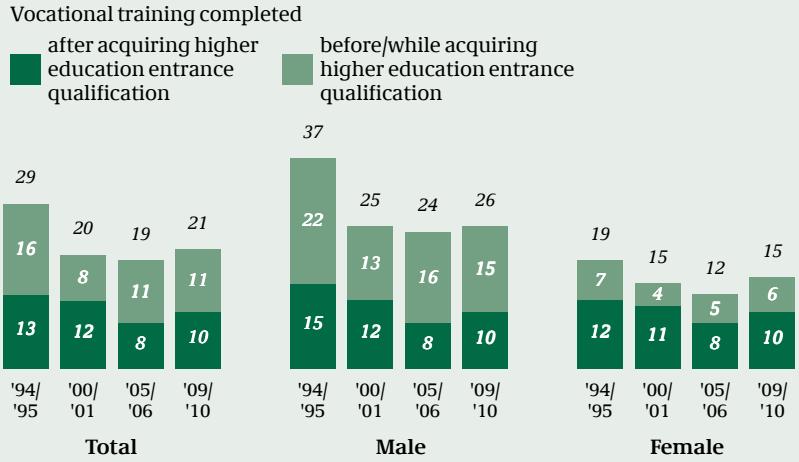
Fig. 42 Transition to higher education – development of basic figures, in % (2005-2011)



1) Since 2007 the figures are adjusted considering the double *Abitur* graduation classes.
2) 2011 figures are preliminary and unadjusted, source: Fachserie 11, Reihe 4.1 – Vorbericht.
3) As yet no data available for 2011.
4) 2011 figures estimated, source: Federal Statistical Office, 12th coordinated population projection.
5) The adjusted percentage of first-year students of 2011 will be available in autumn 2012.
Source: Federal Statistical Office, Fachserie 1, Reihe 1.3; Fachserie 11, Reihe 4.3.1

BMBF's Data Portal (German language only): Figure link: www.datenportal.bmbf.de/**bild-42**
Additional data: www.datenportal.bmbf.de/**2.5.75**

Fig. 43 German first-year students at higher education institutions who have completed vocational training, by sex, in % (winter semester 1994/1995-2009/2010)

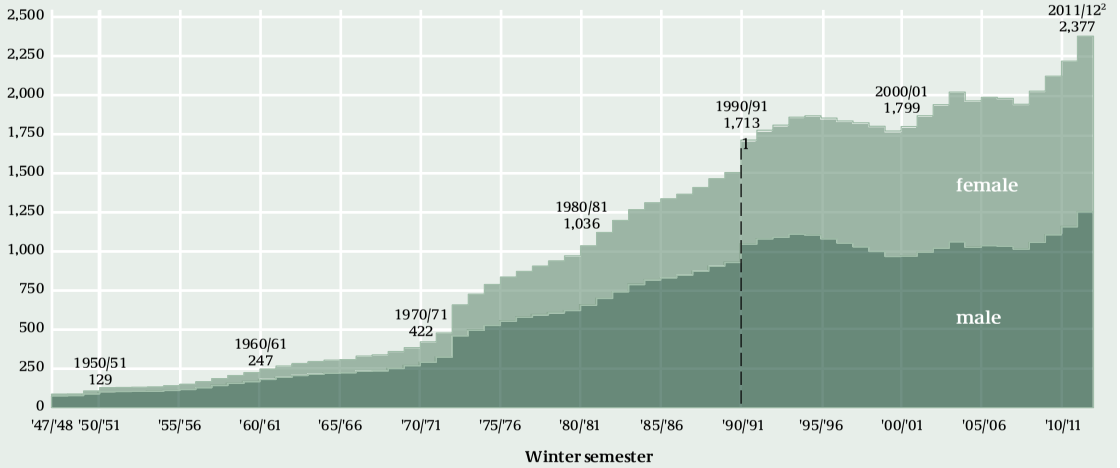


Remark: Possible rounding differences.
Source: Datenreport zum Berufsbildungsbericht 2009, table A5.4.2-3; Datenreport zum Berufsbildungsbericht 2011, table A4.6.3-4; **Data:** Hochschul-Informations-System GmbH, Studienberechtigtenbefragungen, calculations of the Federal Institute for Vocational Education and Training

BMBF's Data Portal (German language only): Figure link: www.datenportal.bmbf.de/**bild-43**
Additional data: www.datenportal.bmbf.de/**2.5.76**

The percentage of first-year students at higher education institutions who completed company-based training before entering higher education increased slightly among both men and women in 2009/2010, for the first time since 1995.

Fig. 44 Number of students, by sex, in thousands (winter semester 1947/1948-2011/2012)

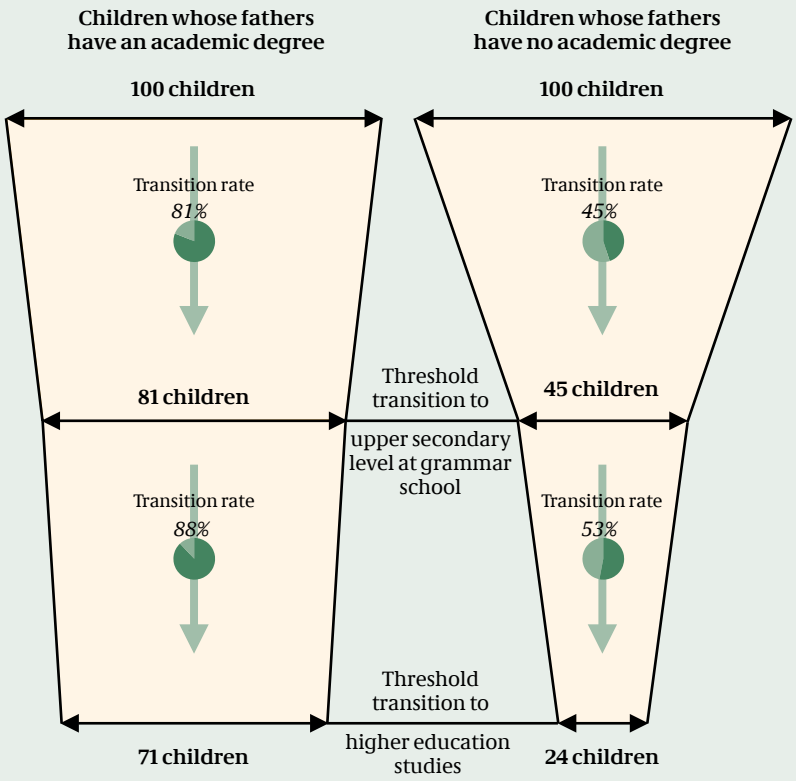


1) Since 1990 including new *Länder* and Berlin-East.
2) Preliminary results.
Source: Federal Statistical Office, Fachserie 11, Reihe 4.1 and special findings

BMBF's Data Portal (German language only): Figure link: www.datenportal.bmbf.de/**bild-44**
Additional data: www.datenportal.bmbf.de/**2.5.23**
www.datenportal.bmbf.de/**2.5.24**

Demographic developments and the expansion of education in the 1960s led to a strong increase in the number of university students. Women in particular benefited from this development. While only 19.7% of all students in the 1950/1951 winter semester were women, this figure has risen continuously, reaching 47.3% in the 2011/2012 winter semester.

Fig. 45 Educational filter: Social selection and educational paths, by the father's[1] academic degree (2007)



1) For methodological reasons, assessments of education participation rates among specific social groups continue to use the concept of a family provider as an indicator of the social status of a student's family of origin. For the most part, the family provider is the father. In single-parent families, the family provider is the single parent.
Source: 19. Sozialerhebung des Deutschen Studentenwerks, figure 3.17; **Data:** Federal Statistical Office, special findings from the 2003 and 2007 Microcensus; Hochschul-Informations-System GmbH, Studienanfängerbefragung 2007/2008

BMBF's Data Portal (German language only): Figure: www.datenportal.bmbf.de/**bild-45**
Additional data: www.datenportal.bmbf.de/**2.3.35**

This diagram shows social selection along people's educational careers until university. Young people are classified according to their father's level of education. Children of non-graduates have significantly worse prospects, both in the transition to secondary schools (first threshold) and in the transition to university (second threshold). In total, only 24% of the children of non-graduates and 71% of the children of graduates go to university.

Fig. 46 Students, by types of higher education institution, subject groups and sex, share of foreign students (winter semester 2011/2012)[1]

Subject group		Type of higher education institution		
		Total[2]	University[3]	University of applied sciences[4]
Languages, cultural studies	t	**454,727**	437,184	17,543
	f	***70.2%***	*70.0%*	*74.1%*
	a	***10.3%***	*10.4%*	*8.4%*
Sports	t	**27,294**	26,989	305
	f	***37.3%***	*37.5%*	*24.3%*
	a	***4.1%***	*4.1%*	*2.6%*
Law, economics, social sciences	t	**726,518**	388,802	306,275
	f	***50.8%***	*48.3%*	*54.1%*
	a	***9.8%***	*11.3%*	*8.9%*
Mathematics, natural sciences	t	**420,880**	333,933	86,768
	f	***36.6%***	*40.3%*	*22.4%*
	a	***10.7%***	*10.8%*	*10.6%*
Human medicine, health sciences	t	**130,832**	105,205	25,627
	f	***64.4%***	*62.1%*	*73.7%*
	a	***9.7%***	*11.1%*	*3.8%*
Veterinary medicine	t	**8,179**	8,179	-
	f	***84.0%***	*84.0%*	-
	a	***6.7%***	*6.7%*	-
Agricultural, forestry and nutritional sciences	t	**45,594**	25,658	19,936
	f	***54.6%***	*57.7%*	*50.6%*
	a	***8.8%***	*12.1%*	*4.5%*
Engineering	t	**470,510**	206,125	264,385
	f	***20.7%***	*22.0%*	*19.7%*
	a	***13.9%***	*17.3%*	*11.3%*
Art, art theory	t	**85,629**	62,770	22,859
	f	***62.9%***	*64.5%*	*58.8%*
	a	***17.0%***	*19.9%*	*9.2%*
Total[5]	**t**	**2,377,034**	**1,601,230**	**744,150**
	f	***47.3%***	***50.9%***	***39.4%***
	a	***11.1%***	***12.0%***	***9.7%***

Explanation of abbreviations/symbols: t = total; f = share of females; a = share of foreign students; - = no figures or magnitude zero.
1) Preliminary result.
2) All higher education institutions including colleges of public administration.
3) Including colleges of education, colleges of theology, colleges of art and music.
4) Excluding colleges of public administration.
5) Including other studies and unclear.
Source: Federal Statistical Office, Fachserie 11, Reihe 4.1 (Vorbericht)

BMBF's Data Portal (German language only): Figure link: www.datenportal.bmbf.de/**bild-46**
Additional data: www.datenportal.bmbf.de/**2.5.77**

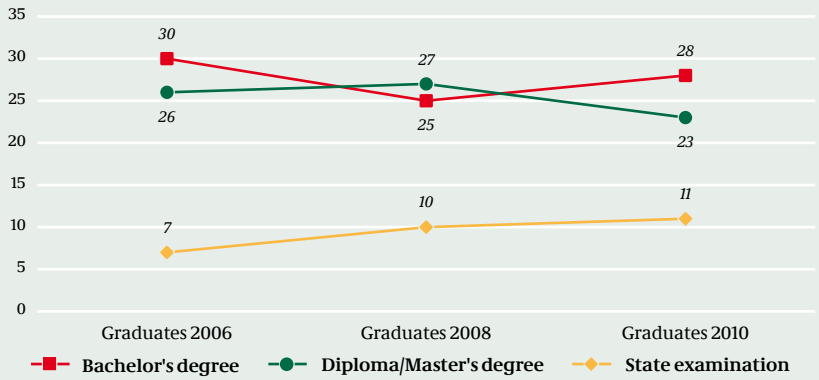
Fig. 47 University graduates, by examination types and sex, share of foreign graduates (2006-2010)

Examination type		2006	2007	2008	2009	2010
Bachelor's degree[1]	t	15,050	23,358	39,753	71,989	112,108
	f	*54.9%*	*53.9%*	*54.0%*	*51.7%*	*51.1%*
	a	*10.2%*	*9.9%*	*8.5%*	*7.2%*	*6.9%*
Master's degree[1]	t	11,268	14,219	17,206	20,802	26,722
	f	*39.7%*	*40.7%*	*42.6%*	*43.8%*	*45.7%*
	a	*42.1%*	*37.4%*	*34.8%*	*31.8%*	*28.3%*
University degree[1,2,3]	t	106,409	112,607	111,834	111,853	103,413
	f	*51.9%*	*52.2%*	*52.9%*	*52.3%*	*52.3%*
	a	*10.5%*	*11.0%*	*11.2%*	*10.9%*	*11.0%*
Degree from university of applied sciences[2]	t	82,239	83,505	82,802	72,808	56,248
	f	*43.7%*	*43.4%*	*42.4%*	*41.4%*	*41.1%*
	a	*5.8%*	*6.6%*	*6.9%*	*7.5%*	*7.6%*
Teacher's degree[4]	t	26,451	28,859	32,579	36,120	37,577
	f	*76.5%*	*75.9%*	*75.3%*	*73.8%*	*73.7%*
	a	*1.8%*	*1.7%*	*1.7%*	*1.8%*	*1.8%*
Doctorate	t	24,287	23,843	25,190	25,084	25,629
	f	*40.9%*	*42.2%*	*41.9%*	*44.1%*	*44.1%*
	a	*13.4%*	*14.7%*	*14.5%*	*14.5%*	*14.9%*
Total degrees	**t**	**265,704**	**286,391**	**309,364**	**338,656**	**361,697**
	f	***50.5%***	***50.8%***	***51.1%***	***51.0%***	***51.4%***
	a	***9.8%***	***10.3%***	***10.3%***	***10.0%***	***9.8%***
Habilitation	t	1,993	1,881	1,800	1,820	1,755
	f	*22.2%*	*24.3%*	*23.4%*	*23.8%*	*24.9%*
	a	-	-	-	-	-

Explanation of abbreviations/symbols: t = total; f = share of females; a = share of foreign students; - = no figures or magnitude zero.
1) Excluding teacher's degrees.
2) Excluding bachelor's degree and master's degree.
3) Including the examination groups 'artistic degree' and 'other degree'.
4) Including teacher's bachelor degree and teacher's master degree.
Source: Federal Statistical Office, Fachserie 11, Reihen 4.2, 4.4

BMBF's Data Portal (German language only): Figure link: www.datenportal.bmbf.de/**bild-47**
Additional data: www.datenportal.bmbf.de/**2.5.45**
www.datenportal.bmbf.de/**2.5.81**

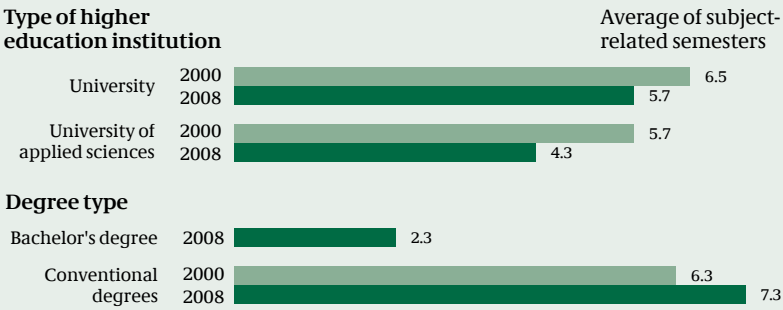
Fig. 48 Student drop-out rates, by degree types, in % (graduates 2006/2008/2010)[1]



1) The drop-outs of the different degree programmes relate to different years of first-year students.
Source: Hochschul-Informations-System GmbH, HIS Forum Hochschule 3/2012, Studienabbruchuntersuchung 2012, figures 2 and 3

BMBF's Data Portal (German language only): Figure link: www.datenportal.bmbf.de/**bild-48**
Additional data: www.datenportal.bmbf.de/**2.5.90**

Fig. 49 Average duration of subject-related studies until student drop-out, by types of higher education institution and degree types (2000/2008)



Source: Hochschul-Informations-System GmbH, Studienabbruchuntersuchungen

BMBF's Data Portal (German language only): Figure link: www.datenportal.bmbf.de/**bild-49**
Additional data: www.datenportal.bmbf.de/**2.5.79**

Fig. 50 Duration of studies with successful final examination, by examination types and sex (2006-2010)

Examination type		2006		2007		2008		2009		2010	
		SH	SS	SH	SS	SH	SS	SH	SS	SH	SS
Bachelor's degree[1]	Male	8.8	7.4	8.6	7.3	8.4	7.2	8.0	7.0	8.0	7.1
	Female	8.0	7.0	7.9	6.9	7.7	6.8	7.5	6.8	7.5	6.8
	Total	8.3	7.2	8.2	7.1	8.0	7.0	7.7	6.9	7.7	6.9
Master's degree[1]	Male	10.3	4.7	10.8	4.9	10.8	4.8	10.9	4.8	11.2	4.8
	Female	10.3	4.6	10.7	4.7	10.7	4.6	10.9	4.7	10.8	4.7
	Total	10.3	4.7	10.7	4.8	10.8	4.7	10.9	4.7	11.0	4.8
University degree[1,2,3]	Male	13.5	12.2	13.4	12.1	13.4	12.1	13.4	12.1	13.6	12.3
	Female	13.3	11.8	13.1	11.7	13.3	11.8	13.2	11.8	13.4	12.0
	Total	13.4	12.0	13.2	11.9	13.3	11.9	13.3	12.0	13.5	12.2
Degree at university of applied sciences[3]	Male	10.3	9.3	10.3	9.4	10.1	8.7	10.6	9.6	10.7	9.8
	Female	9.7	8.9	9.8	9.0	9.4	8.4	9.9	9.1	10.0	9.2
	Total	10.0	9.1	10.1	9.2	9.8	8.6	10.3	9.4	10.4	9.6
Teacher's degree[4]	Male	14.0	10.9	13.6	10.6	13.3	10.3	13.0	10.0	13.0	9.9
	Female	11.6	9.5	11.6	9.5	11.5	9.3	11.3	8.9	11.3	8.6
	Total	12.1	9.8	12.1	9.8	11.9	9.5	11.7	9.2	11.7	8.9
Total	**Male**	**11.9**	**10.0**	**11.7**	**9.9**	**11.5**	**9.6**	**11.2**	**9.4**	**10.9**	**9.0**
	Female	**11.6**	**9.8**	**11.5**	**9.7**	**11.3**	**9.4**	**10.9**	**9.1**	**10.5**	**8.7**
	Total	**11.7**	**9.9**	**11.6**	**9.8**	**11.4**	**9.5**	**11.1**	**9.2**	**10.7**	**8.8**

Explanation of abbreviations/symbols: SH = duration of studies by semesters in higher education; SS = duration of studies by subject-related semesters.
1) Excluding teacher's degree.
2) Including examination groups 'artistic degree' and 'other degree'.
3) Excluding bachelor's degree and master's degree.
4) Including teacher's bachelor degree and teacher's master degree.
Source: Analysis of the BMBF's database ICE; **Data:** Federal Statistical Office

BMBF's Data Portal (German language only): Figure link: www.datenportal.bmbf.de/**bild-50**
Additional data: www.datenportal.bmbf.de/**2.5.80**

Fig. 51 Doctorates and habilitations, by subject groups and sex (2010)

Subject group	Doctorates		Habilitations	
	Total number	Share of females	Total number	Share of females
Languages, cultural studies	2,760	*54.5%*	318	*36.8%*
Sports	115	*42.6%*	14	*28.6%*
Law, economics, social sciences	3,534	*36.8%*	139	*26.6%*
Mathematics, natural sciences	8,092	*39.3%*	295	*19.7%*
Human medicine, health sciences	7,287	*55.8%*	867	*21.7%*
Veterinary medicine	481	*77.8%*	22	*40.9%*
Agricultural, forestry and nutritional sciences	538	*48.5%*	22	*31.8%*
Engineering	2,561	*15.4%*	57	*14.0%*
Art, art theory	261	*65.5%*	21	*42.9%*
Total[1]	**25,629**	***44.1%***	**1,755**	***24.9%***

1) Doctorates including subjects outside the fields of study stucture.
Source: Federal Statistical Office, Fachserie 11, Reihen 4.2, 4.4

BMBF's Data Portal (German language only): Figure link: www.datenportal.bmbf.de/**bild-51**
Additional data: www.datenportal.bmbf.de/**2.5.81**

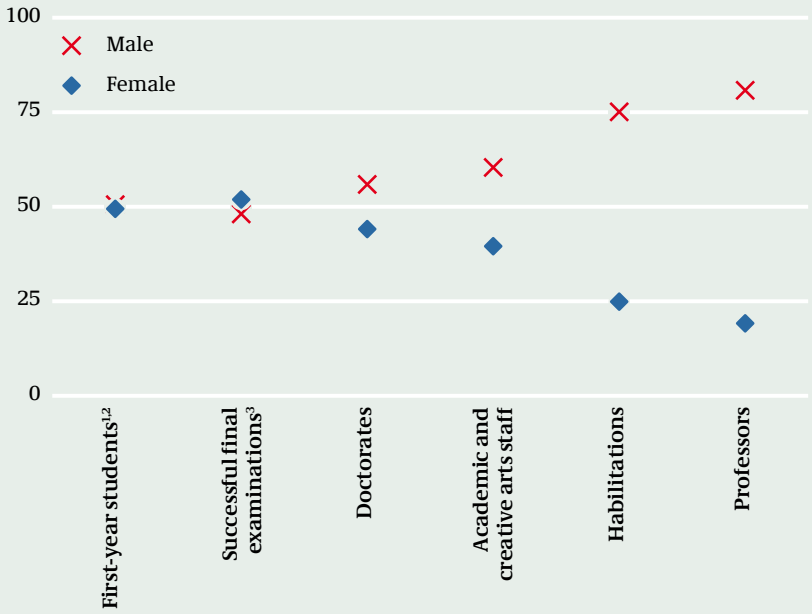
Fig. 52 Higher education staff, by subject groups and sex (2010)

Subject group		Total staff	Academic and creative arts staff	Administrative, technical and other staff
Languages, cultural studies	t	49,038	43,784	5,254
	f	*55.2%*	*51.6%*	*85.2%*
Sports	t	3,496	2,965	531
	f	*41.3%*	*37.8%*	*60.8%*
Law, economics, social sciences	t	67,529	60,134	7,395
	f	*37.9%*	*33.2%*	*76.1%*
Mathematics, natural sciences	t	81,228	62,087	19,141
	f	*34.7%*	*26.9%*	*60.1%*
Human medicine, health sciences	t	162,537	58,189	104,348
	f	*70.4%*	*44.5%*	*84.8%*
Veterinary medicine	t	2,760	1,596	1,164
	f	*67.5%*	*63.0%*	*73.5%*
Agricultural, forestry and nutritional sciences	t	9,507	6,151	3,356
	f	*48.5%*	*40.2%*	*63.6%*
Engineering	t	66,117	50,222	15,895
	f	*22.9%*	*18.1%*	*38.2%*
Art, art theory	t	18,393	17,165	1,228
	f	*39.6%*	*38.2%*	*58.6%*
Central facilities[1]	t	95,820	21,134	74,686
	f	*57.0%*	*48.2%*	*59.6%*
Central facilities of university clinics[2]	t	45,257	940	44,317
	f	*67.5%*	*52.8%*	*67.9%*
Total	**t**	**601,682**	**324,367**	**277,315**
	f	***51.7%***	***35.8%***	***70.2%***

Explanation of abbreviations/symbols: t = total; f = share of females.
1) Excluding clinic specific facilities.
2) Only human medicine.
Source: Federal Statistical Office, Fachserie 11, Reihe 4.4

BMBF's Data Portal (German language only): Figure link: www.datenportal.bmbf.de/**bild-52**
Additional data: www.datenportal.bmbf.de/**2.5.82**

Fig. 53 Share of males and females in various status and degree groups in the field of higher education, in % (2010)



1) In their first semester (first enrolment).
2) In winter semester 2010/2011.
3) Excluding doctorates.
Source: Federal Statistical Office, Fachserie 11, Reihen 4.1, 4.2, 4.4

BMBF's Data Portal (German language only): Figure link: www.datenportal.bmbf.de/**bild-53**
Additional data: www.datenportal.bmbf.de/**2.5.83**

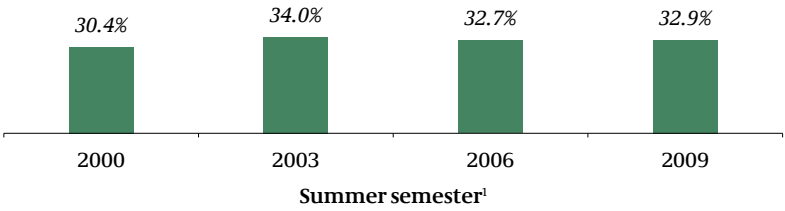
Fig. 54 BAföG – number of recipients; expenditure, by amounts and types of aid (2006-2010)

Recipients[1] Financial amount	2006	2007	2008	2009	2010
Recipients					
Total	**817,546**	**806,085**	**822,323**	**873,082**	**916,295**
fully funded	387,352	389,978	429,179	441,535	447,787
share (in %)	*47.4*	*48.4*	*52.2*	*50.6*	*48.9*
partly funded	430,194	416,107	393,144	431,547	468,507
share (in %)	*52.6*	*51.6*	*47.8*	*49.4*	*51.1*
average monthly number[2]	**540,329**	**524,490**	**525,003**	**559,395**	**584,850**
Financial amount					
Total (in thousands of euros)	**2,256,143**	**2,188,065**	**2,331,918**	**2,702,569**	**2,873,065**
Grant (in %)	*66.5*	*66.7*	*67.0*	*66.3*	*65.9*
Interest-free loan (in %)	*33.5*	*33.3*	*33.0*	*33.7*	*34.1*
Average amount of financial aid per capita[3] (in euros per month)	**348**	**348**	**370**	**403**	**409**

Explanation of abbreviations/symbols: BAföG = Federal Training Assistance Act.
1) Including recipients at distant learning institutions.
2) Arithmetic mean of a year's twelve average monthly numbers.
3) With regard to the average monthly number.
Source: Federal Statistical Office, Fachserie 11, Reihe 7

BMBF's Data Portal (German language only): Figure link: www.datenportal.bmbf.de/**bild-54**
Additional data: www.datenportal.bmbf.de/**2.6.11**

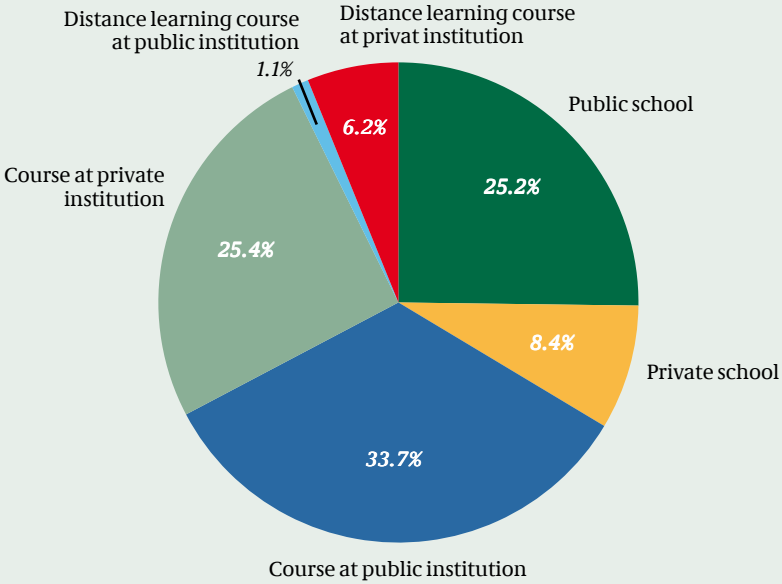
Fig. 55 BAföG – Share of recipients among those students in their first six semesters (2000-2009)



Explanation of abbreviations/symbols: BAföG = Federal Training Assistance Act.
Remark: All figures indicate the annual average.
1) Until 2001 only German students, since 2006 including foreigners with a German education.
Source: 19. Sozialerhebung des Deutschen Studentenwerks, figure 8.1

BMBF's Data Portal (German language only): Figure link: www.datenportal.bmbf.de/**bild-55**
Additional data: www.datenportal.bmbf.de/**2.6.12**

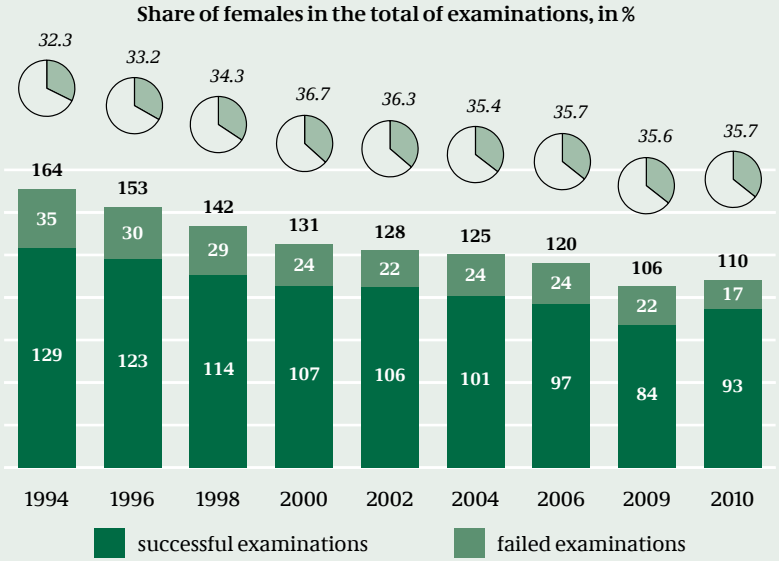
Fig. 56 AFBG ("Meister-BAföG") – recipients, by continuing education institutions (2010)



Explanation of abbreviations/symbols: AFBG = Upgrading Training Assistance Act; BAföG = Federal Training Assistance Act.
1) Inclusive foreign case (*Auslandsfall*, AFBG, section 5(2)): 9 recipients.
Source: Federal Statistical Office, Fachserie 11, Reihe 8

BMBF's Data Portal (German language only): Figure link: www.datenportal.bmbf.de/**bild-56**
Additional data: www.datenportal.bmbf.de/**2.6.8**
www.datenportal.bmbf.de/**2.6.9**

Fig. 57 Further training examinations / Meister examinations, by sex, in thousands (1994-2010)[1]

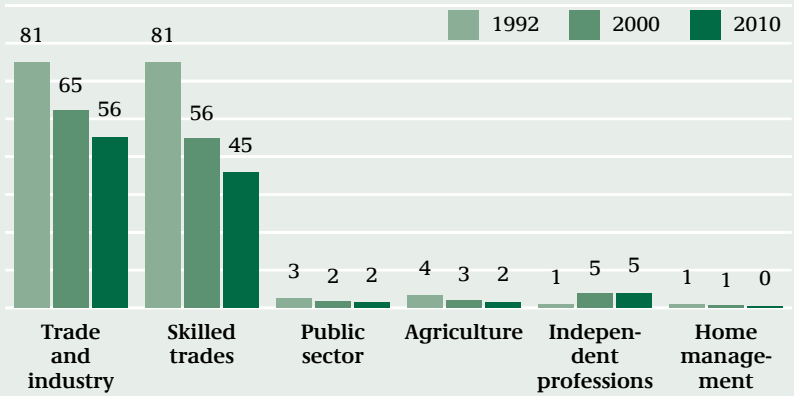


1) Due to the redesign of the statistic in 2007, the comparability of the results before and after this change is limited. For 2007 and 2008 no data has been published of the field further training examination / *Meister* examination.
Source: Federal Statistical Office, Fachserie 11, Reihe 3

BMBF's Data Portal (German language only): Figure link: www.datenportal.bmbf.de/**bild-57**
Additional data: www.datenportal.bmbf.de/**2.7.13**

The sharp drop in the number of *Meister* examinations can be attributed to two factors: First, the number of new training contracts fell by about 80,000 between 1999 and 2009 (about 55,000 of them in the skilled trades alone). This reduces the number of potential participants in *Meister* courses. Second, as a result of the reform of the Craft Trades Law in early 2004, a *Meister* qualification is no longer necessary to run a business in more than half of all skilled trades. A small increase was recorded between 2009 and 2010.

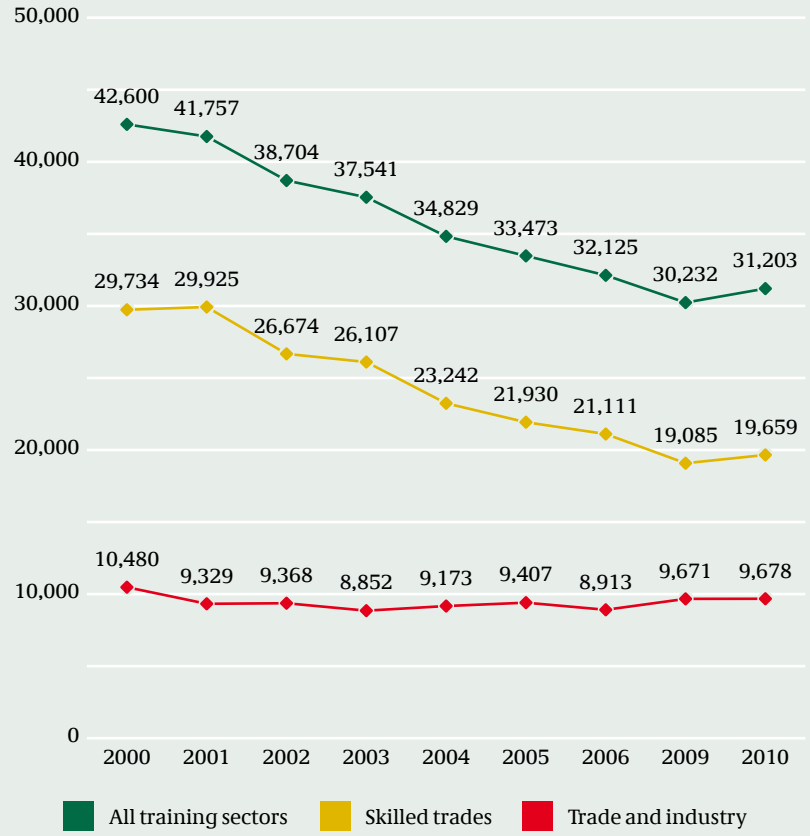
Fig. 58 Further training examinations / Meister examinations, by training sectors, in thousands (1992/2000/2010)[1]



1) Due to the redesign of the statistic in 2007, the comparability of the results before and after this change is limited.
Source: Federal Statistical Office, Fachserie 11, Reihe 3

BMBF's Data Portal (German language only): Figure link: www.datenportal.bmbf.de/**bild-58**
Additional data: www.datenportal.bmbf.de/**2.7.13**

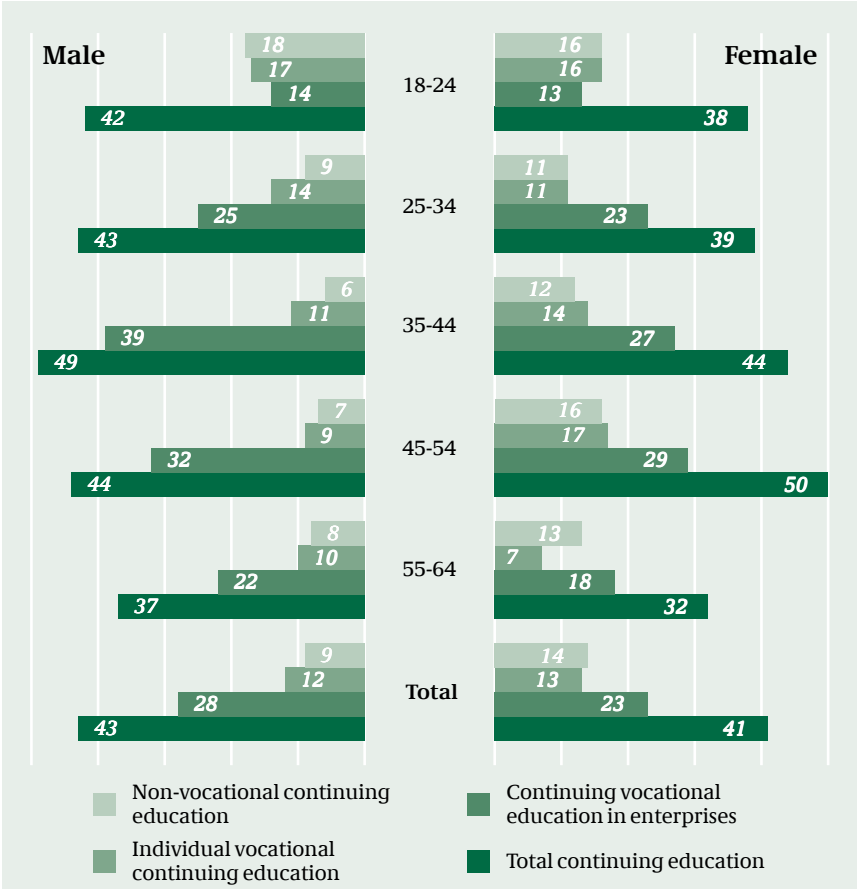
Fig. 59 Successful Meister examinations, by training sectors (2000-2010)[1]



1) Due to the redesign of the statistic in 2007, the comparability of the results before and after this change is limited. For 2007 and 2008 no data has been published of the field further training examination / *Meister* examination.
Source: Datenreport zum Berufsbildungsbericht 2009, Übersicht B5.2-4 (updated)
Data: Federal Statistical Office (Fachserie 11, Reihe 3), calculations of the Federal Institute for Vocational Education and Training

BMBF's Data Portal (German language only): Figure link: www.datenportal.bmbf.de/**bild-59**
Additional data: www.datenportal.bmbf.de/**2.7.14**

Fig. 60 Participation in general and vocational continuing education and training, by age groups, in % (2010)



Source: TNS Infratest, Adult Education Survey 2010

BMBF's Data Portal (German language only): Figure link: www.datenportal.bmbf.de/**bild-60**
Additional data: www.datenportal.bmbf.de/**2.7.11**

Fig. 61 Continuing education of the labour force, by age groups and general school-leaving qualifications (2010)

Subject-matter	Participants at					
	continuing vocational education in enterprises		individual vocational continuing education		non-vocational continuing education	
	t	f	t	f	t	f
By age groups						
Age from ... up to under ... years						
18 - 25	907	*47.2%*	1,142	*47.7%*	1,149	*46.3%*
25 - 30	1,029	*50.5%*	669	*41.7%*	536	*49.8%*
30 - 35	1,303	*44.5%*	554	*48.9%*	445	*63.6%*
35 - 40	1,825	*38.1%*	804	*45.8%*	440	*64.8%*
40 - 45	2,376	*41.3%*	766	*66.3%*	721	*64.6%*
45 - 50	2,176	*45.7%*	908	*63.0%*	858	*66.1%*
50 - 55	1,713	*48.1%*	776	*65.5%*	577	*72.8%*
55 and more	1,918	*44.9%*	805	*39.3%*	1,010	*63.3%*
By general school-leaving qualifications						
Secondary general school certificate	2,427	*29.0%*	1,108	*31.1%*	866	*46.1%*
Intermediate school certificate or equivalent	4,876	*52.5%*	2,152	*60.5%*	1,692	*70.7%*
Entrance qualification for universities of applied sciences	1,365	*41.2%*	463	*42.8%*	479	*60.1%*
University entrance qualification	4,390	*46.0%*	2,397	*58.4%*	2,156	*58.9%*
Type of qualification not stated	-	-	36	*22.2%*	133	*48.9%*
No general school-leaving qualification	196	*24.0%*	194	*38.7%*	234	*62.4%*

Explanation of abbreviations/symbols: t = total in thousands; f = share of females; - = no data available.
Source: TNS Infratest, Adult Education Survey 2010

BMBF's Data Portal (German language only): Figure link: www.datenportal.bmbf.de/**bild-61**
Additional data: www.datenportal.bmbf.de/**2.7.15**

The highest level of participation in continuing education is recorded in the 40–45 age group and among those who have an intermediate school certificate or equivalent.

Fig. 62 Participation and intensity of continuing vocational education in enterprises, by economic sectors (2005)

Economic sector		Participation rate[1] (in %)					Participation per participant (in hours)
		Total employed	Share of females	By age groups			
				Under 25 years	25 to 54 years	55 years and older	
C	Mining and quarrying	48.1	*40.6*	51.8	49.5	22.8	33
D 15-16	Mfr. of food products, beverages and tobacco	36.7	*40.5*	39.4	38.0	24.6	19
D 17-19	Mfr. of textiles and textile products; Mfr. of leather and leather products	28.0	*30.3*	25.1	30.0	19.0	29
D 21-22	Mfr. of pulp, paper and paper products; publishing and printing	29.1	*28.8*	32.6	31.6	12.6	29
D 23-26	Mfr. of coke, refined petroleum products and nuclear fuel; Mfr. of chemicals, chemical products and man-made fibres; Mfr. of rubber and plastic products; Mfr. of other non-metallic mineral products	49.6	*46.8*	66.8	51.2	28.9	36
D 27-28	Mfr. of basic metals and fabricated metal products	35.8	*42.7*	32.7	37.9	23.8	29
D 29-33	Mfr. of machinery and equipment n.e.c.; Mfr. of electrical and optical equipment	35.0	*29.7*	29.8	36.4	28.6	40
D 34-35	Mfr. of transport equipment	62.1	*53.7*	62.5	61.9	63.3	19
D 20, 36-39	Mfr. of wood and wood products; Mfr. of furniture; manufacturing n.e.c.; Recycling	29.3	*25.9*	33.6	30.4	16.8	22
E	Electricity, gas and water supply	58.4	*48.9*	45.8	62.7	30.7	26
F	Construction	34.7	*38.9*	40.0	35.6	25.9	23
G 50	Sale, maintenance and repair of motor vehicles and motorcycles; retail sale of automotive fuel	54.6	*45.6*	40.3	61.9	24.5	29
G 51	Wholesale trade and commission trade, except of motor vehicles and motorcycles	37.5	*34.1*	27.0	41.0	21.8	24
G 52	Retail trade, except of motor vehicles and motorcycles; repair of personal and household goods	20.0	*18.7*	16.2	21.3	16.8	21
H	Hotels and restaurants	29.7	*28.3*	30.0	32.1	16.6	25
I 60-63	Transport	35.4	*31.5*	24.5	38.0	23.6	20
I 64	Post and telecommunications	21.8	*19.8*	11.5	22.9	15.6	59
I 65-66	Financial intermediation	54.9	*52.4*	68.2	56.2	35.8	41
J 67	Activities auxiliary to financial intermediation	67.6	*64.2*	75.4	68.3	43.6	50
K+O	Real estate, renting and business activities; Other community, social and personal service activities	38.9	*41.3*	32.4	41.4	26.1	31
Total		**38.8**	***35.3***	**33.5**	**41.0**	**27.3**	**30**

Explanation of abbreviations/symbols: Mfr. = Manufacture.
1) In enterprises that offer courses.
Source: Federal Statistical Office, Third European Continuing Vocational Training Survey 2005 (CVTS3)

BMBF's Data Portal (German language only): Figure link: www.datenportal.bmbf.de/**bild-62**
Additional data: www.datenportal.bmbf.de/**2.7.12**

3 International comparison

Comparing Germany with other countries is a way of gauging Germany's performance in education, research and innovation. The results show that Germany is in an excellent position.

Particularly when it comes to the development of new patents that are relevant for the world market, figures show that Germany is well above average among the European countries and even ahead of Japan and the United States. The export of technology products arising from these patents makes a significant contribution to Germany's economic performance.

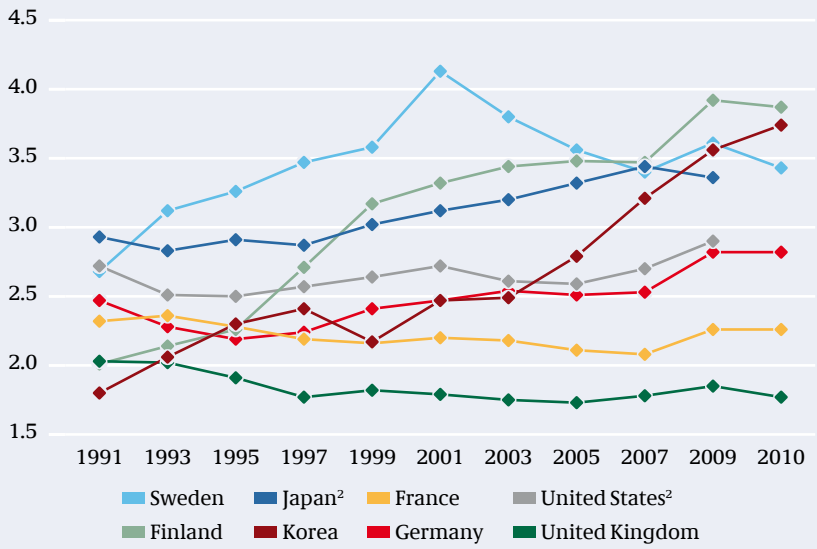
In the area of education, developments in Germany are similar to those in other OECD countries: The percentage of people who embark on a degree course at "tertiary A" level (universities and universities of applied sciences *(Fachhochschulen)*, not including colleges of public administration; see glossary for further information) has risen. The percentage of young people who go on to obtain a degree at this level has also risen, in Germany and in all the other OECD countries. In Germany, the percentage of university graduates has gone up from 14% of the age group in 1995 to 26% of the age group in 2009.

The Strategy for the Internationalization of Science, Research and Development is the Federal Government's answer to the challenge of global competition. It identifies the best knowledge, structures and processes in a continuous international comparison and enables them to be used for the benefit of the German science system. This requires cooperation between all stakeholders in the German research and innovation system.

Further information:

Web portals:
- German Education Server (www.bildungsserver.de/innovationsportal/bildungplus.html?artid=801)
- Eurydice – Education Information Network in the European Community (www.eurydice.org)
- Publication: Education at a Glance 2011 / OECD indicators (www.oecd.org)

Fig. 63 Gross domestic expenditure on research and development (GERD), share of gross domestic product in selected countries, in % (1991-2010)[1]

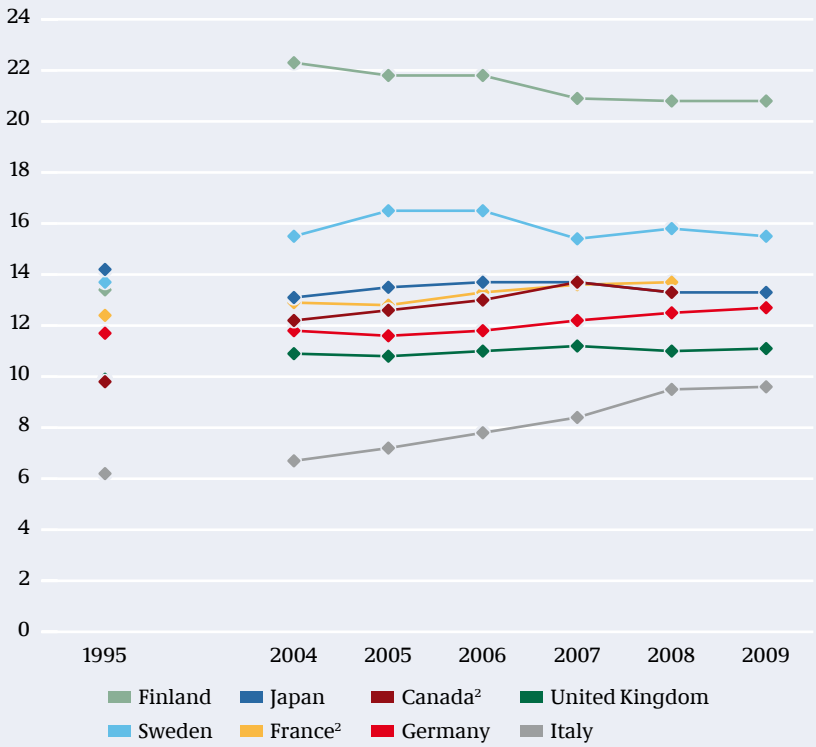


1) Some figures are provisional, estimated, or only partly comparable with figures from previous years (see original edition of "Main Science and Technology Indicators").
2) No data available for 2010.
Source: Bundesbericht Forschung und Innovation 2012, table 16 (updated) / figure 44; **Data:** OECD ("Main Science and Technology Indicators 2011/2")

BMBF's Data Portal (German language only): Figure link: www.datenportal.bmbf.de/**bild-63**
Additional data: www.datenportal.bmbf.de/**1.3.1**

The indicator for selected countries shows different dynamics: Finland and Sweden still are the leading European countries. Germany and the USA have been recording positive developments in recent years. Korea surpassed Germany and the USA around the middle of the decade and now belongs to the group of leading countries together with Finland, Sweden and Japan.

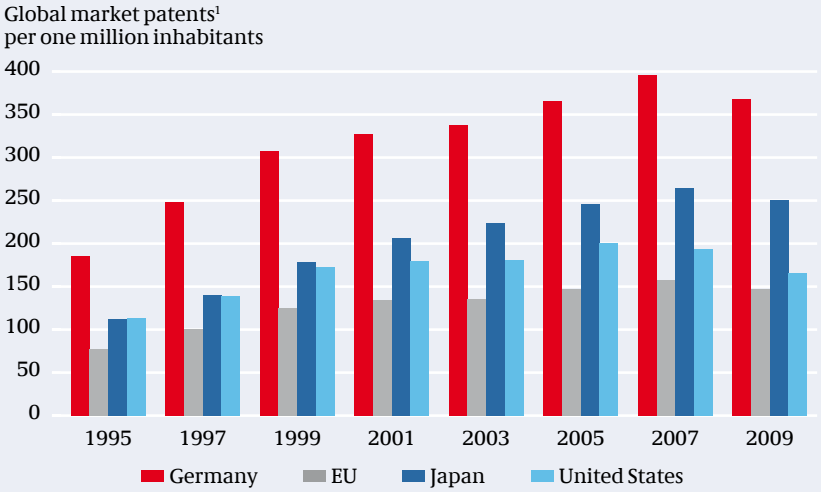
Fig. 64 R&D personnel in selected OECD countries, per thousand labour force, based on full-time equivalents (1995, 2004-2009)[1]



Explanation of abbreviations/symbols: R&D = research and development; OECD = Organisation for Economic Co-operation and Development.
1) Some figures are provisional, estimated, or only partly comparable with figures from previous years (see original edition of "Main Science and Technology Indicators").
2) For the year 2009: survey not carried out, is not yet completed or is no longer possible.
Source: Bundesbericht Forschung und Innovation 2012, table 41; **Data:** OECD ("Main Science and Technology Indicators 2011/1") and calculations of the Federal Ministry of Education and Research

BMBF's Data Portal (German language only): Figure link: www.datenportal.bmbf.de/**bild-64**
Additional data: www.datenportal.bmbf.de/**1.7.11**

Fig. 65 World market-relevant patents: Germany, European Union, Japan and United States (1995-2009)

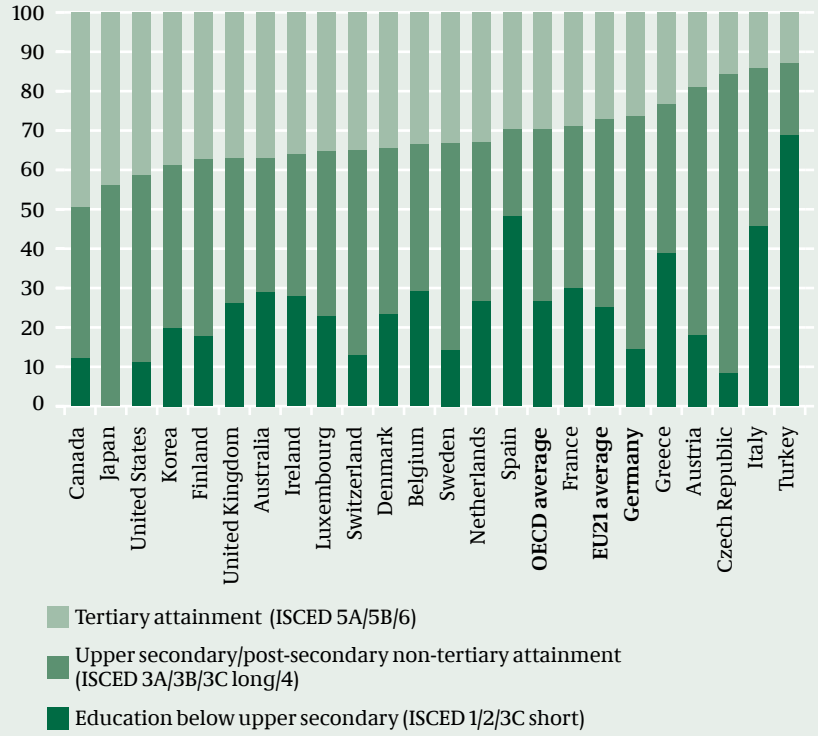


Explanation of abbreviations/symbols: EU = European Union.
1) Inventions registered in Europe or at the World Intellectual Property Organization (WIPO).
Source: Bundesbericht Forschung und Innovation 2012, table 45; **Data:** EPAPAT, WOPATENT, OECD and calculations of the Fraunhofer Institute for Systems and Innovation Research

BMBF's Data Portal (German language only): Figure link: www.datenportal.bmbf.de/**bild-65**
Additional data: www.datenportal.bmbf.de/**1.8.4**

World market-relevant patents are inventions filed in Europe or with the World Intellectual Property Organization. Such patents are particularly important for Germany's export-oriented economy, as they help ensure that the invention is protected even beyond the domestic market. This indicator shows significant growth rates for Germany. The number of patents per million inhabitants increased by about 13% between 2001 and 2009. Over the same period, Germany gained slightly on the EU average. Germany files about twice as many patents per million inhabitants as the US. Its patent intensity is higher than Japan's by about one half.

Fig. 66 Educational attainment: Adult population in selected OECD countries, in % (2009)



Explanation of abbreviations/symbols: OECD = Organisation for Economic Co-operation and Development; ISCED = International Standard Classification of Education (see glossary).
Source: OECD, Education at a Glance 2011, table A1.1a

BMBF's Data Portal (German language only): Figure link: www.datenportal.bmbf.de/**bild-66**
Additional data: www.datenportal.bmbf.de/**0.23**

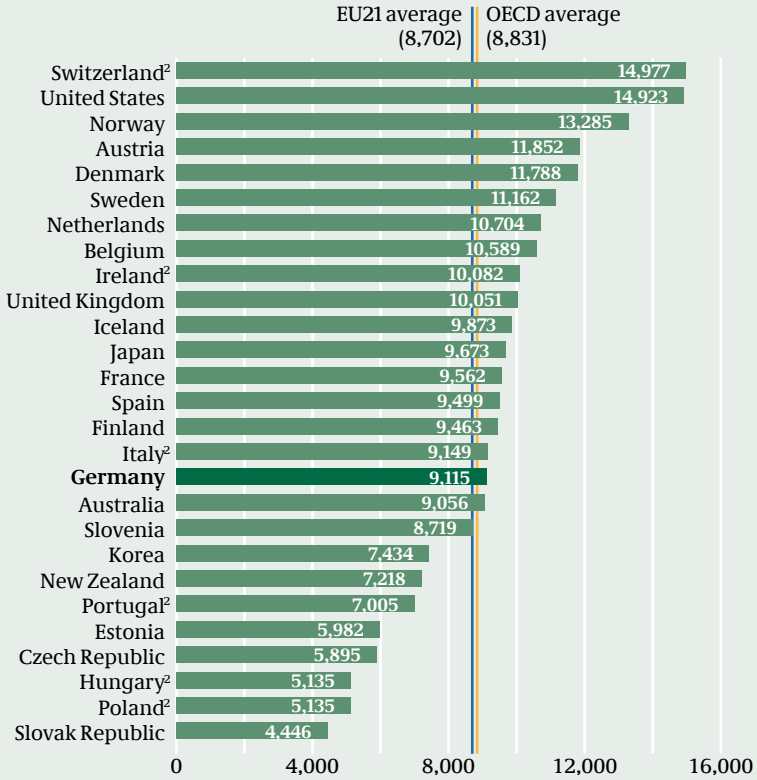
This graph shows that Germany holds a leading position at upper secondary level. That is mainly a result of the well-established vocational training system and the dual training system.

Fig. 67 First-time graduation rates for tertiary-type A programmes in selected OECD countries, in % (1995/2000/2009)

Explanation of abbreviations/symbols: OECD = Organisation for Economic Co-operation and Development; ISCED = International Standard Classification of Education (see glossary).
1) Year of reference 2008 instead of 2009.
2) Break in the series between 2008 and 2009 due to a partial reallocation of vocational programmes into ISCED 2 and ISCED 5B.
3) Break in the series in 2008 due to changes in the methodology.
4) Year of reference 2007 instead of 2009.
Source: OECD, Education at a Glance 2011, table A3.2

BMBF's Data Portal (German language only): Figure link: www.datenportal.bmbf.de/**bild-67**
Additional data: www.datenportal.bmbf.de/**2.5.84**

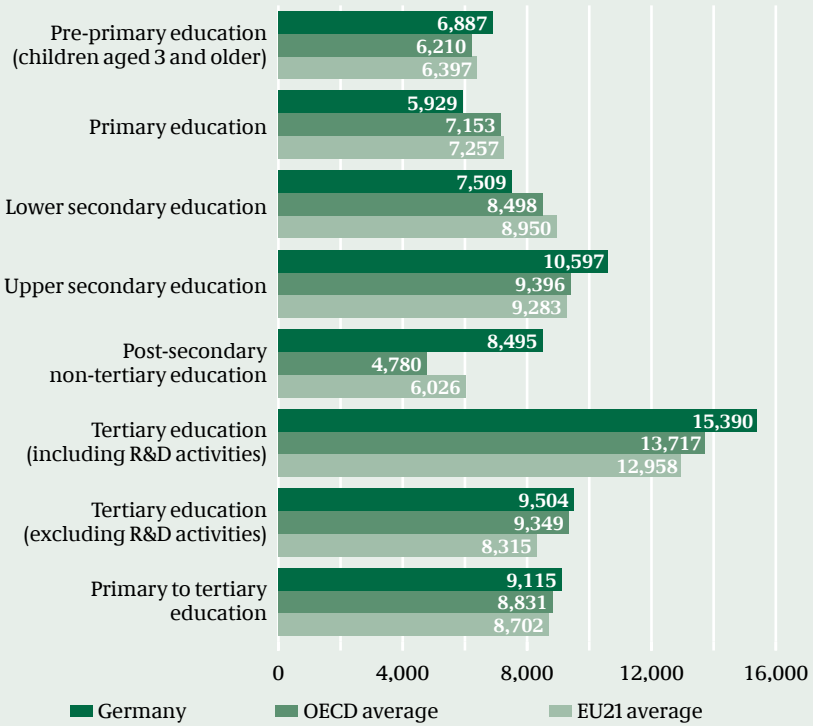
Fig. 68 Annual expenditure on educational institutions per student from primary to tertiary education, in US dollar (2008)[1]



Explanation of abbreviations/symbols: OECD = Organisation for Economic Co-operation and Development.
1) Expenditure at a particular level of education is calculated by dividing the total expenditure on educational institutions at that level by the corresponding full-time equivalent enrolment. Expenditure is converted into eqivalents US dollar by dividing the national currency figure by the purchasing power parity (PPP) index for the gross domestic product (GDP). The exchange rate 2008 for Germany between US dollar (PPP) and euro was 1.230.
2) Public institutions only (for Italy excluding tertiary education).
Source: Bildungsfinanzbericht 2011, table 5.1-1, figure 5.1.1-1; **Data:** OECD

BMBF's Data Portal (German language only): Figure link: www.datenportal.bmbf.de/**bild-68**
Additional data: www.datenportal.bmbf.de/**2.1.7**

Fig. 69 Annual expenditure on educational institutions per student, by levels of education, in US dollar (2008)[1]

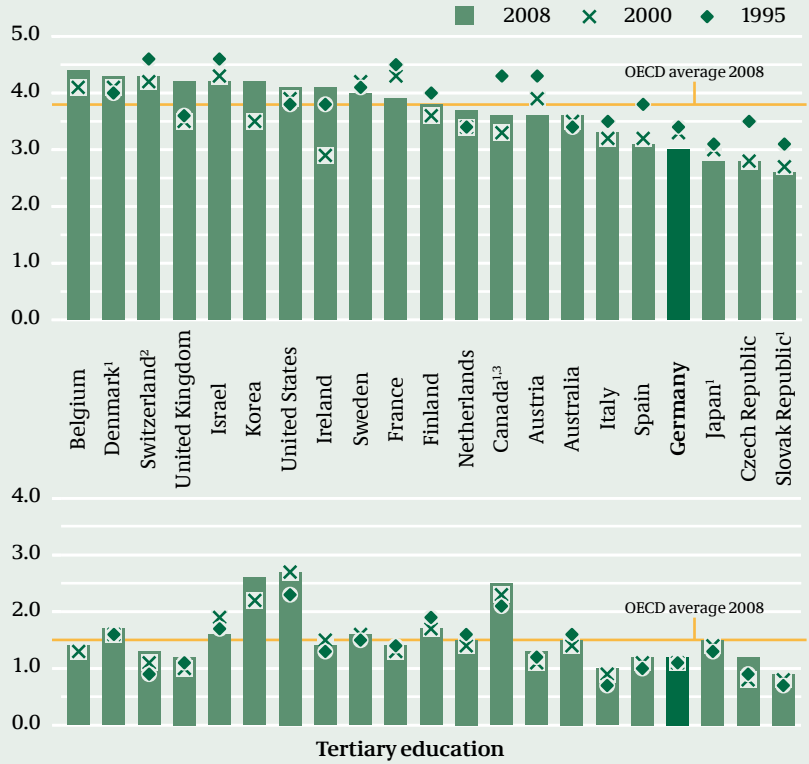


Explanation of abbreviations/symbols: R&D = research and development; OECD = Organisation for Economic Co-operation and Development.
1) Expenditure at a particular level of education is calculated by dividing the total expenditure on educational institutions at that level by the corresponding full-time equivalent enrolment. Expenditure is converted into eqivalents US dollar by dividing the national currency figure by the purchasing power parity (PPP) index for the gross domestic product (GDP). The exchange rate 2008 for Germany between US dollar (PPP) and euro was 1.230.
Source: Bildungsfinanzbericht 2011, table 5.1.1-1, figure 5.1.1-2; **Data:** OECD

BMBF's Data Portal (German language only): Figure link: www.datenportal.bmbf.de/**bild-69**
Additional data: www.datenportal.bmbf.de/**2.1.7**

The expenditure on educational institutions per student is an indicator of the staff and financial resources available to the institutions in question. A look at the individual levels of education shows the differences in spending as well as Germany's position compared to the OECD/EU21 average. Germany is below average at primary and lower secondary level only.

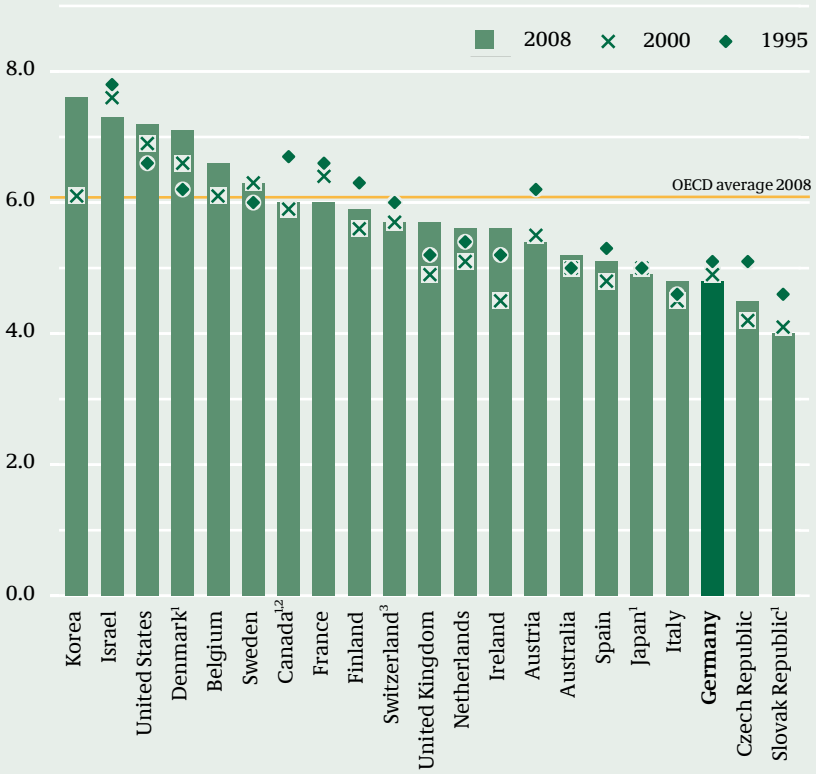
Fig. 70 Expenditure on educational institutions as a percentage of GDP, by levels of education in selected OECD countries, from public and private sources (1995, 2000, 2008)



Explanation of abbreviations/symbols: GDP = gross domestic product; OECD = Organisation for Economic Co-operation and Development.
1) Some levels of education are included in others.
2) In tertiary education public expenditure only.
3) Year of reference 2007 instead of 2008.
Source: OECD, Education at a Glance 2011, table B2.1

BMBF's Data Portal (German language only): Figure link: www.datenportal.bmbf.de/**bild-70**
Additional data: www.datenportal.bmbf.de/**2.1.12**

Fig. 71 Expenditure on educational institutions as a percentage of GDP, for all levels of education in selected OECD countries, from public and private sources (1995, 2000, 2008)



Explanation of abbreviations/symbols: GDP = gross domestic product; OECD = Organisation for Economic Co-operation and Development.
1) Some levels of education are included in others.
2) Year of reference 2007 instead of 2008.
3) In tertiary education public expenditure only.

Source: OECD, Education at a Glance 2011, table B2.1

BMBF's Data Portal (German language only): Figure link: www.datenportal.bmbf.de/**bild-71**
Additional data: www.datenportal.bmbf.de/**2.1.12**

4 Glossary

Abitur: see "university entrance qualification"

Academic and creative arts staff: The group of academic and creative arts staff at institutions of higher education mainly includes members of established academic staff, senior administrators and directors, employed academic and creative arts staff, and doctors undergoing practical training.

Academic degree: In Germany, students can receive the following academic degrees after passing the relevant examinations: Bachelor's degree, state examination, *Diplom* and *Magister* (both of which are being phased out), Master's degree and doctorate.

AFBG – Upgrading Training Assistance Act (Aufstiegsfortbildungsförderungsgesetz): The Upgrading Training Assistance Act (AFBG, also known as the *"Meister-BAföG"*) has been in force since 23 April 1996. It provides skilled craftsmen and tradesmen of all ages with financial support to upgrade their training and attain higher qualifications. The aim is to counteract the skills shortage in Germany and enhance Germany's competitiveness, particularly in economically difficult times. The law is a comprehensive funding instrument for vocational skill development in all occupational areas.

Apprentice: An apprentice is someone who is undergoing training under the dual system in a recognized training occupation based on a training contract in accordance with the Vocational Training Act. Apprentices learn on the job or in company/intercompany training centres and simultaneously attend part-time vocational school (dual system).

Bachelor: A Bachelor's degree is the first qualification offered by institutions of higher education after completion of an undergraduate programme. In Germany, Bachelor's courses were introduced in connection with the Bologna process. The standard period of study of most Bachelor's degree courses is six semesters, but can be up to seven or eight semesters (i.e. three to four years). Students can then proceed to a more advanced Master's degree programme or, in exceptional cases, a doctorate.

BAföG – Federal Training Assistance Act (Berufsausbildungsförderungsgesetz): The Federal Training Assistance Act regulates government support for the education of school

students and university students in Germany. The main aims of the BAföG are to improve equal opportunities in the education system and to mobilize academic potential in lower-income population groups.

Continuing vocational education and training: Continuing vocational education and training has the aim of giving people who have completed their training and are already in the workforce additional qualifications or maintaining/refreshing their existing skills in order to secure their employment prospects and enable them to act independently on the labour market. At the same time, it aims to ensure that there are enough well-qualified workers to cover the needs of companies and the economy as a whole.

Education budget: The education budget includes personnel expenditure, operating expenditure, capital spending and pension plans for active civil servants working in the area of education in accordance with national accounting for the entire area of education (pre-primary education, out-of-school youth education, schools and institutions of higher education, continuing education). Depreciation, financing costs, hours lost due to continuing education of staff, training allowances and pensions for retired education staff are not included. Public spending under the Federal Training Assistance Act (BAföG), on retraining, transport for students etc. is substantiated within the framework of educational funding. The financial contribution of the central, regional and local authorities (Federal Government, *Länder* and municipalities) to the education budget can be viewed in two different ways – according to the concept of "initial funds" or the concept of "final funds". In the "initial funds" concept, the financial transactions between the central, regional and local authorities are taken into account. The concept of "final funds" does not take financial transactions between the central, regional and local authorities into consideration. The distinction between "initial funds" and "final funds" does not affect the total volume of public spending for the area of education. Nor do transactions between public budgets affect financial contributions from private sources, from abroad, or the total volume of the education budget.

Educational participation rate: The educational participation rate refers to the percentage of people in any given age group who are pursuing a qualifica-

tion at a certain level (e.g. university degree or training under the dual system).

EU – European Union:
EU19 refers to the 15 Member States of the European Union before the enlargement of 1 May 2004 (EU15) plus four Eastern European OECD countries (Czech Republic, Hungary, Poland and Slovakia).
EU21 refers to the EU Member States that are also members of the OECD.
EU27 refers to the 27 current Member States of the European Union.

First-year students / new entrants to higher education: New entrants to higher education are students in their first semester (first enrolment) or in their first semester of a certain course of study.

Full-time equivalent (FTE): Unit to measure the full-time activity of a person over a certain period. This unit serves to express the working time of a person doing part-time R&D work (including part-time workers) as the working time of a full-time R&D worker (cf. Frascati Manual 2002, sections 331 ff).

Further training examination / Meister examination: Further training and *Meister* examinations demonstrate knowledge and skills acquired through further training measures. They must comply with the special requirements of vocational adult education.

GDP – Gross domestic product: GDP is a measure of a country's economic performance over a certain period of time. It measures the value of domestically produced goods and services (added value), as long as these are not used as a basis for the production of other goods and services.

GERD – Gross Domestic Expenditure on Research and Development:
Total expenditure on domestically performed R&D, whatever the source; this also includes R&D performed within the country and funded from abroad and by international organizations. However, it does not cover the expenditure on R&D performed abroad by international organizations headquartered in the country or R&D funding paid abroad (cf. Frascati Manual 2002, section 423).

Government expenditure on R&D:
All resources allocated to R&D by the Federal Government and the *Länder*, regardless of the sector in which R&D is performed.

Habilitation: A *Habilitation* is a post-doctoral qualification to teach at professorial level. The *Habilitation* procedure is an academic examination procedure that includes a *Habilitation* thesis, a

colloquium and a public lecture.

iABE – Integrated reporting on vocational training: Integrated reporting on vocational training brings together various official statistics to give an overview of the paths young people's lives take and of vocational training pursued after leaving general schools. A comprehensive system of (educational) sectors and accounts (qualification pathways) describes the programmes available above lower secondary level. Vocational education and training opportunities are categorized according to four (educational) sectors:
- "Vocational training" (objective: full vocational qualification): A full vocational qualification is the foundation for entering and remaining in employment and for the ability to shape one's own career.
- "Integration into training (transition system)" (objective: vocational training): Integration measures serve to prepare young people for – and place them in – vocational training. It includes a wide range of programmes and measures, most of them publicly financed.
- "University entrance qualifications" (objective: acquiring a university entrance qualification): A university entrance qualification enables people to pursue higher education or vocational training.
- "Academic degree programmes" (objective: university degree): A university degree is the foundation for high-level employment.

ICE – Information, Controlling, Entscheidung (Information, Controlling, Decision): ICE is a web-based information system that provides comprehensive data, particularly about those qualified to enter higher education, new entrants to higher education, students, examinations, graduates, and higher education financing.

Industry expenditure on research and development (R&D): R&D expenditure by business enterprises and institutions for cooperative industrial research and experimental development (IfG).

Innovations: Innovations are new or significantly improved products or services that have been introduced to the market (product innovations) and new or improved production or delivery methods (process innovations) (cf. Oslo Manual 2005, sections 156 and 163).

Institution of higher education: "Institution of higher education" is the general term used for different academic institutions, including those with a practical and artistic focus, that are engaged in training and the pro-

motion of the sciences and arts through research and teaching. Institutions of higher education include universities, colleges of art and music, universities of applied sciences and colleges of public administration.

ISCED 97 – International Standard Classification of Education: ISCED was developed by UNESCO in the early 1970s to provide a consistent framework for collecting and presenting educational statistics, thus enabling or facilitating national and international comparisons. The classification of 1975 was updated in 1997 (ISCED 97) and now reflects all organized learning processes (see table on the next pages).

Labour force: The labour force comprises all civilians in dependent employment, self-employed people and family workers. This includes employees subject to social insurance contributions, apprentices, people in marginal employment, civil servants (not including soldiers), unemployed people, self-employed people and family workers.

Länder codes (German states):
BW = Baden-Württemberg
BY = Bavaria
BE = Berlin
BB = Brandenburg
HB = Bremen
HH = Hamburg
HE = Hesse
MV = Mecklenburg-Western Pomerania
NI = Lower Saxony
NW = North Rhine-Westphalia
RP = Rhineland-Palatinate
SL = Saarland
SN = Saxony
ST = Saxony-Anhalt
SH = Schleswig-Holstein
TH = Thuringia

Master: A Master's degree is the qualification offered by institutions of higher education after completion of a second-cycle programme. It is conferred after one- or two-year full-time or part-time studies. To be admitted to a Master's degree course, students need to be in possession of a Bachelor's degree or have completed a traditional course of study (*Magister*, *Diplom*, first state examination in law or teaching, medical degree). A Master's degree can build on previous studies or open up new areas of knowledge.

Meister examination: see "Further training examination / Meister examination"

Assignment of national education programmes to the ISCED 97 – [1/4][1]

ISCED level	Education programmes
0 Pre-primary education	- Kindergartens - Pre-school classes - School kindergartens
1 Primary education	- Primary schools - Integrated comprehensive schools (grades 1-4) - Free Waldorf schools (grades 1-4) - Special needs schools (grades 1-4)
2 Lower secondary education	
2A Programmes designed for direct access to level 3A or 3B - general education	- Secondary general schools - Orientation stages independent of school type - Intermediate schools - Special needs schools (grades 5-10) - Schools with different courses of education - Grammar schools (grades 5-9/10)[2] - Integrated comprehensive schools (grades 5-9/10)[2] - Free Waldorf schools (grades 5-10) - Evening secondary general schools - Evening intermediate schools - Vocational extension schools - General programmes at full-time vocational schools or pupils at part-time vocational schools who have no training contract and either comply with compulsory education, or gain lower secondary education degrees
2B Vocational preparation/vocational programmes - vocational preparation - vocational programmes designed for direct access to level **3B**	Vocational preparation programmes (at full-time vocational schools, pre-vocational training year and pupils at vocational schools who have no training contract, respectively)
2C Programmes not giving access to level 3 designed for direct access to the labour market	-

1) Last adjusted to the school year 2008/2009.
2) At grammar schools and integrated comprehensive schools leading to a school-leaving certificate after grade 12, upper secondary level begins at grade 10 instead of 11.
3) Since 2008/2009 including Baden-Württemberg Cooperative State University (formerly: vocational academies that were assigned to ISCED 5B).
Source: Federal Statistical Office, Bildungsfinanzbericht, Anhang A3

Assignment of national education programmes to the ISCED 97 – [2/4][1]

ISCED level	Education programmes
3 Upper secondary education	
3A Programmes designed to provide direct access to level **5A** - general education	- Grammar schools (grades 10-12/11-13)[2] - Integrated comprehensive schools (grades 10-12/ 11-13)[2] - Free Waldorf schools (grades 11-13) - Special needs schools (grades 11-13) - Specialised upper secondary schools – two-years - Specialised grammar schools - Full-time vocational schools that lead to higher education entry qualification
3B Programmes designed to provide direct access to level **5B** - vocational education	- Basic vocational programmes that are taken into account to the first year of apprenticeship (at full-time vocational schools, basic vocational training year) - Part-time vocational schools (dual system) - Full-time vocational schools that lead to a fully qualifying vocational certificate (excluding health care and social professions, educator training) - One-year programmes in health care professions (at full-time vocational schools or schools for nurses, midwives etc.)
3C Programmes **not** giving access to level 5 designed for direct access to the labour market or to levels 3 and 4	- Civil service trainees in the middle grade of civil service

1) Last adjusted to the school year 2008/2009.
2) At grammar schools and integrated comprehensive schools leading to a school-leaving certificate after grade 12, upper secondary level begins at grade 10 instead of 11.
3) Since 2008/2009 including Baden-Württemberg Cooperative State University (formerly: vocational academies that were assigned to ISCED 5B).
Source: Federal Statistical Office, Bildungsfinanzbericht, Anhang A3

Assignment of national education programmes to the ISCED 97 – [3/4][1]

ISCED level	Education programmes
4 Post-secondary non-tertiary education	

4A Programmes that prepare for entry to level **5A**	- Evening grammar schools
	- Adult education colleges
	- Specialised upper secondary schools – one-year
	- Two-year full-time vocational schools
	- Combination of a general education programme (level 3A) and a vocational programme (level 3B)
	  - Higher education entry qualification, then part-time vocational schools (dual system)
	  - Higher education entry qualification, then full-time vocational schools that lead to a vocational certificate
	  - Part-time vocational schools (dual system), then higher education entry qualification
	  - Full-time vocational schools that lead to a vocational certificate, then higher education entry qualification
	  - Simultaneous acquisition of a higher education entry qualification and a vocational certificate (at full-time vocational schools and partly at specialised grammar schools)

4B Programmes designed to provide direct access to level **5B**	- Combination of two programmes of level 3B
	  - Part-time vocational schools (dual system), then full-time vocational schools that lead to a vocational certificate
	  - Full-time vocational schools that lead to a vocational certificate, then part-time vocational schools (dual system)
	  - Two dual sytem trainings in succession
	  - Retrainees at part-time vocational schools (dual system)

4C Programmes not giving access to level 5 designed for direct access to the labour market	-

1) Last adjusted to the school year 2008/2009.
2) At grammar schools and integrated comprehensive schools leading to a school-leaving certificate after grade 12, upper secondary level begins at grade 10 instead of 11.
3) Since 2008/2009 including Baden-Württemberg Cooperative State University (formerly: vocational academies that were assigned to ISCED 5B).
Source: Federal Statistical Office, Bildungsfinanzbericht, Anhang A3

Assignment of national education programmes to the ISCED 97 – [4/4][1]

ISCED level	Education programmes
5 First stage of tertiary education	
5A	- Universities - Colleges of education - Colleges of theology - Comprehensive universities - Colleges of art and music - Universities of applied sciences[3]
5B	- Trade and technical schools - Specialised academies (Bavaria) - Vocational academies - Colleges of public administration - Two- or three-year programmes in health care and social professions or educator training (at full-time vocational schools or schools for nurses, midwives etc.)
6 Second stage of tertiary education	- Doctoral studies
Programmes not assignable to a level	Mainly mentally handicapped pupils at special needs schools that cannot be assigned to an education area

1) Last adjusted to the school year 2008/2009.
2) At grammar schools and integrated comprehensive schools leading to a school-leaving certificate after grade 12, upper secondary level begins at grade 10 instead of 11.
3) Since 2008/2009 including Baden-Württemberg Cooperative State University (formerly: vocational academies that were assigned to ISCED 5B).
Source: Federal Statistical Office, Bildungsfinanzbericht, Anhang A3

OECD – Organisation for Economic Co-operation and Development: The OECD is a forum in which the governments of 34 countries (most of them industrialized nations) work together to meet the challenges related to globalization in the areas of economy, society, environment and governance and take advantage of the associated opportunities. The OECD's stated goals are to contribute to optimal economic development and a rising standard of living in its member countries, to promote economic growth in its member countries and in developing countries, and to facilitate the expansion of international trade.

Percentage of first-year students: The percentage of first-year students (first enrolment) in any given year group is an important indicator for higher education planning.

Percentage of people qualified to enter higher education: The number of people qualified to enter higher education as a percentage of the relevant age group is calculated on the basis of the average figure for 17-to-under-20-year-olds (in *Länder* with 12 years of schooling) or 18-to-under-21-year-olds (in *Länder* with 13 years of schooling) among residents with and without German nationality.

Percentage of people who pursue higher education: This refers to the percentage of school-leavers in any given year group who have already started a degree course or have the firm intention of starting one. It is calculated on the basis of a representative survey by Hochschul-Informations-System GmbH. In addition to this group (people with a firm intention of pursuing higher education), people who are not yet sure about going to university or are considering it as an alternative can also be factored in. A maximum percentage is calculated in this way.

Private non-profit institutions (PNP sector): In national reporting, this sector includes non-profit organizations mainly financed by government (e.g. the Helmholtz Association of German Research Centres (HGF), the Max Planck Society (MPG) or the *Fraunhofer-Gesellschaft* (FhG)) and private non-profit organizations financed neither mainly by the government nor mainly by the private sector and not primarily serving business enterprises.

Qualifications: see "ISCED 97"

R&D: Research and development

R&D expenditure: Research and experimental development (R&D) com-

prise creative work undertaken on a systematic basis in order to increase the stock of knowledge, including knowledge of man, culture and society, and the use of this stock of knowledge to devise new applications (cf. Frascati Manual 2002, section 63). Expenditure incurred in the context of this work is expenditure on research and development. A distinction is made between intramural and extramural R&D expenditures.
"Intramural expenditures" are all expenditures for R&D performed within a statistical unit or sector of the economy during a specific period, whatever the source of funds (cf. Frascati Manual 2002, sections 358 f).
"Extramural expenditures" are the sums a unit, organization or sector reports having paid or committed themselves to pay to another unit, organization or sector for the performance of R&D during a specific period. (cf. Frascati Manual 2002, section 408). This can include spending on research and development activities outsourced by businesses (e.g. research contracts awarded to other companies, research institutes or universities).

R&D personnel: All those directly employed in the area of R&D, regardless of their position. This includes researchers, technical personnel and other staff (cf. Frascati Manual 2002, sections 294 ff).

School types in Germany:

General schools:
- "Adult education college" *(Kolleg)*: Establishment where adults attend full-time classes to obtain the general higher education entrance qualification.
- "Comprehensive school" *(Gesamtschule)*: Type of school at lower secondary level offering several courses of education leading to different qualifications. It either takes the form of a cooperative comprehensive school or an integrated comprehensive school. In the cooperative type, pupils are taught in classes grouped according to the different qualifications available, whilst in the integrated type, pupils are placed in courses according to level of proficiency in a number of core subjects, but taught together as a year group in all other subjects.
- "Evening grammar school" *(Abendgymnasium)*: Establishment at which adults can attend evening classes to obtain the general higher education entrance qualification.
- "Evening intermediate school" *(Abendrealschule)*: Establishment at which adults can attend evening classes to obtain an intermediate school leaving qualification.
- "Evening secondary general school" *(Abendhauptschule)*: Establishment at which adults can attend evening classes

to obtain a secondary general school leaving qualification.
- "Free Waldorf School" *(Freie Waldorfschule)*: Privately maintained primary and secondary schools, which base their work on the ideological and educational ideas of Rudolf Steiner.
- "Grammar school" *(Gymnasium)*: Type of school covering both lower and upper secondary level (years 5-13 or 5-12) and providing an in-depth general education aimed at the general higher education entrance qualification (Abitur).
- "Intermediate school" *(Realschule)*: Type of school at lower secondary level, usually comprising years 5-10. Provides pupils with a more extensive general education and the opportunity to go on to courses at upper secondary level that lead to vocational or higher education entrance qualifications.
- "Primary school" *(Grundschule)*: Compulsory school for all children from the age of 6. It comprises four years, except in Berlin and Brandenburg, where it covers six years.
- "Schools with different courses of education" *(Schularten mit mehreren Bildungsgängen)*: A category used in school statistics which applies to types of school providing the courses of education otherwise offered by secondary general schools and intermediate schools. Outside statistics, schools with different courses of education also include comprehensive schools which additionally offer the grammer school course of education.
- "Secondary general school" *(Hauptschule)*: Type of school at lower secondary level providing a basic general education, usually comprising years 5-9. Compulsory school, unless the pupil is attending a different type of secondary school.
- "Special needs school" *(Förderschule)*: This type of school provides teaching and care for children who have physical or mental disabilities or are at social risk and cannot be taught successfully enough at mainstream schools. As a rule, special needs schools have the same educational mission as other general schools.

Vocational schools:
- "Full-time vocational school" *(Berufsfachschule)*: Vocational school at upper secondary level offering a wide range of courses of varying duration. A full-time school, it prepares or trains students for a specific occupation at different levels of qualification.
- "Part-time vocational school" *(Berufsschule)*: Vocational school at upper secondary level generally providing part-time instruction in general and vocational subjects to trainees receiving vocational education and training within the dual system.

- "Pre-vocational and basic vocational training year" *(Berufsvorbereitungsjahr/ Berufsgrundbildungsjahr)*: Pre-vocational and basic vocational training year refer to vocational education mostly in the form of full-time schooling which provides basic general knowledge and basic vocational knowledge relating to a certain occupational field.
- "Specialised grammar school" *(Fachgymnasium)*: Type of school at upper secondary level offering a three-year course which includes both the general education subjects taught at upper grammer school level and career-oriented subjects, such as business and technology, but which also leads to the general higher education entrance qualification *(Abitur)*.
- "Specialised upper secondary school" *(Fachoberschule)*: Vocational school at upper secondary level providing two-year courses in various subject areas leading to the entrance qualification for universities of applied sciences. The first year consists of both practical training in the workplace and lessons, whilst the second year covers general and subject-specific lessons.
- "Specialized/vocational academy" *(Fachakademie/Berufsakademie)*: Specialized/vocational academies offer vocational education usually as preparation for an upper-level career. An intermediate school certificate or a recognized equivalent is required for entry. Full-time attendance is for at least two years.
- "Trade and technical school" *(Fachschule)*: Vocational school offering continuing vocational training courses of between one and three years which build on initial vocational training and subsequent employment and lead to a further qualification in a profession.
- "Two-year full-time vocational school" *(Berufsoberschule/Technische Oberschule)*: Vocational school at upper secondary level in a few *Länder*. Offers those who have completed vocational training in the dual system the opportunity to obtain a higher education entrance qualification.
- "Vocational extension school" *(Berufsaufbauschule)*: Vocational extension schools are attended by young people who are undergoing or have completed vocational training or who are or have been employed. On successful completion, pupils earn a certificate equivalent to the intermediate school certificate which qualifies them for entrance to trade and technical schools.

Science expenditure: Science expenditure covers expenditure on research and development (R&D) as well as expenditure on academic teaching and education and other related scientific and technological activities. The latter include, for example, scientific and tech-

nical information services, data collections for general purposes, studies on the feasibility of technical projects (feasibility studies for research projects, however, form part of R&D), and development of a basis for decision-making in politics and industry.

Training contract: A training contract is concluded between the company providing training and the apprentice on the basis of the Vocational Training Act or the Craft Trades Law. The content and duration of training and the examination requirements are set out in the Federal Government's training regulations. The training duration is between two and three years, usually three.

Training occupation: In Germany, training occupations are occupational activities that can be learned under the dual system of vocational education and training. Young people can only be trained in officially recognized training occupations. Official recognition is granted through training regulations under the Vocational Training Act (BBiG) or the Craft Trades Law (HwO). The skills to be learned in vocational training are defined in the Vocational Training Act and the training regulations in question.

Training sector: Official statistics differentiate between the following training sectors in company-based vocational training: trade and industry, skilled trades, agriculture, public sector, home management, independent professions (e.g. lawyers and notaries, patent lawyers, tax accountants, tax agents, auditors, doctors, dentists, veterinarians, pharmacists) and maritime transport.

Unemployed: Unemployed people are jobseekers who are temporarily out of employment or employed for less than 15 hours per week, are looking for employment of at least 15 hours per week that is subject to insurance, and submit to the efforts of the employment office or the local authority to find them work – i.e. are able and willing to work.

Unemployment rate: The number of unemployed people is calculated in relation to the number of civilians in dependent employment or, since January 2009, in relation to the total civilian labour force. The unemployment rate is often referred to as the "national unemployment rate", as opposed to the ILO unemployment rate, which is mainly used for the purpose of international comparison.

University entrance qualification: Admission to a German institution of higher education requires an Abitur or university entrance qualification. To

enrol at a university, students must have a general or subject-restricted higher education entrance qualification or pass an aptitude test or an examination for talented/gifted students. The two latter options, subsumed under "admission without a formal university entrance qualification" in official higher education statistics, are particularly common among students at colleges of fine arts and colleges of music. To enrol at a university of applied sciences, students must have a general higher education entrance qualification or an entrance qualification for universities of applied sciences or pass an aptitude test or an examination for talented/gifted students.

University of applied sciences (Fachhochschule): Universities of applied sciences offer courses with a greater practical focus, particularly in engineering and the areas of business, social studies, design and informatics. Courses are shorter than at universities.

Published by
Federal Ministry of Education and Research (BMBF)
Division for Statistics and International Comparative Analyses
53170 Bonn

Orders
in writing to
Publikationsversand der Bundesregierung
Postfach 48 10 09
18132 Rostock, Germany
Phone: +49 (0) 1805 - 77 80 90
Fax: +49 (0) 1805 - 77 80 94
(14 cents per minute from German landlines, no more than 42 cents per minute from mobile phones)
E-mail: publikationen@bundesregierung.de
Internet: www.bmbf.de

Date: August 2012

Printed by
Druck- und Verlagshaus Zarbock GmbH & Co. KG, Frankfurt

Photo credits
Cover photo, pages 2, 9, 21, 26, 34, 43, 81: Thinkstock; page 15: Royalty-Free/Corbis; page 57: BananaStock Ltd; page 68: Image Source Pink/Getty Images

Editorial office and design
Hochschul-Informations-System GmbH, Hannover (www.his.de)
ICE-Gruppe, Projekt StaGuS
Hans Dicken, Marc Friese, Helena Kopp, Heike Naumann, Viktor Skladovs
Layout: Peter Juzak, Petra Nölle

QR code to the Data Portal
www.datenportal.bmbf.de

Federal Ministry
of Education
and Research