# C 1 EDUCATION AND QUALIFICATIONS

Between 1992 and 2010, Germany saw a 57 percent increase in the number of school-leavers qualified to enter higher education institutions. Within this period, numbers went up from 290,600 to 456,600 (cf. C 1 – 1). According to estimates, these numbers should further increase substantially and reach a level of approximately 520,000 by 2013. This increase is due to a double intake in school-leavers. After 2014, the number of potential third-level students is due to decrease again. Yet, based on current projections, it can be assumed that up until 2025, the number of potential third-level students will still be well above 400,000 – which would largely correspond to 2006 levels.

252,000 foreign students were enrolled at German higher education institutions in the academic year of 2010; in 1997, there had been only 150,000 foreign students (C 1 – 3) in Germany. This increase is largely attributable to *Bildungsausländer*, i.e. students who have a foreign citizenship and obtained their higher education entrance qualification abroad. Their proportion of all students was 8.3 percent in 2011. In contrast, non-mobile students *Bildungsinländer*, i.e. students who have a foreign passport but acquired their higher education entrance qualification in Germany, make up only 3 percent of all students.

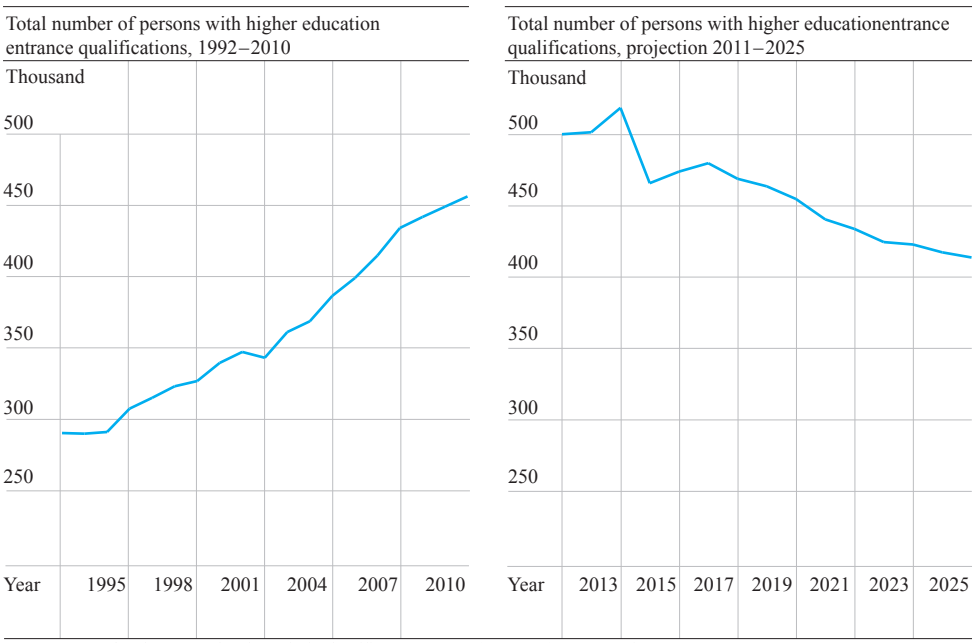
Yet, for a country's research and innovation system it is not solely the number of graduates that is relevant: it is particularly important to also train professionals for academic careers in the MINT subject groups. In this regard, the central subject groups of mathematics / natural sciences and engineering did not develop homogeneously (C 1 – 4). While the proportion of graduates from mathematics / natural sciences subjects has risen slightly from 14.1 to 16.5 percent since 1993, the proportion of engineering graduates has dropped significantly from 25.7 to 16.9 percent.

An international comparison of education levels is always difficult; this is due to differences in educational systems and differences in the weighing of degrees (C 1 – 6). Hence, the ISCED classification, which divides educational attainment into six stages, can serve as a rough frame of reference only. National characteristics and particularities will have to be taken into account in each case. Thus, in Germany for instance, many vocational qualifications are obtained through dual training, while in other countries the same vocational qualification would be acquired via academic degree courses. As a result, the proportion of graduates (ISCED 5A and 6) in the German workforce is 17.6 percent, which is significantly lower than the rate displayed by relevant European comparable countries such as Great Britain (27.2 percent) or the Netherlands (30.4 percent). In return, the (non-academic) further training qualifications of *Meister* (master tradesman) and *Techniker* (technician) play a comparatively important role in Germany. Individuals who have obtained such a further training qualification are regarded as highly qualified – like academics – and account for 10 percent of the total workforce. Finally, 60 percent of economically active people in Germany have an intermediate level of education (ISCED 3 and 4). In other European countries, the proportion of the workforce with intermediate qualifications tends to be substantially lower.

## School-leavers qualified for higher education in Germany

C 1–1

Persons with higher education entrance qualification: school-leavers who have obtained entitlement to enter general or subject-specific tertiary education at a university or a university of applied science.




Source (actual values): Federal Statistical Office (*Statistisches Bundesamt*, various years).
Source (projected values): statistical publications of the Conference of Ministers of Education and Cultural Affairs *(Kultusministerkonferenz)*, in: Leszczensky et al. (2012).

## Share of new tertiary students in the relevant age group in selected OECD countries

C 1–2

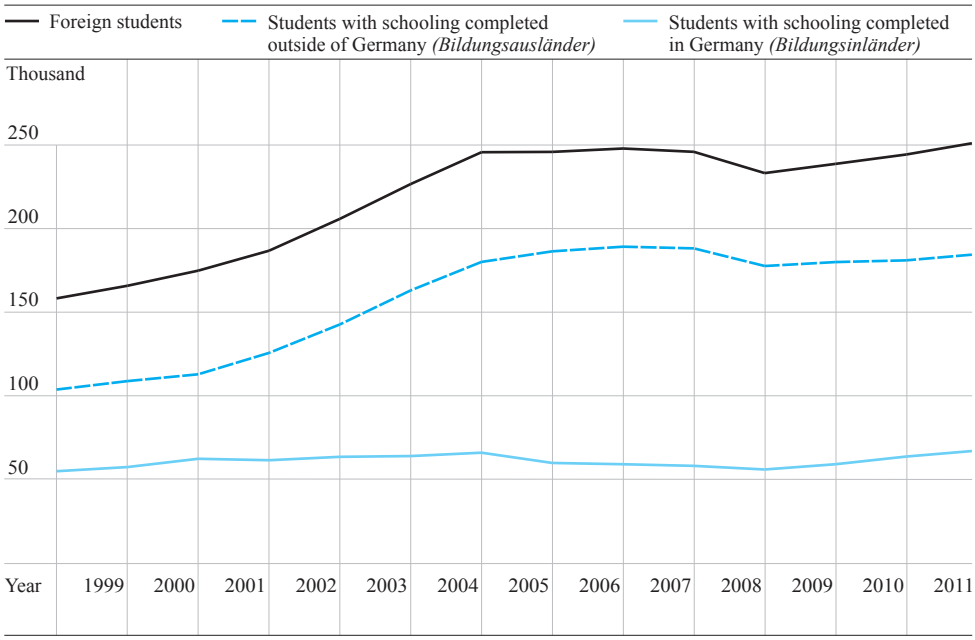
(figures in percent)

Entrance rate: proportion of newly enrolled students of the population in the relevant age group. The entrance rate measures the extent to which demographic potential is exploited for the development of academic human capital.

| OECD Countries | 1995 | 2000 | 2001 | 2003 | 2004 | 2005 | 2007 | 2008 | 2009 |
|---|---|---|---|---|---|---|---|---|---|
| Australia | – | 59 | 65 | 68 | 70 | 82 | 86 | 87 | 94 |
| Canada | – | – | – | – | – | – | – | – | – |
| Finland | 39 | 71 | 72 | 73 | 73 | 73 | 71 | 70 | 69 |
| France | – | 37 | 37 | 39 | – | – | – | – | – |
| *Germany* | *26* | *30* | *32* | *36* | *37* | *36* | *34* | *36* | *40* |
| Italy | – | 39 | 44 | 54 | 55 | 56 | 53 | 51 | 50 |
| Korea | 41 | 45 | 49 | 47 | 49 | 54 | 61 | 71 | – |
| Japan | 31 | 35 | 37 | 40 | 40 | 41 | 46 | 48 | 49 |
| Netherlands | 44 | 53 | 54 | 52 | 56 | 59 | 60 | 62 | 63 |
| Switzerland | | 29 | 33 | 38 | 38 | 37 | 39 | 38 | – |
| Spain | – | 47 | 47 | 46 | 44 | 43 | 41 | 41 | 46 |
| Sweden | 57 | 67 | 69 | 80 | 79 | 76 | 73 | 65 | 68 |
| Great Britain | – | 47 | 46 | 48 | 52 | 51 | 55 | 57 | 61 |
| USA | – | 43 | 42 | 63 | 63 | 64 | 65 | 64 | 70 |
| OECD average | 37 | 47 | 48 | 53 | 53 | 54 | 56 | 56 | 59 |

Sources: OECD: Bildung auf einen Blick (Education at a Glance) – OECD Indicators (various years), in: Leszczensky et al. (2012).

## C 1–3 Foreign students at German higher education institutions




Source: Federal Statistical Office *(Statistisches Bundesamt)*; research in HIS-ICE, in: Leszczensky et al. (2012).

Foreign students are persons without German citizenship. These can be divided into students who obtained their higher education entrance qualification in Germany *(Bildungsinländer)*, and students who obtained their higher education entrance qualification abroad *(Bildungsausländer)*.

## C 1–4 Graduates and subjects studied

| | 1993 | 1995 | 2000 | 2005 | 2007 | 2009 | 2010 |
|---|---|---|---|---|---|---|---|
| **Total number of graduates** | **173,756** | **197,015** | **176,654** | **207,936** | **239,877** | **287,997** | **294,330** |
| Percentage of women | 39.8 | 41.2 | 45.6 | 50.8 | 51.8 | 51.7 | 52.1 |
| Percentage who studied at a university | | 63.6 | 64.3 | 60.8 | 62.4 | 62.0 | – |
| **Linguistics, cultural studies** | | | **29,911** | **35,732** | **43,827** | **53,003** | **54,808** |
| Percentage for that subject group | | | 16.9 | 17.2 | 18.3 | 18.4 | 18.6 |
| **Law, business and social sciences** | **53,170** | **66,538** | **62,732** | **76,566** | **85,838** | **101,391** | **102,315** |
| Percentage for that subject group | | | 35.5 | 36.8 | 35.8 | 35.2 | 34.9 |
| **Medicine/health sciences** | | | **10,620** | **11,817** | **13,358** | **15,142** | **15,222** |
| Percentage for that subject group | | | 6.0 | 5.7 | 5.6 | 5.3 | 5.2 |
| **Agriculture, forestry, nutrition sciences** | **5,477** | **5,527** | **4,761** | **5,312** | **5,661** | **6,363** | **6,215** |
| Percentage for that subject group | | | 2.7 | 2.6 | 2.4 | 2.4 | 2.1 |
| **Art and art-related subjects** | | | **7,630** | **9,678** | **10,399** | **11,541** | **11,820** |
| Percentage for that subject group | | | 4.3 | 4.7 | 4.3 | 4.0 | 4.0 |
| **Mathematics, natural sciences** | | | **21,844** | **30,737** | **38,417** | **47,782** | **48,561** |
| Percentage for that subject group | 14.1 | 14.1 | 12.4 | 14.8 | 16.0 | 16.6 | 16.5 |
| **Engineering sciences** | **44,629** | **47,295** | **35,725** | **34,339** | **38,065** | **47,004** | **49,860** |
| Percentage for that subject groups | 25.7 | 24.0 | 20.2 | 16.5 | 15.9 | 16.3 | 16.9 |

Source: Federal Statistical Office *(Statistisches Bundesamt, Fachserie 11, Reihe 4.2)*, as well as research in HIS/ICE. Figures from Leszczensky et al. (2012).

Subject structure rate and graduation rate: the subject structure indicates the proportion of first-degree graduates who have completed their studies in a particular subject or group of subjects. The graduation rate indicates the proportion of persons of the population in the relevant age group who have newly graduated from a higher education institution.

## Further training according to employment status and qualification level

C 1–5

(figures in percent)

Further education rate: proportion of persons who participated in a further education measure within four weeks prior to the time of the survey.

| | 1996 | 1997–1999 | 2000–2002 | 2003–2005 | 2006 | 2007 | 2008 | 2009 | 2010 |
|---|---|---|---|---|---|---|---|---|---|
| **Gainfully employed persons** | **4.1** | **3.8** | **3.4** | **5.2** | **5.3** | **5.5** | **5.6** | **5.1** | **5.0** |
| low (ISCED 0–2) | 1.1 | 1.0 | 0.9 | 1.3 | 1.3 | 1.1 | 1.3 | 1.0 | 1.1 |
| medium (ISCED 3–4) | 3.8 | 3.4 | 3.1 | 3.8 | 3.9 | 4.0 | 4.1 | 3.7 | 3.4 |
| high (ISCED 5–6) | 6.7 | 6.2 | 5.4 | 10.0 | 10.6 | 10.8 | 10.8 | 9.4 | 9.7 |
| **Unemployed persons** | **5.5** | **4.5** | **4.4** | **2.7** | **2.4** | **2.8** | **3.3** | **3.0** | **3.0** |
| low (ISCED 0–2) | 2.0 | 2.0 | 2.1 | 1.5 | 1.4 | 1.7 | 2.0 | 2.1 | 2.5 |
| medium (ISCED 3–4) | 5.9 | 4.8 | 4.7 | 2.7 | 2.4 | 2.9 | 3.6 | 3.2 | 2.6 |
| high (ISCED 5–6) | 10.7 | 8.5 | 7.9 | 5.2 | 5.0 | 5.5 | 5.2 | 4.8 | 6.7 |
| **Persons outside the labour force** | **4.1** | **3.5** | **3.3** | **1.1** | **0.9** | **0.8** | **0.9** | **0.6** | **0.8** |
| low (ISCED 0–2) | 0.5 | 0.5 | 0.6 | 0.4 | 0.4 | 0.4 | 0.5 | 0.7 | 0.7 |
| medium (ISCED 3–4) | 5.8 | 4.7 | 4.2 | 1.3 | 0.9 | 0.8 | 0.9 | 0.4 | 0.8 |
| high (ISCED 5–6) | 8.9 | 7.4 | 6.3 | 2.1 | 2.0 | 1.7 | 2.0 | 1.1 | 1.1 |

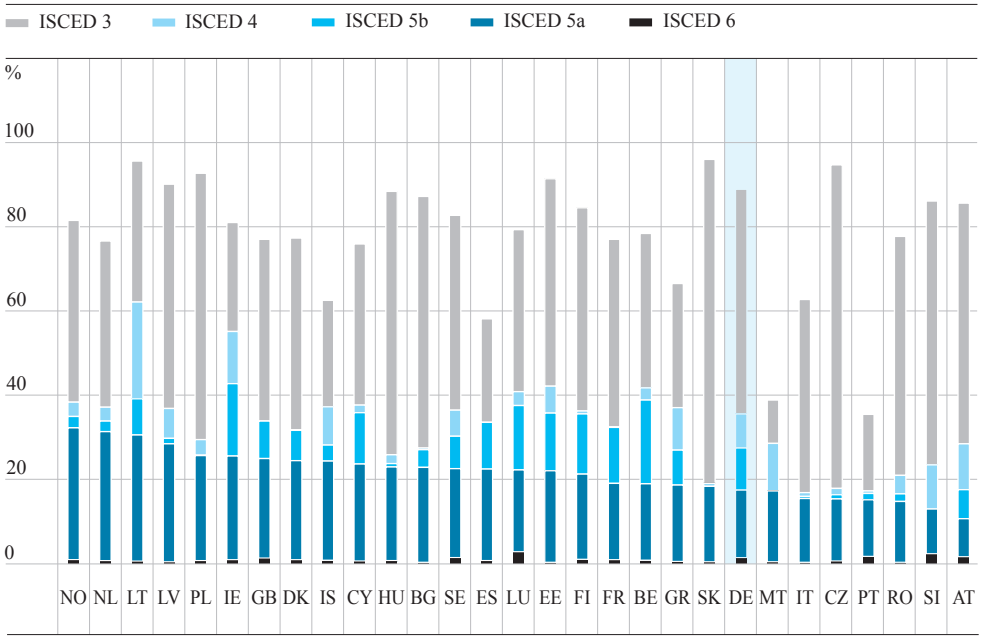
Total population: all persons from the age of 15 to 64 years (excluding school-going juveniles, apprentices and students). For information on ISCED, cf. C 1– 6.
Source: European Labour Force Survey, micro-data 2009 and 2010. Calculations by NIW.

## Qualification level of the European workforce in 2010

C 1–6

(figures in percent)

The classification of qualification levels is based on the International Standard Classification of Education (ISCED).[383]
*ISCED 3:* qualification to study at a university of applied science / university or completion of an apprenticeship
*ISCED 4:* qualification to study at a university of applied science / university and completion of an apprenticeship
*ISCED 5B:* Master craftsman or technician training, or equivalent degree from a university of applied science
*ISCED 5A:* degree from a higher education institution
*ISCED 6:* completion of doctoral degree




Source: Eurostat, European Labour Force Survey. Calculations by NIW. Figures from Leszczensky et al. (2012).