



Includes data
download option
for all figures

2020

Wissenschaft weltoffen

DAAD

Deutscher Akademischer Austauschdienst
German Academic Exchange Service

Facts and Figures
on the International Nature
of Studies and Research
in Germany and Worldwide

DZHW

German Centre for
Higher Education Research and Science Studies



Wissenschaft weltoffen 2020

DAAD Deutscher Akademischer Austauschdienst
German Academic Exchange Service

**Facts and Figures
on the International Nature
of Studies and Research
in Germany and Worldwide**

Published by

DAAD
Deutscher Akademischer Austauschdienst
German Academic Exchange Service
Kennedyallee 50, D-53175 Bonn
Study and Research

DZHW
Deutsches Zentrum für Hochschul- und
Wissenschaftsforschung GmbH
German Centre for Higher Education Research and
Science Studies
Lange Laube 12, D-30159 Hannover
Educational Careers and Graduate Employment

Publisher

wbv Media GmbH & Co. KG
Postfach 10 06 33, D-33506 Bielefeld
wbv.de

Authors

Rachel Estévez Prado (DAAD)
Katharina Fourier (DAAD)
Dr. Ulrich Heublein (DZHW)
Dr. Julia Hillmann (DAAD)
Christopher Hutzsch (DZHW)
Alexander Kupfer (DAAD)
Dr. Jan Kercher (DAAD)
Dr. Christian Schäfer (DAAD)

Data preparation

Configuration and evaluation of the Wissenschaft
weltoffen web information system: Martin Fuchs,
Dr. Ulrich Heublein, Christopher Hutzsch (DZHW)

The content management, the editorial team and the
publisher have compiled the information in this
publication with the utmost care. However, they cannot
exclude the possibility that, in exceptional cases, some
of the information was based on erroneous data or may
have changed after going to press. Therefore, they
assume no liability of any kind for the completeness and
accuracy of the information.

Overall production

wbv Publikation
A division of wbv Media GmbH & Co. KG,
Bielefeld 2020

Layout

zaydesign, Christiane Zay, Potsdam

This publication is available for free download at
wbv-open-access.de

This publication is published under the following
Creative Commons copyright license:
<http://creativecommons.org/licenses/by-sa/4.0/>



All trade, company and brand names used in this work
may be protected by intellectual property rights, even if
they are not identified as such. The use of such names
in this work does not justify unauthorised reproduction
thereof.

Printed in Germany

Number of copies: 700

ISBN: 978-3-7639-6574-8

DOI: 10.3278/7004002sew

Order number 7004002se

Bibliographical information of the German National Library

The German National Library catalogues this publication
in the German National Bibliography; detailed
bibliographical data are available online at
https://www.dnb.de/EN/Home/home_node.html.

SPONSORED BY THE

Federal Ministry
of Education
and Research



Federal Foreign Office

The project on which this brochure is based and the publi-
cation thereof were funded by the Federal Ministry of Edu-
cation and Research and the Federal Foreign Office.

This publication was printed in sustainable ink on 100%
recycled paper using a carbon-neutral process (certified
with the German "Blue Angel" environmental label).



FOREWORD

Internationalisation is one of the prerequisites for the successful development of teaching and research at universities. Therefore, empirical surveys are regularly carried out to assess the international nature of the German higher education system and keep policymakers and society fully informed. In this context, “Wissenschaft weltoffen” has established itself as a central source of information on student and researcher mobility.

Currently, the international academic world faces unique challenges due to restrictions on contact and travel resulting from the COVID-19 pandemic. Innovative ways must be found to ensure cooperation and exchange worldwide. This will help to further increase the importance of issues related to internationalisation.

The strong dynamics of internationalisation processes mean that the concept and data offering of “Wissenschaft weltoffen” must also be further developed on an ongoing basis. For this year’s 20th edition, the DAAD and DZHW have therefore fundamentally revised the publication format. The central aim of this update is to be even more focused when selecting relevant findings and topics on mobility and internationalisation from the wealth of data and information available. At the same time, the goal is also to align the treatment of these central aspects of internationalisation more precisely to the knowledge needs of national and international target groups.

As part of this revision, the previous focus chapter has been replaced by an expansion of the spotlights introduced in the previous two editions, in which particularly relevant aspects are presented in greater depth and, at the same time, as briefly and clearly as possible. Instead of a bilingual edition, from this year on, there will also be a separate German and English edition, as is already the case with the compact edition of “Wissenschaft weltoffen”. This creates more space for data explanations and interpretations, thereby facilitating access to the information offered by “Wissenschaft weltoffen” for both German-speaking and international readers.

The basis of “Wissenschaft weltoffen” will continue to be the central statistical indicators on the international mobility of students, academics and researchers. As usual, these will also be available as data tables for download at www.wissenschaft-weltoffen.de. In addition, we have already begun preparations to

make these data available to you in future on a new, modern and user-friendly website.

In this issue, a special spotlight chapter focuses in detail on the ever-present topics of university teaching under the conditions dictated by the COVID-19 pandemic. It attempts to provide an initial, still incomplete overview of the consequences of the COVID-19 pandemic for worldwide student mobility and offers a cautious outlook on further developments.

The DAAD and the DZHW would like to thank Ms Christiane Zay and the publishing house wbv Media for the graphic design and realisation. We would also like to express our special thanks to the Federal Statistical Office Germany, the science organisations, the research institutes and other institutions that have provided information and data for “Wissenschaft weltoffen 2020”, as well as to the Federal Foreign Office and the Federal Ministry of Education and Research, whose grants have made it possible to finance the publication.

Finally, we would like to express our sincere thanks to Marion Schnepf, the graphic designer of “Wissenschaft weltoffen” for many years, who unfortunately passed away shortly after this issue went to press. With her work, Ms Schnepf has had a decisive influence on the image of “Wissenschaft weltoffen” for almost 20 years since the first issue. We will miss her extremely competent, committed and always friendly cooperation and will always remember her fondly.



Dr. Dorothea Rüländ
Secretary General of
the DAAD



Prof. Dr. Monika Jungbauer-Gans
Scientific Director of
the DZHW

CONTENTS

<p>Summary 6</p> <p>Development of international nature of studies and research in Germany and worldwide</p>		
A INTERNATIONAL ACADEMIC MOBILITY AND TRANSNATIONAL EDUCATION	B INTERNATIONAL STUDENTS IN GERMANY	C GERMAN STUDENTS ABROAD
<p>1 International student mobility</p> <p>1.1 Mobility development and mobility flows 12</p> <p>1.2 Key host countries 14</p> <p>1.3 Key countries of origin 16</p> <p>1.4 Student Mobility in Europe 18</p> <p>2 International mobility and cooperation among academics and researchers</p> <p>2.1 International academics and researchers at public higher education and research institutes 20</p> <p>2.2 European mobility of academics and researchers in the context of ERC funding 22</p> <p>2.3 International co-publications 24</p> <p>SPOTLIGHT European academic collaboration in the Horizon 2020 research framework programme 26</p> <p>3 Transnational education projects of German universities</p> <p>3.1 Locations and forms 28</p> <p>3.2 Features of the German TNE projects 30</p>	<p>1 International students</p> <p>1.1 Mobility trends, first-year students and federal states 42</p> <p>1.2 Regions and countries of origin 44</p> <p>1.3 Types of degree and subject groups 46</p> <p>2 Degree-related mobility</p> <p>2.1 Mobility trends, type of degree, subject group and graduates 48</p> <p>2.2 Regions and countries of origin 50</p> <p>2.3 Applicants 52</p> <p>2.4 Withdrawal rates 54</p> <p>SPOTLIGHT Refugees at German universities – review and outlook 56</p> <p>3 Temporary study-related visits abroad</p> <p>3.1 Mobility trends and subject groups 60</p> <p>3.2 Regions and countries of origin 62</p> <p>3.3 Erasmus visits 64</p>	<p>1 Degree-related mobility</p> <p>1.1 Mobility development and major host countries 66</p> <p>1.2 Subject groups and types of degree 68</p> <p>2 Temporary study-related visits abroad</p> <p>2.1 Mobility development 70</p> <p>2.2 Status of goal achievement 72</p> <p>2.3 Host regions and host countries 74</p> <p>2.4 Erasmus visits 76</p>
SPECIAL SPOTLIGHT COVID-19 and the consequences for international student mobility – initial findings and forecasts 32		

To accompany this publication, further information is available online under the following address:
http://www.wissenschaftweltoffen.de/index_html?lang=en.

This includes additional tables, information on other evaluation options and a comprehensive glossary. You will also find a linked PDF document of this publication. Relevant data sheets on the various figures can be downloaded by clicking the  symbol.

In addition, the DZHW maintains a service point, which advises parties on evaluating this data pool according to their individual requirements and also carries out such evaluations on request. This service is available to universities free of charge.

Please address enquiries to wissenschaft-weltoffen@dzhw.eu

D INTERNATIONAL ACADEMICS AND RESEARCHERS IN GERMANY	E GERMAN ACADEMICS AND RESEARCHERS ABROAD	METHODOLOGY
1 International academics and researchers at German universities	1 German academics and researchers at foreign universities	Methodology 112
1.1 Mobility trends, regions and countries of origin 78	1.1 Salaried academic staff 100	Mapping mobility: data basis and analysis concepts regarding the international mobility of students and academics and researchers
1.2 Federal states and subject groups 80	1.2 Doctoral candidates 102	Glossary 118
SPOTLIGHT International doctoral candidates in Germany 82	1.3 Doctoral students on temporary doctoral-related visits abroad 104	References 119
2 International academics and researchers at non-university research institutes	2 German guest researchers abroad	Structure of the world regions 120
2.1 Mobility trends, regions and countries of origin 88	2.1 Mobility trends, funding organisations and funding groups 106	
2.2 Subject groups and qualifications 90	2.2 Regions and countries of origin and subject groups 108	
3 International guest researchers in Germany	2.3 Erasmus guest lecturers 110	
3.1 Mobility trends, funding organisations and scholarship groups 92		
3.2 Regions and countries of origin and subject groups 94		
3.3 International guest researchers at non-university research institutes 96		
3.4 Erasmus guest lecturers 98		

SUMMARY: DEVELOPMENT OF INTERNATIONAL NATURE OF STUDIES AND RESEARCH IN GERMANY AND WORLDWIDE

The COVID-19 pandemic and its initial consequences for international student mobility

The COVID-19 pandemic, which broke out at the beginning of 2020, has led to a fundamental rupture in the development of the international mobility of students, academics and researchers. Even though the extent and impact of the restrictions cannot yet be accurately assessed, no country or university has remained unaffected, despite regionally varying pandemic progressions (cf also pp. 32–41).

By 1 April 2020, universities in 185 countries had already discontinued their teaching activities. According to a worldwide survey, 60% of universities were closed and 30% were only open to a limited extent by that time. By June 2020, around two-thirds of all universities surveyed had converted their teaching to digital distance learning and around three-quarters of all students were studying via distance learning formats. Contact bans and campus closures led to 89% of the universities reporting impairments in the international mobility of students, even after the first few weeks of the pandemic.

However, the available data also show that thus far, there has been almost no reduction in levels of student interest in studying abroad. For this reason, initial forecasts also assume that after the expected decline in mobility figures, the duration and extent of which will depend on the further development of the pandemic, there will be a rap-

“ Despite the COVID-19 pandemic, there has been little reduction so far in the level of interest in study experiences abroad.

id increase in the number of internationally mobile students. Above all, the fulfilment of postponed mobility intentions will not only help the swift return to the previous mobility levels, but will also mean that they are significantly exceeded. This is due in part to the extremely dynamic development of international mobility in recent years.

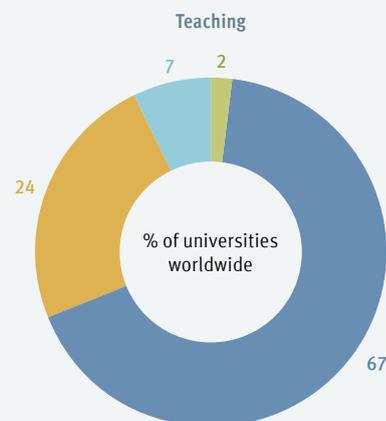
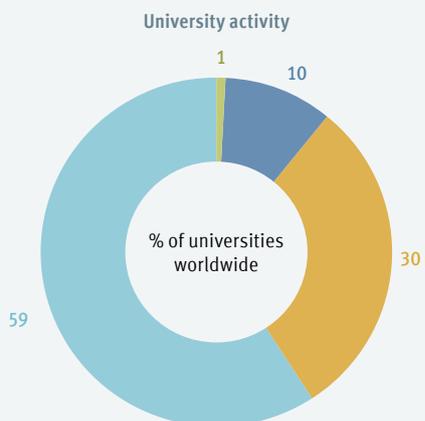
International academic mobility and cooperation (Chapter A)

According to UNESCO, around 5.3 million students were enrolled outside their home country in 2017. This corresponds to an increase of around 217,000 international students, or 4% compared to the previous year. Over the past ten years, the number of internationally mobile students has increased by around 2.2 million, or 71%. The USA is by far the most important host country for international students. Around 985,000 international students were enrolled in the USA in 2017, which corresponds to 19% of all internationally mobile students worldwide. The largest flows of international student mobility therefore lead from China, by far the most important country of origin, to the USA, but also to the other host countries, the United Kingdom, Australia and Japan. In 2017 a total of around 925,000 students from China were enrolled at universities abroad. This alone represents 17% of all internationally mobile students worldwide.

The data situation regarding internationally mobile academics and researchers at the respective host universities abroad is significantly

different. The data situation regarding internationally mobile academics and researchers at the respective host universities abroad is significantly

1 Effects of the COVID-19 pandemic on higher education worldwide in April 2020

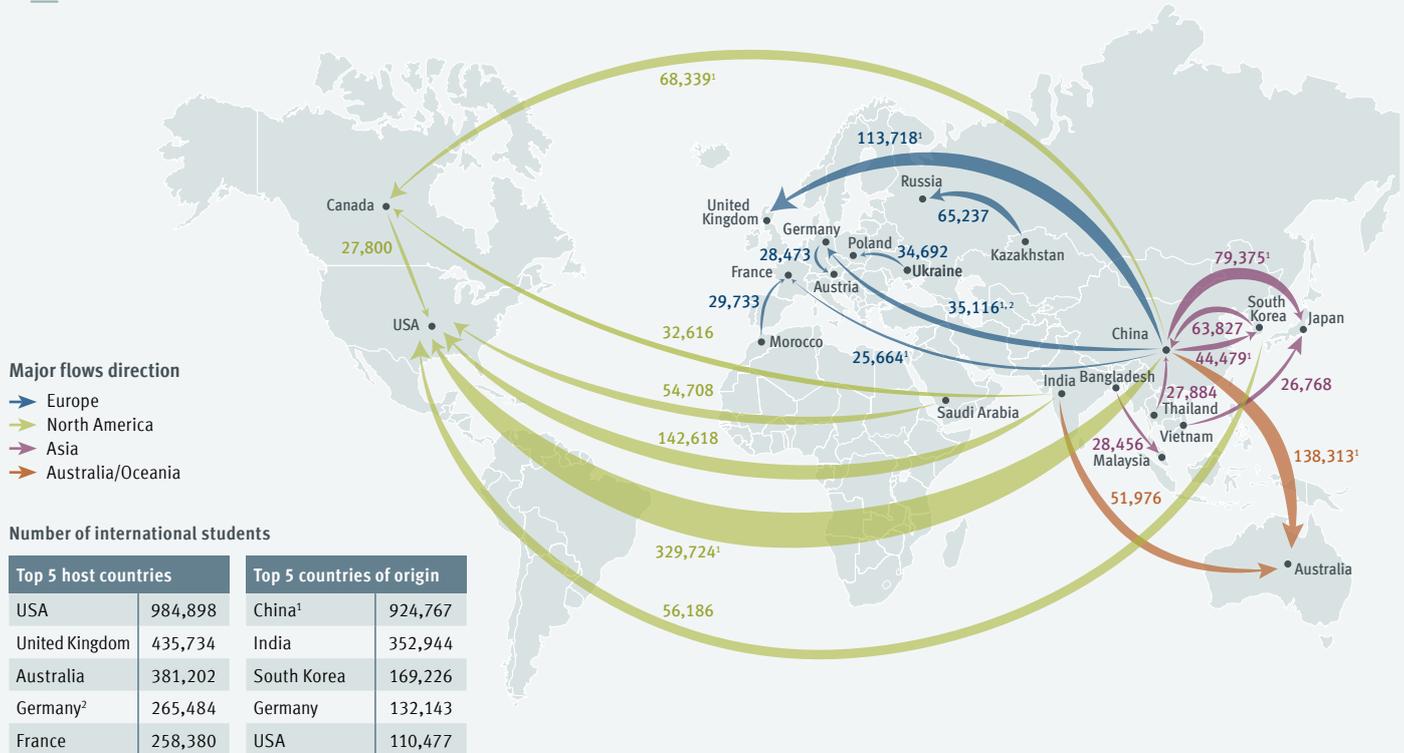


- Institutions open as usual, no measures to combat pandemic in effect
- Institutions open as usual with measures to combat the pandemic in effect
- Institutions only partly open, campus activities greatly restricted
- Institutions closed completely, all campus activities stopped

- No restrictions
- In-person learning replaced by distance learning
- Teaching currently largely suspended, preparing to switch to distance learning
- Teaching currently suspended

Source: International Association of Universities (IAU)

2 Flows of internationally mobile students between host countries and countries of origin, 2017



Figures for absolute numbers of students

Source: UNESCO/Federal Statistical Office student statistics; state-level reporting periods; DAAD calculations

less satisfactory than in relation to internationally mobile students. To date, there are no internationally comparable UNESCO or OECD statistics on this subject similar to those available regarding worldwide student mobility. Looking at the 15 host countries for which data could be collected within the framework of “Wissenschaft weltoffen”, the USA, with around 135,000 international academics and researchers at US universities, proves to be by far the most important host country. It is followed by the United Kingdom (around 65,000), Germany (around 59,000), Switzerland (around 24,000) and France, whose universities and non-university research institutes employ only around 15,000 foreign academics and researchers.

“ The three key host countries for internationally mobile academics and researchers are the USA, the United Kingdom and Germany.

Transnational education designates a sub-area of internationalisation in which universities from one country bear the academic responsibility for study programmes in another country that are aimed at prospective students from that country. German universities are present with transnational education projects worldwide at

64 locations in 36 countries, offering 291 study programmes. The number of students enrolled in German TNEs has risen continuously between 2015 and 2019 from around 26,000 to around 33,000, while in 2020, there was a slight decline in the number of students for the first time (by around 1%). The regional focus of German TNE projects is on North Africa and the Middle East (Egypt, Jordan, Oman, Turkey) and Asia (China, Vietnam, Singapore, Kazakhstan, Kyrgyzstan).

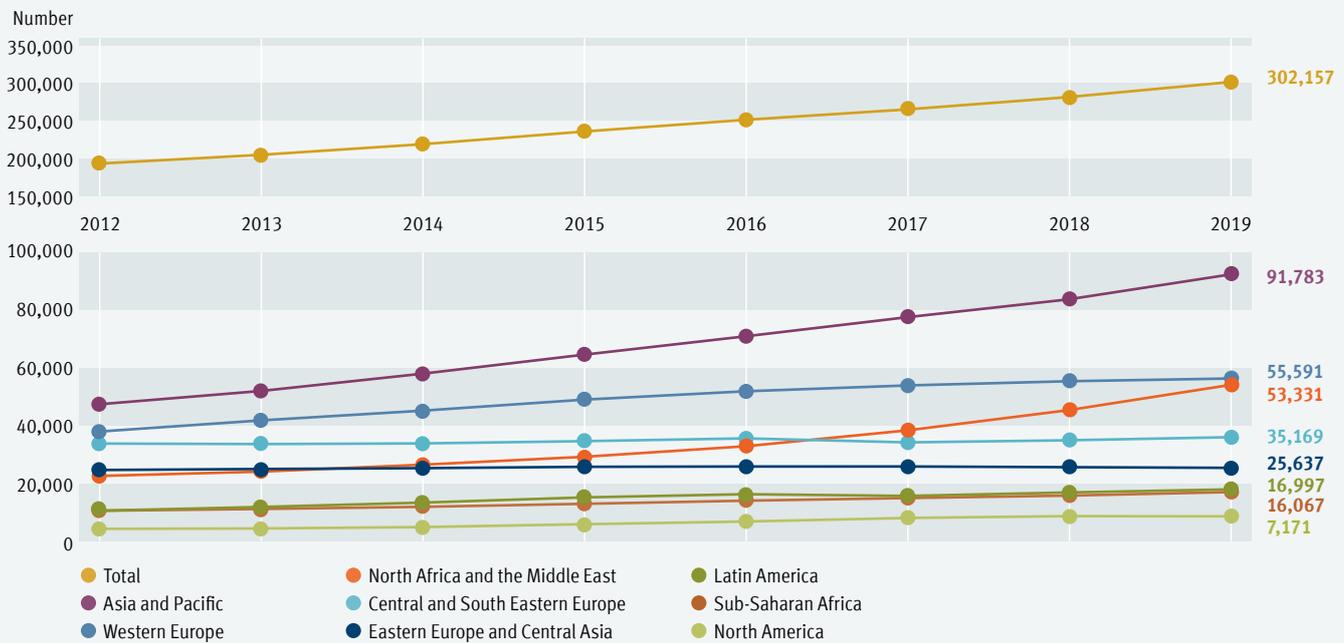
International students in Germany (Chapter B)

The number of international students at German universities continued to rise in the 2019 academic year, with around 302,200 international students enrolled in Germany at that time. This amounts to 7% more than in the previous year. They accounted for 10.5% of all students, the highest percentage ever recorded by international students at German universities. This figure is 12.1% at universities and 7.8% at universities of applied sciences. In 2018, the number of international first-year students also continued to grow by 5% to around 110,000.

The Asia and Pacific region is the most important region of origin for international students, with a share of 30%, followed by Western Europe and North Africa and Middle East, with a student share of 18% each. The number of students from North Africa and the Middle East has grown by 68% in the last three years, which is significantly

SUMMARY: DEVELOPMENT OF INTERNATIONAL NATURE OF STUDIES AND RESEARCH IN GERMANY AND WORLDWIDE

3 International students in Germany by region of origin, since 2012



Figures in absolute numbers

Source: Federal Statistics Office, student statistics

faster than that of other regions. Central and South Eastern Europe and Eastern Europe and Central Asia have not recorded any increase. The key country of origin is China, from where around 39,900 students, or 13% of all international students, have enrolled in Germany. In second and third place are India, with around 20,600 (7%), and Syria, with around 13,000 students (4%). The number of Syrian students has increased by 275% in the last three years.

9% are exchange students or other visiting students not intending to complete their studies in Germany. However, the overwhelming majority of 91% of international students are aiming to gain a degree at universities in Germany. 38% each intend to gain a bachelor's or master's degree. The share of international students among all master's students is around 20%, while 6% of bachelor's programmes come from abroad. Among doctoral students, the proportion of young international academics and researchers is 25%.

The largest group of international students – around 40% – has enrolled in engineering courses. Around 25% are studying a subject related to law, economics and the social sciences. Accordingly, these two subject groups also represent the majority of the approximately 44,000 international graduates (37% and 28% respectively) who graduated in 2018. A total of around 9% of all university graduates come from abroad. They account for 18% of all graduates with a successful doctorate and 16% of all graduates with a master's degree. In the bachelor's programmes,

“ 91% of international students aim to obtain a degree in Germany.”

international graduates account for 5%. The withdrawal rate among international students is still higher than among German students. For international first-year students in 2014 and 2015 in bachelor's programmes, the withdrawal rate was 49% and for first-year students in 2016 in master's programmes, the withdrawal rate was 26%.

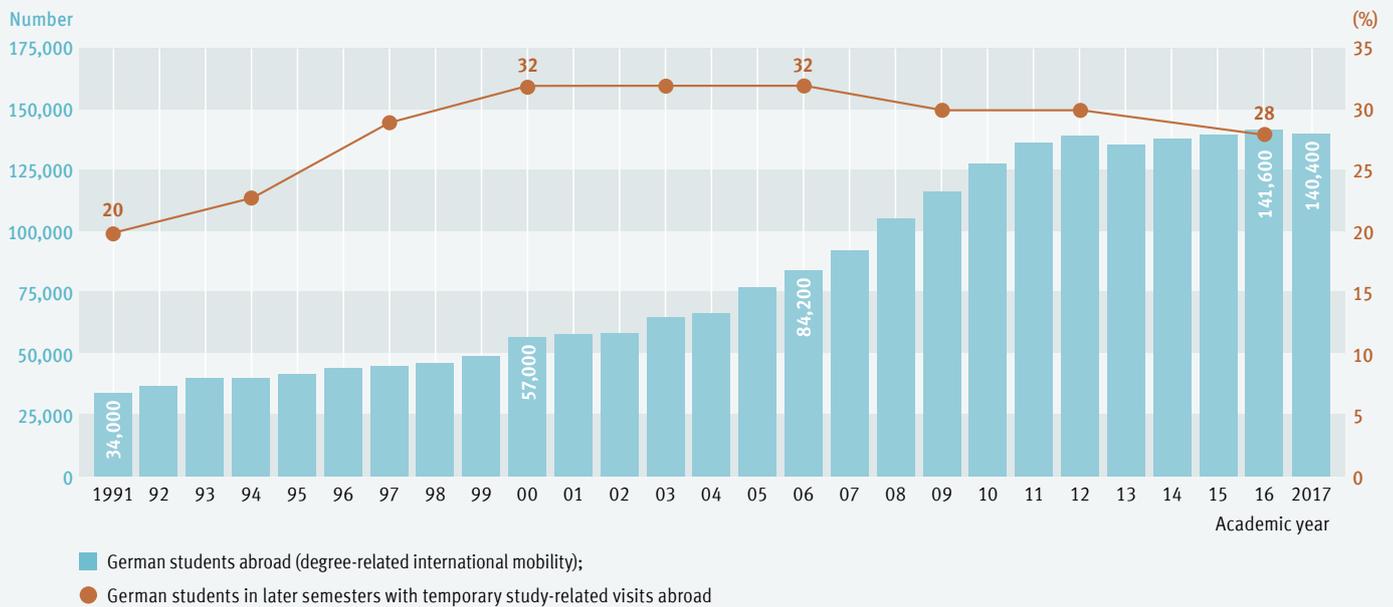
German students abroad (Chapter C)

In 2017, around 140,000 Germans were studying abroad, with the majority of these students (approx. 90%) also aspiring to obtain a degree abroad. The key host countries were Austria (around 28,700 students, or 20% of all international students abroad), the Netherlands (21,900, or 16%), the United Kingdom (15,700, or 11%) and Switzerland (15,600, or 10%). Looking at the development of the overall figures, it becomes clear that in the period between 2002 and 2010, i.e. during the introduction of the new, tiered system of

study, above-average growth rates of 10% and more were achieved in one year. During this period, the share of international students as a proportion of all German students rose from 3.4% to 6.0%. This indicates that the option opened up by

the new study system of following a bachelor's programme in Germany with a master's programme abroad has been, and is still being, used by a large number of students. However, since the completion of the introduction of the new types of degree, the absolute number of German students studying abroad has not risen any fur-

4 Degree-related and temporary study-related international mobility of German students since 1991



Figures in absolute numbers and relative values

Sources: Federal Statistics Office, German students abroad, country-specific reporting periods; DSW social surveys 1991–2016

ther, and their share of all German students has even fallen slightly to currently 5.2% due to the further increase in the number of students in Germany up to 2015.

A similar development can be seen in the number of temporary study-related visits abroad by German students. Between 1991 and 2000, the share of students with temporary study-related stays abroad rose sharply (from 20% to 32%) and stabilised at this level until 2006. In 2009 and 2012 the figure was slightly lower at 30% in each case, falling further to 28% in 2016. In contrast to degree-related international mobility, the introduction of the two-cycle study system with bachelor's and master's programmes was therefore not associated with an increase in temporary study-related mobility. Instead, there was even a certain decline in temporary student mobility during this period.

“ Since 2006, degree-related international mobility has risen sharply, while temporary mobility has declined slightly.

There are also clear differences between the host country preferences and degree-related international mobility, with the United Kingdom in first place (10%), followed by the USA (9%), France and Spain (8% each).

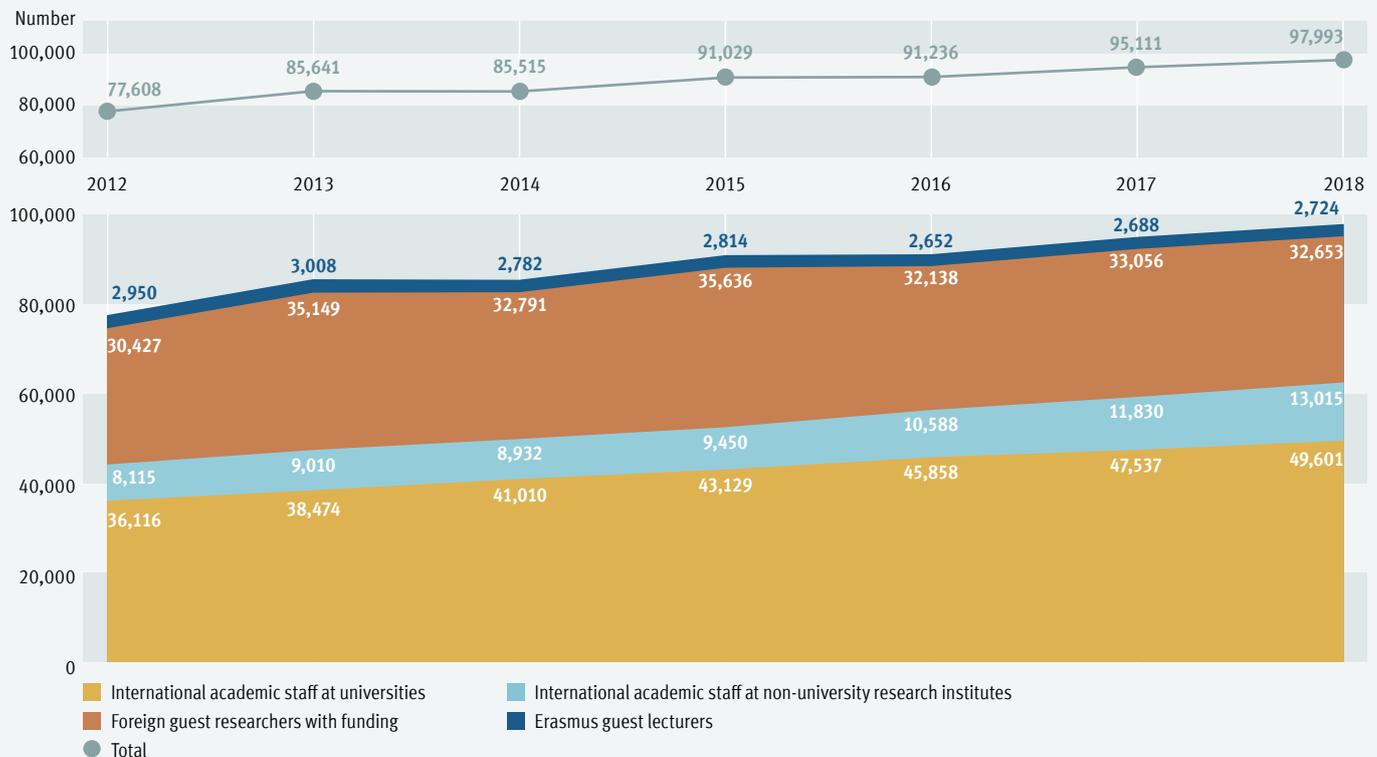
International academics and researchers in Germany (Chapter D)

In 2018, around 49,600 research associates and artistic staff of foreign nationality were employed at German universities, including around 3,400 international professors. International staff thus accounted for 12.2% of the total academic staff, compared to 7.1% of the professors. Since 2007, the number of all international research associates at German universities has risen continuously, by 15% in the last three years alone. In the case of international professors, the increase over the same period was 7%. Western Europe is the key region of origin for international academic staff. 36% of all international academic staff and as many as 67% of international professors come from Western European countries. Italy, China, India and Austria are the key countries of origin. Most international professors come from the two German-speaking countries, Switzerland (9%) and Austria (20%).

In 2018, the four largest non-university research institutes (NURI) employed around 13,000 academics and researchers of foreign nationality. Since 2010, their number has almost doubled (+91%), so that in 2018, around 27% of all academics and researchers came from abroad. EU countries account for 44% of the foreign academics and researchers, while the remaining European countries account for 13%. The key countries of origin are Italy (7%), China and India (6% each). The international academic staff at the NURI are highly qualified, with around 50% of doctoral candidates and one in five research group or institute directors coming from abroad.

SUMMARY: DEVELOPMENT OF INTERNATIONAL NATURE OF STUDIES AND RESEARCH IN GERMANY AND WORLDWIDE

5 International academics and researchers in Germany, by type of mobility since 2012



Sources: Federal Statistics Office, university staff resources and NURI statistics; information from funding bodies; DAAD Erasmus statistics

In addition to employed international academic staff, international guest researchers also conduct research and teach in Germany, with their stay funded by domestic and foreign organisations. In 2018, this amounted to around 32,700 stays. This figure has changed only slightly since 2016. Of the guest stays, 46% were funded by the DFG and 40% by the DAAD alone. With shares of 22% and 21% respectively, Western Europe and Asia and Pacific are the key regions of origin for international guest researchers, while China, India and Russia (with 6% each) are the three key countries of origin. The non-university research institutes also promote stays by international guest researchers. The Max Planck Society and the Helmholtz and Leibniz Associations together have supported the stays of around 10,400 international guest researchers. Such data are not yet available for the Fraunhofer-Gesellschaft.

“ Since 2012, more than 30,000 guest visits by international academics and researchers to Germany have been funded each year.

German academics and researchers abroad (Chapter E)

Only a few countries currently record the number, origin and status of international academics and researchers employed at

their universities. Such data are currently available for Belgium (the Flemish part of the country), the United Kingdom, the Netherlands, Austria and Switzerland. Most German academics and researchers are employed in Switzerland (around 8,600), the United Kingdom (around 5,800) and Austria (around 5,400). This corresponds to the number of German professors, with Switzerland also leading the way with around 1,300, followed by Austria with around 830 and the United Kingdom with around 820. In each of these countries, the proportion of German professors among international professors is higher than the proportion of all German academics and researchers among all international academics and researchers. The highest share of all international professors is reached by German professors in Austria with 71%. In Switzerland, they account for 46% of all international professors.

Around 13,900 young German academics and researchers were enrolled for doctoral studies at foreign universities in 2017. With a share of 78%, the overwhelming majority of them earned their doctorates in Western Europe. Most German doctoral students conducted their research in Switzerland (25%), the United Kingdom

(16%), Austria (15%) and the USA (9%). For quite a few young German academics and researchers studying for their doctorate in Germany, temporary stays abroad are also an important part of their doctoral period. In 2019, 28% of all doctoral students at a German university had completed at least one doctoral-related temporary stay abroad. 55% of these stays occurred in Western Europe. However, the key host countries were the USA (13%), followed by the United Kingdom (9%) and France (8%).

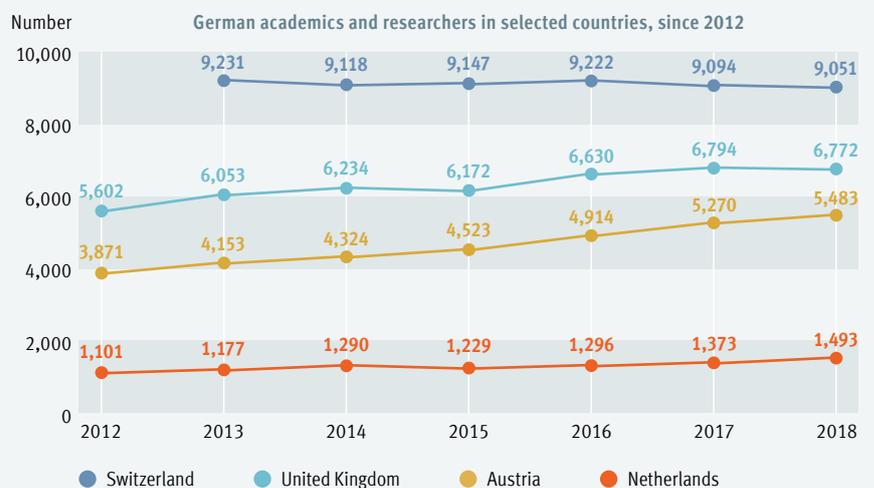
“ In 2017, almost 14,000 Germans were enrolled for doctoral studies at foreign universities.

These and other temporary guest visits by German academics and researchers abroad were funded by domestic and foreign organisations. In 2018, this involved a total of around 14,700 stays. Compared to the previous year, the number of grants was virtually unchanged. Around three-quarters of the stays were funded by the DAAD. Western Europe is the key host region for German guest researchers (27%). Other major host regions are North America and Asia and Pacific (19% each). By far the most important host countries for German guest researchers abroad are the USA (16%), followed by Japan and the United Kingdom (6% each).

* Endnotes

- 1 Including students from Hong Kong and Macau
- 2 Data from the Federal Statistical Office Germany, since unlike other host countries, the UNESCO data for Germany on the countries of origin of international students do not include international doctoral students
- 3 Switzerland has not been a programme country under the Erasmus+ programme since 2014.

6 German academics and researchers in selected countries by type of mobility, 2018



Figures in absolute numbers and %

Sources: National data from respective statistical agencies; data from funding bodies; DAAD Erasmus statistics; DZHW calculations

1 International student mobility

1.1 Mobility development and mobility flows

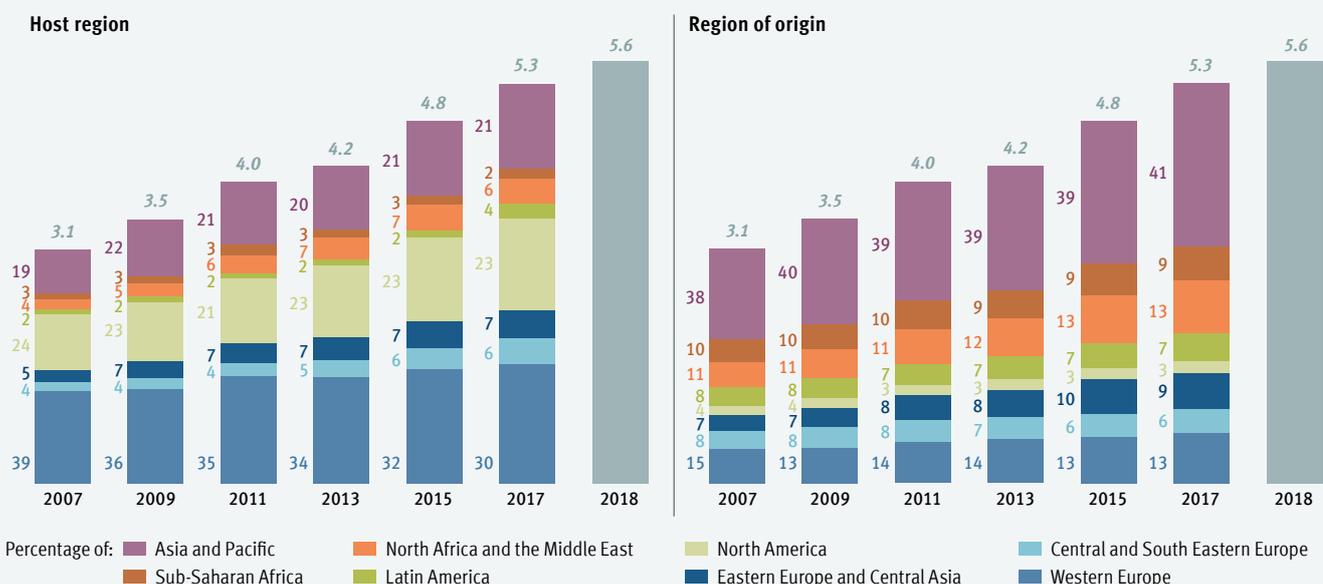
According to UNESCO, around 5.6 million students were enrolled outside their home country in 2018. This corresponds to an increase of around 240,000 international students, or 4% compared to the previous year. Since 2008, the number of internationally mobile students has increased by around 2.2 million, or 68%.⁸ The reasons for this can be roughly divided into push and pull factors. Push factors are understood to be problems in the respective countries of origin that act as a motive for mobility. These include, in particular, political and economic instability, often combined with insufficient capacities of the higher education system, low quality of teaching provision, lack of reputation of universities and research, and low employment opportunities. Inadequate capacities of domestic universities often go hand in hand with a growing population. High study and living costs also act as push factors. Pull factors, on the other hand, are certain characteristics of the respective host countries. Most of these factors are virtually a mirror image of the push factors: political and economic stability, combined with well-developed capacities of the higher education system, high quality teaching, a worldwide reputation for higher education and research, and good employment opportunities.

The importance of most host regions and the regions of origin of international students changed only slightly between 2007 and 2017. Western Europe continues to dominate the host regions (30%), followed by North America (23%) and Asia and the Pacific (21%). However, the share of the Western Europe region has fallen by nine percentage points since 2007. Among the regions of origin, Asia

Methodology

The basis for the collection and processing of data is the “International Standard Classification of Education” (2011), which ensures the international comparability of national data. As a result, there are sometimes deviations from national data, for example also with regard to Germany. When interpreting the data presented here, it should also be noted that the vast majority of student mobility recorded by UNESCO is degree mobility and only a very small proportion is temporary credit mobility. The data are therefore not comparable with national data on temporary study-related student mobility, such as the data on German students presented in Chapter C2. Moreover, the UNESCO statistics are not based on a complete survey of all mobile students worldwide but only on the best possible calculation of these statistics on the basis of the respective available data. Missing data are estimated. The availability and informative value of the data depends heavily on the development of education statistics in the respective countries. Some countries, particularly in South and Central America and Africa, have so far been unable to provide any data on international students at their HEIs. Even the now major host country China has not yet provided UNESCO with data on the origin of international students in China. This inevitably leads to an underestimation of the importance of certain host countries or regions of origin.

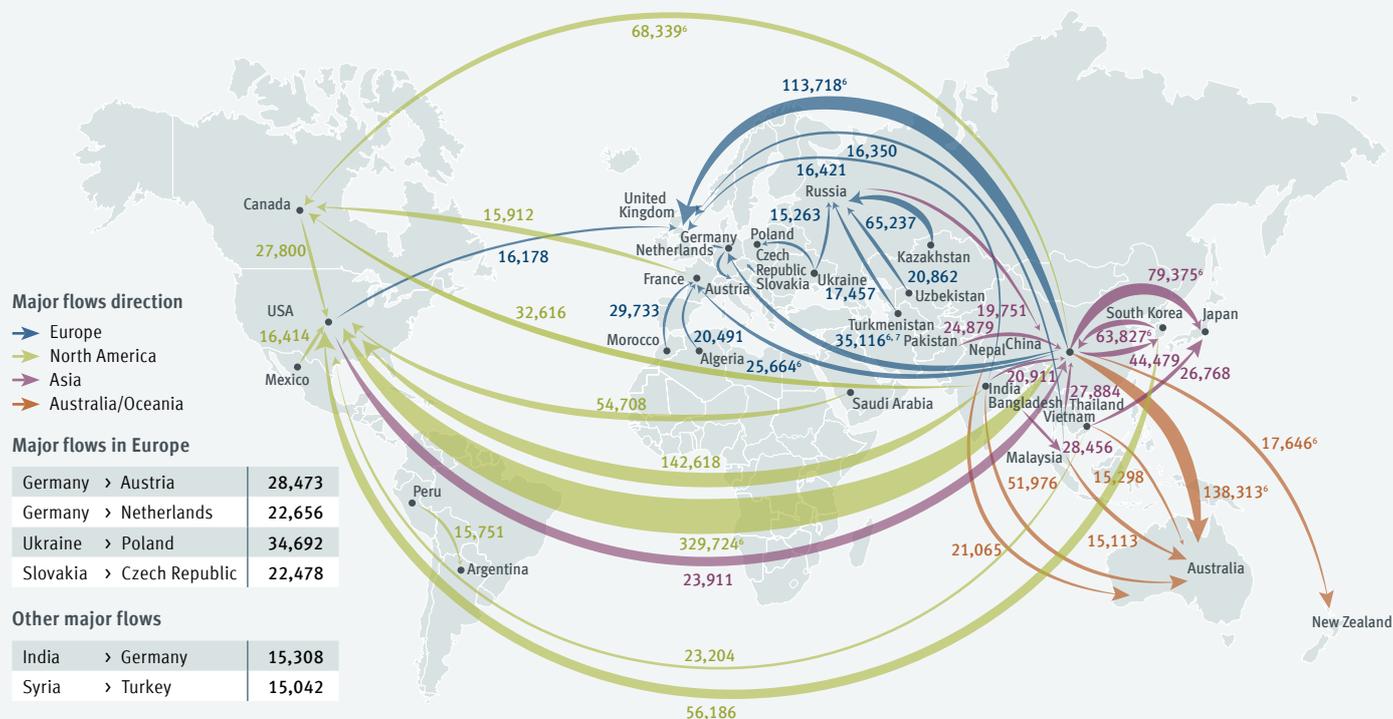
A1.1 International students, by host region and region of origin since 2007^{1, 2, 8}



XX Total (millions)

Source: UNESCO student statistics; state-level reporting periods; DAAD calculations

↓ A1.2 Major flows of international student mobility, 2017^{3, 4, 5}



Figures for absolute numbers of students

Sources: UNESCO student statistics; state-level reporting periods; DAAD calculations; CSIS

* Footnotes

- 1 Deviations in comparison with previous issues of "Wissenschaft weltoffen" and "Wissenschaft weltoffen kompakt" result from updates of the UNESCO database.
- 2 Data on regions of origin without international students in China, as their countries of origin are not yet included in UNESCO statistics and no other data source provides corresponding time series
- 3 For the sake of clarity, only mobility flows with at least 15,000 internationally mobile students are shown.
- 4 To provide as complete a picture as possible of current international student mobility, the UNESCO statistics were supplemented by data from the Center for Strategic and International Studies (CSIS) on the countries of origin of international students in China. These are not yet included in the UNESCO statistics.
- 5 Without Singapore as a host country, since the UNESCO statistics do not include data on the countries of origin of international students
- 6 Including students from Hong Kong and Macau
- 7 Data from the Federal Statistical Office, since the UNESCO data on the countries of origin of international students for Germany – in contrast to other host countries – do not include international doctoral students
- 8 The UNESCO data for the year 2018 were published only shortly before this issue went to press. A detailed mobility analysis of these data by region and country will be published in the compact edition of "Wissenschaft weltoffen" in the spring of 2021.

and the Pacific has for years represented by far the largest share of internationally mobile students (41%), followed by North Africa and the Middle East (13%) and Western Europe (13%).

The largest flows of international student mobility lead from China, by far the most important country of origin, to the USA, Australia, the United Kingdom and Japan as host countries. In 2017, a total of around 925,000 students from China were enrolled at universities abroad.⁶ This alone represents 17% of all internationally mobile students worldwide. Their number has increased by around 7% compared to the previous year and has more than doubled in the last ten years (+109%). Around 330,000 Chinese students were enrolled at universities in the USA alone in the 2017 academic year. This figure represents 6% of global student mobility and has increased by 4% compared to the previous year. UNESCO lists around 138,000 Chinese students in 2017 in Australia (+13%), around 114,000 in the United Kingdom (+7%) and around 79,000 in Japan (+4%). Other significant student mobility flows are from India to the US (143,000, +5% compared to last year), from China to Canada (68,000, +8%), from Kazakhstan to Russia (65,000, -7%) and from South Korea to China (64,000, -10%).

Within Europe, the main student flows are from Ukraine to Poland (35,000, +18%), from Germany to Austria (28,000, +2%) and the Netherlands (23,000, +0%) and from Slovakia to the Czech Republic (22,000, +0%).

1 International student mobility

1.2 Key host countries

When looking at the host countries of international students, a distinction must be made between countries with the largest absolute number and countries with the largest share of international students. For example, the number of international students in 2017 in the USA – by far the most important host country – was around 985,000, but if we look at the US share of the total number of students, the figure is only around 5%. By contrast, only around 11,000 international students studied in Qatar in the same year but the proportion of all students here is 35%. Other countries with high shares of international students are the United Arab Emirates (34%), Singapore (27%) and Australia (22%). By contrast, Japan, which ranks 8th among the key host countries, has only 4% and for Spain, which hosts a similar number of international students to the United Arab Emirates, the figure is just 3%.

“ The diversity of countries of origin is significantly higher in Germany and France than in Australia and the USA.

Depending on the host country, the shares of the key countries of origin in relation to the respective total number of international students vary. For the four key host countries, the USA, the United Kingdom, Australia and Germany, China and India are the key countries of origin with the highest number of international students. While these two countries account for around half of all international students in the USA (48%) and Australia (50%) alone, their share is much lower in Germany (16%) and France (11%). This means that in Germany and France the diversity of the countries of origin is significantly higher than in Australia and the USA. A comparatively low level of diversity can also be observed in the United Kingdom, where Chinese and Indian students make up 30% of all international students. For the USA, Australia and also the United Kingdom, this

↓ A1.3 Host countries with the highest numbers and proportions of international students (2017)¹

Host country	Number of international students	
USA	984,898	
United Kingdom	435,734	
Australia	381,202	
Germany ³	265,484	
France	258,380	
Russia	250,658	
Canada	209,979	
Japan	164,338	
China ²	162,996	
Turkey	108,076	

Host country ⁴	Proportion of international students (%)	
Qatar	35.3	
UAE	33.6	
Singapore	27.3	
Australia	21.5	
New Zealand	19.6	
United Kingdom	17.9	
Switzerland	17.8	
Austria	17.2	
Jordan	13.9	
Canada	12.9	

* Footnotes

- 1 Total number of local students from OECD figures, if not included in UNESCO data
- 2 Including Hong Kong and Macao. Mobility between China, Hong Kong and Macao has been excluded.
- 3 Data from the Federal Statistical Office, since these contain all registered international doctoral students, a total of 26,223 persons, while the UNESCO data, with 19,200 international doctoral students in Germany, are based on underestimates from surveys conducted by the Federal Statistical Office
- 4 Only countries with at least 10,000 international students
- 5 Data from the Federal Statistical Office, since the UNESCO data on the countries of origin of international students for Germany – unlike other host countries – do not include international doctoral students
- 6 Cf Preiss (2012).

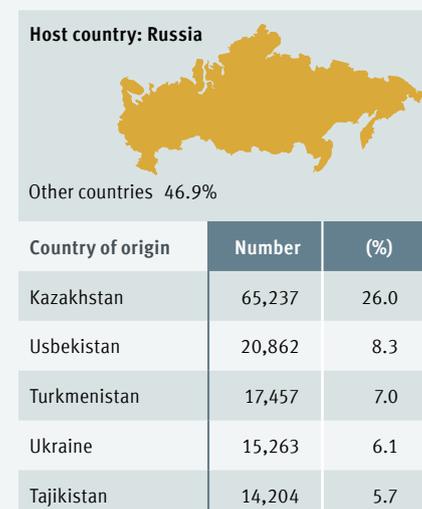
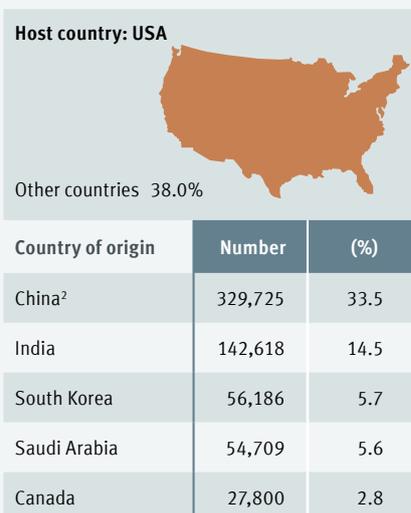
Sources: UNESCO/OECD/Federal Statistical Office; state-level reporting periods; DAAD calculations

means that the enrolment figures for international students are considerably dependent on just one or two countries of origin. In these three countries in particular, this dependency is further exacerbated by the fact that international students pay significantly higher tuition fees than local students and therefore contribute a large share of higher education funding. Sudden slumps in incoming mobility from these two countries of origin can quickly lead to enormous problems for the entire higher education funding in these countries. One example is the huge decline in the number of Indian students in Australia between 2007 and 2011, from over 30,000 students to under 10,000 students.⁶

Apart from China, the major countries of origin of international students in France include French-speaking African countries, such as Morocco, Algeria and Tunisia, which are still closely linked to France through their colonial past. In the case of Germany, the relatively high number of students from Russia can certainly also be attributed in part to close economic and cultural ties. With 17% of all mobile students from Russia, Germany is also their key host country.

In Russia, moreover, the profile of origin of international students is strongly influenced by regional factors. The five key countries of origin – Kazakhstan, Uzbekistan, Turkmenistan, Ukraine and Tajikistan – already account for over half of all international students. In contrast to all other major host countries, China and India, with a combined share of 7%, only play a very minor role here. A similarly strong regional profile of origin of international students can be seen in Australia, where the five key countries of origin are all located in their own region (Asia and the Pacific).

↓ A1.4 Key countries of origin for international students in key host countries, 2017



Sources: UNESCO/Federal Statistical Office student statistics; state-level reporting periods; DAAD calculations

1 International student mobility

1.3 Key countries of origin

The two key countries of origin of internationally mobile students are China, with around 925,000, and India with around 353,000 international students. These are followed – by a wide margin – by South Korea (169,000), Germany (132,000) and the USA (110,000), which is among the five key countries of origin for the first time. It should be noted that these statistics include not only UNESCO data but also, for the first time, data from the Center for Strategic and International Studies (CSIS) on the countries of origin of international students in China. Such data have not been included in UNESCO statistics to date. As a result, some countries of origin show significant increases compared to the previous edition of “Wissenschaft weltoffen” and there are also shifts in the ranking of countries, although largely for statistical reasons.

“50% of internationally mobile students from India are enrolled in North America, while only 26% remain in the Asia and Pacific region.”

When looking at countries of origin, a distinction must also be made between countries with the largest absolute number and countries with the largest share of internationally mobile students. For example, although China is by far the most important country of origin in 2017, with around 925,000 internationally mobile students, its share of all Chinese students is only 2%. In India, the second key country of origin, the share of internationally mobile students is only 1%. By contrast, in some other countries, there are significantly higher proportions of international students in relation to the total number of students. These include in particular countries with low study capacities or an underdeveloped higher education system on a global scale, Luxembourg (61%), Turkmenistan (52%), Cyprus (35%), Slovakia, Azerbaijan and Kuwait (17% each). According to UNESCO statistics, the share of internationally mobile students in Germany is around 4% of all students.¹

↓ A1.5 Countries of origin with the highest numbers and proportions of internationally mobile students, 2017⁴

Country of origin	Number of internationally mobile students
China ⁶	924,767
India	352,944
South Korea	169,226
Germany	132,143
USA	110,477
Vietnam	105,973
France	99,793
Kazakhstan	98,905
Nigeria	91,025
Saudi Arabia	85,364

Country of origin ⁵	Proportion of internationally mobile students (%)
Luxembourg	61.1
Turkmenistan	52.4
Cyprus	35.2
Slovakia	17.3
Azerbaijan	17.3
Kuwait	16.5
Moldavia	16.1
Nepal	16.0
Zimbabwe	14.9
Kazakhstan	13.6

Sources: UNESCO student statistics; state-level reporting periods; DAAD calculations; CSIS

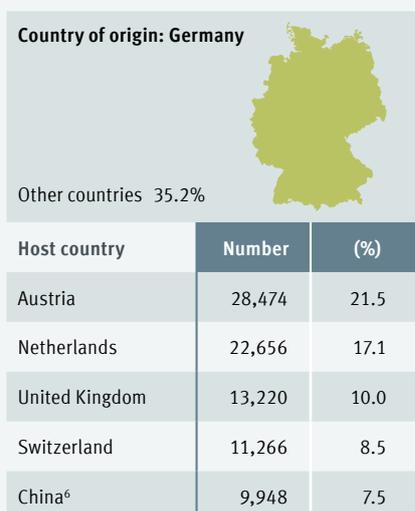
* Footnotes

- 1 This ratio should be understood as the proportion of German students studying abroad for a degree in relation to the total number of German students. The ratio is therefore significantly lower than the ratio of students with temporary study-related visits abroad (cf Chapter C2).
- 2 Cf Barnett et al (2016), Didelon/Richard (2012), Shields (2013), Shields (2016).
- 3 It should be noted, however, that the probability of a high proportion of intraregional mobility increases with the size and number of countries within a region and is therefore highly dependent on the regional classification used. This becomes clear, for example, when comparing the North American region with the Asia and Pacific region.
- 4 To provide as complete a picture as possible of international student mobility, the UNESCO statistics were supplemented by data from the Center for Strategic and International Studies (CSIS) on the countries of origin of international students in China. These are not yet included in the UNESCO statistics.
- 5 Only countries with at least 10,000 international students
- 6 Including Hong Kong and Macao. Mobility between China, Hong Kong and Macao has been excluded.
- 7 Data from the Federal Statistical Office, since the UNESCO data on the countries of origin of international students for Germany – unlike other host countries – do not include international doctoral students

Looking at both the countries of origin with the highest shares and those with the strongest growth in the number of internationally mobile students recorded by UNESCO, it is striking that smaller countries in particular, as well as countries that do not yet have an internationally renowned higher education system, are recording particularly high proportions and growth rates. In countries such as Germany, the USA or the United Kingdom, on the other hand, the mobility rates and growth rates are much lower in comparison. This is partly explained by the fact that UNESCO statistics primarily record degree-related international student mobility (cf p. 112/113). The motives for this form of mobility differ fundamentally from the motives for temporary study-related mobility. While degree-related mobility is usually based on the endeavour to improve the chances for the individual student's life and career plans by obtaining a foreign university degree, temporary study-related mobility is characterised rather by motives such as broadening horizons, language and career promotion.

Historical, linguistic, economic and political factors lead to clear preferences among the preferred host countries of the internationally mobile students.² In some cases, this can lead to a strongly regional orientation of student mobility.³ For example, 80% of German students remain within the Western European region, while 56% of Vietnamese students remain within the Asia and Pacific region. By contrast, a significantly lower proportion of intraregional mobility is evident among Chinese students, only 35% of whom choose a country in the Asia and Pacific region, while 43% choose to study in North America. The same finding is evident among Indian students to an even greater extent: in India, 50% of the students who are mobile abroad are currently enrolled in North America, while the proportion of students in the Asia and Pacific region is only 26%.

↓ A1.6 Preferred host countries of internationally mobile students from key countries of origin, 2017⁴



Sources: UNESCO student statistics; CSIS; state-level reporting periods; DAAD-calculations for individual country level reporting periods; DAAD calculations

1 International student mobility

1.4 Student Mobility in Europe

One of the central objectives of European higher education policy is to increase student mobility in the European Higher Education Area (EHEA). A concrete mobility goal was set for all EU countries in 2011 in the “Council conclusions on a benchmark for learning mobility” and was also adopted for all EHEA countries in the “Bucharest Communiqué” one year later in the context of the Bologna Process. According to this, by 2020 at least 20% of all university graduates in any year in the EU or EHEA countries should have acquired a degree abroad or have gained temporary study-related mobility experience. Temporary study-related mobility is defined as recognised study and placements of at least three months or with at least 15 ECTS credits. Data on this have so far only been published for the EU countries. According to the latest statistics, 11.6% of higher education graduates in the EU were internationally mobile in 2017 within the framework of their studies, in line with the criteria of the EU mobility benchmark. The largest share of these, 8%, was temporary study-related mobility (credit mobility), while the remaining 3.6% was degree mobility. Three years before 2020, the EU was thus still relatively far from achieving its target.¹

A comparison between the individual EU countries shows clear differences in student mobility. Luxembourg students are by far the most mobile, with an overall mobility rate of around 81%. 74% of

Luxembourg students alone are mobile in relation to their degree and spend their entire period of study abroad. Cyprus (37%) and the Netherlands (25%) are considerably further behind, but also have mobility rates that are well above average. There are large differences between these two countries – as in a comparison of all other EU countries – in terms of which type of mobility is preferred by students. While students from Cyprus study abroad almost exclusively for a degree (35%), temporary study-related visits abroad dominate in the Netherlands (23%). All other EU countries are still below the target of 20%, including Germany, which, at around 18%, only just misses the target.

The key student mobility flows within the EHEA in 2017, with over 20,000 students each, go from Kazakhstan to Russia, from Ukraine to Poland, from Germany to Austria and the Netherlands, and from Slovakia to the Czech Republic. The key host country for students from the EHEA is the United Kingdom with around 151,000 international students from other EHEA countries, followed by Germany (110,000), Austria (65,000), France (57,000) and the Netherlands (56,000). The key country of origin of students from the EHEA is Germany with around 109,000 international students in other EHEA countries, followed by Kazakhstan (75,000), Ukraine (74,000), Italy (64,000) and France (60,000).

A1.7 Major flows of student mobility within the European Higher Education Area, 2017²



Figures for absolute numbers of students

Source: UNESCO student statistics

* Footnotes

- 1 It should be noted here that in some countries (including Germany), mobility data are still based on estimates or projections, since their national higher education statistics do not yet provide any corresponding official data. Moreover, no data on temporary study-related mobility are yet available for three countries (Estonia, Ireland, Poland). However, since all EU countries are encouraged to expand their higher education statistics accordingly, the data situation is expected to continue to improve in the coming years.
- 2 For reasons of clarity, only mobility flows with at least 5,000 students are shown.
- 3 Data on temporary study-related mobility are not yet available for these countries.
- 4 To provide as complete a picture as possible of international student mobility, the UNESCO statistics were supplemented by data from the Center for Strategic and International Studies (CSIS) on the countries of origin of international students in China. These are not yet included in the UNESCO statistics.

Looking at the key host countries of the EHEA, it is clear that the EHEA plays a very diverse role as a region of origin for international students in these countries. The countries with the highest share of students from EHEA countries are Austria (87%), the Czech Republic (85%), Denmark (83%) and Poland (82%). Finally, the lowest shares of international students from EHEA countries are found in Russia (19%), France (22%), Turkey (30%), Finland (31%) and Ukraine (32%).

Similarly, there are also major differences within the EHEA with regard to countries of origin. The highest proportions of internationally mobile students in other EHEA countries are found here for Moldova, Cyprus, Slovakia and Azerbaijan, with 97% each. Conversely, there are no countries where the proportion of host countries outside the EHEA exceeds 60%. The highest shares are found in the United Kingdom (57%), Russia (42%), France (40%) and Turkey (36%). While the majority of mobile students from many EHEA countries appear to be studying in other EHEA countries, this does not mean that they represent the majority of international students in these countries. In the key host countries of the EHEA in particular, students from non-EHEA countries dominate.

A1.8 Mobility rates of students within the EU from major countries of origin, 2017

Country of origin	Proportion of internationally mobile students (%)		
	Degree-related mobility	Temporary study-related mobility	
Luxembourg	73.6	6.9	80.5
Cyprus	35.1	1.7	36.9
Netherlands	2.3	22.6	24.9
Finland	3.8	15.2	19.0
France	3.4	14.6	18.0
Germany	5.1	12.8	17.8
Latvia	8.5	7.2	15.7
Sweden	4.6	10.9	15.5
Lithuania	8.6	6.8	15.4
Austria	5.0	9.6	14.5
Malta	9.0	5.4	14.4
Greece	12.1	1.7	13.9
Italy	4.4	9.1	13.6
Slovakia	13.0	0.0	13.0
Czech Republic	3.9	8.0	11.9
Portugal	3.6	7.5	11.1
Denmark	1.5	9.2	10.8
Belgium	3.6	6.2	9.8
Spain	1.9	7.7	9.6
Estonia ³	9.6		9.6
Bulgaria	8.1	1.4	9.5
Hungary	4.1	3.8	7.9
Croatia	3.1	4.6	7.7
Romania	5.8	1.8	7.6
Slovenia	3.6	2.8	6.5
Ireland ³	5.7		5.7
United Kingdom	0.8	3.3	4.1
Poland ³	1.0		1.0
EU total	8.0	3.6	11.6

Percentage of: XX Total mobility

■ Degree-related mobility ■ Temporary study-related mobility

Source: European Commission, Education and Training Monitor 2019

A1.9 Major European Higher Education Area host countries, by proportion of students travelling to study in EHEA and non-EHEA countries, 2017

Host country	Incoming students		Number
	from EHEA countries	from non-EHEA countries	
Austria	64,174	87	9,791
Czech Republic	37,663	85	6,598
Denmark	27,906	83	5,696
Poland	52,706	82	11,219
Switzerland	39,103	73	14,265
Greece	17,584	70	7,483
Romania	18,261	66	9,249
Hungary	17,905	63	10,723
Netherlands	56,069	58	40,220
Belgium	23,344	52	21,634
Italy	44,845	46	52,718
Germany	110,381	43	148,492
Sweden	11,911	41	16,836
Spain	25,645	39	39,282
United Kingdom	151,150	35	284,584
Ukraine	16,801	32	35,967
Finland	7,525	31	16,643
Turkey	32,823	30	75,253
France	56,890	22	201,490
Russia	48,838	19	201,820

Source: UNESCO student statistics; DAAD calculations

A1.10 Major European Higher Education Area countries of origin, by proportion of students travelling to study in EHEA and non-EHEA countries, 2017⁴

Country of origin	Students travelling to study abroad		
	Number	to EHEA countries (%)	to non-EHEA countries
Moldavia	18,369	97	3 492
Cyprus	23,977	97	3 625
Slovakia	31,645	97	3 1,044
Azerbaijan	41,718	97	3 1,483
Belarus	21,831	95	5 1,124
Romania	34,457	94	6 2,058
Bulgaria	23,805	94	6 1,411
Greece	35,018	92	8 2,960
Ukraine	73,540	91	9 7,303
Albania	16,121	91	9 1,501
Austria	17,556	89	11 2,195
Poland	22,506	83	17 4,659
Germany	109,113	83	17 23,101
Italy	63,726	79	21 16,972
Kazakhstan	74,501	75	25 24,404
Spain	31,986	72	28 12,468
Turkey	31,009	64	36 17,356
France	60,063	60	40 39,730
Russia	44,473	58	42 31,937
United Kingdom	18,233	43	57 23,699

Source: UNESCO; DAAD calculations

2.1 International academics and researchers at public higher education and research institutions

The data situation on internationally mobile academics and researchers at the respective host universities abroad is significantly worse than the corresponding data situation on students abroad. To date, there are no internationally comparable UNESCO or OECD statistics on this, unlike for worldwide student mobility. This can be explained in particular by the fact that in many countries, international higher education staff are not recorded in a sufficiently differentiated manner (e.g. with regard to countries of origin). The only exception is international doctoral students, as these are part of the student statistics in most countries. For more comprehensive figures on the international academics and researchers working at universities, it is only possible to draw on statistics from a few selected countries.

The USA is by far the most important host country for international doctoral students. In 2017, around 150,000 young researchers from abroad were aiming to gain a doctorate at US universities. They were followed by the United Kingdom (47,000), France (27,000), Germany (26,000) and Australia (18,000). However, it should be noted that no figures are yet available on international doctoral students in countries such as China, India or South Africa.

As with the key host countries for international students, a distinction can be made between those countries with the largest absolute number and those with the largest proportion of international doctoral students. Particularly high shares are found in Luxembourg (85%), Switzerland (55%) and New Zealand (49%). Obviously, these small and medium-sized countries are not only distinguished by attractive universities with strong research, but also by corresponding doctoral programmes for international doctoral students.

* Footnotes

- 1 Major host countries were defined as those with more than 4,000 international doctoral students according to the OECD or more than 100,000 international students according to UNESCO in 2017. Corresponding national data could be collected for 15 of the relevant 22 countries, but this was not possible for Australia, Canada, China, Malaysia, New Zealand, Russia and the Czech Republic.
- 2 For example, many of the available national statistics are unclear as to which groups of persons or from which career stage academics and researchers are included in the statistics on academic staff. For example, whether or not student assistants or visiting researchers with temporary stays are considered part of the academic staff can have a decisive influence on the respective statistics. For this reason, these two groups have been excluded from the data presented here wherever possible.
- 3 The following groups of persons were recorded (in each case, no full-time equivalents): USA: foreign research and teaching staff without immigrant visas at research universities 2017/18; the United Kingdom: foreign academic staff at universities 2017/18; Germany: foreign academic and artistic staff at universities (without student research assistants) 2017/18; Switzerland: foreign university staff in 2017; France: foreign teaching and research staff at universities and non-university research institutes in 2016/17; Japan: foreign academic staff at universities in 2018; Netherlands: foreign academic staff at universities in 2017; Austria: foreign academics and researchers at universities in 2017; South Korea: foreign professors and academics and researchers in 2017; Spain: foreign teaching and research staff at public universities (PDI/PEI) in 2017/18; Turkey: foreign teaching staff at universities in 2016/17; Sweden, Finland, Italy, Portugal: foreign academic staff in 2016 ("foreign academic staff" according to the ETER definition).
- 4 Only countries with at least 2,000 internationally mobile doctoral students
- 5 International doctoral students in the USA: since the OECD statistics do not contain any data on international doctoral students in the USA, they were supplemented by US data from the database of the "Student and Exchange Visitor Information System" (SEVIS) (survey date: December 2017).
- 6 International doctoral students in Germany: data from the Federal Statistical Office, since they include almost all registered doctoral students (26,223 persons), whereas the (too low) extrapolation from a survey of doctoral students by the Federal Statistical Office is used for the UNESCO data (19,200 persons)
- 7 Including Hong Kong and Macao
- 8 Number of domestic doctoral students from 2016

↓ A2.1 Host countries with the highest numbers and proportions of doctoral candidates (2017)^{4, 5, 6}

Host country	Number of international PhD candidates
USA	149,635
United Kingdom	47,254
France	26,532
Germany	26,223
Australia	18,088
Canada	17,651
Japan	14,375
Switzerland	13,727
Spain	12,854
Turkey	7,626

Host country	Proportion of doctoral candidates (%)
Luxembourg	85.2
Switzerland	55.3
New Zealand	48.9
Netherlands	43.2
USA	42.6
United Kingdom	42.1
France	39.7
Denmark	35.2
Sweden	35.1
Canada	33.4

Sources: OECD student statistics; Federal Statistical Office student statistics; US Department of Homeland Security SEVIS data; country-specific reporting periods; DAAD calculations

China is also a long way ahead of all other countries in terms of internationally mobile doctoral students, with around 87,000 doctoral students from China conducting research at universities abroad in 2017. It was followed by India (30,000), Iran (21,000) and Germany (14,000). The USA, with around 8,000 doctoral students, ranks 10th as the country of origin. The proportion of doctoral students from abroad in relation to all doctoral students in the respective country shows that internationally mobile doctoral students from Germany, at 7% of all German doctoral students, make up a comparatively small share. In developing and newly industrialising countries, this proportion is sometimes much higher, especially in Ecuador (88%), Sri Lanka (74%), Nepal (73%), Saudi Arabia (52%) and Colombia (48%). The strikingly high proportion in Ecuador can be explained by the very limited doctoral opportunities in the country. There are structured doctoral programmes lasting around four to five years at four universities.

In order to obtain a more comprehensive picture of the mobility of academics and researchers than is possible with data on international doctoral students worldwide alone, research was conducted on international academic staff at public higher education and research institutes in major host countries as part of the “Wissenschaft weltoffen” programme.¹ When comparing these national data, it should be noted that the definitions of the academic staff covered or of the universities and research institutes concerned differ from country to country.^{2, 3}

Looking at the eleven host countries for which data could be collected, the USA proves to be by far the most important host country, with around 135,000 international academics and researchers at US universities. It is followed by the United Kingdom (65,000), Germany (59,000), Switzerland (24,000) and France (15,000). Particularly striking here is the low number of foreign researchers in France in direct comparison with Germany, although here – as in the case of Germany – academic staff at non-university research institutes were also included. It is possible that language presents a higher hurdle for recruiting international academic staff in France than in Germany and other countries where, for example, English is often the dominant working language in scientific disciplines.

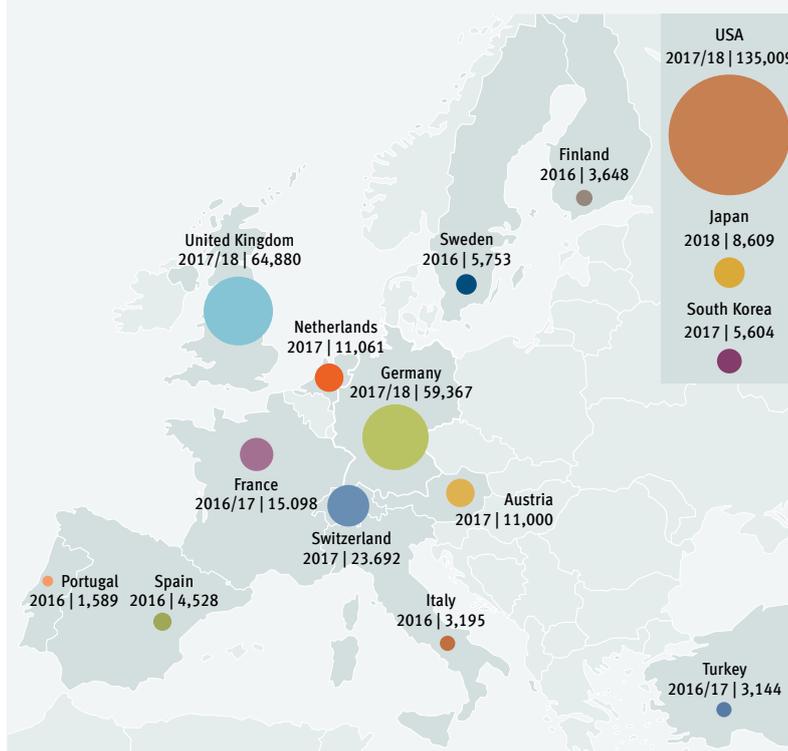
↓ A2.2 Countries of origin with the highest numbers and proportions of internationally mobile doctoral candidates, 2017^{4, 5, 6}

Country of origin	Number of internationally mobile doctoral candidates
China ⁷	87,430
India	29,601
Iran	20,936
Germany	14,345
South Korea	13,970
Italy	13,506
Brazil	8,608
Saudi Arabia	8,329
Canada	8,016
USA	7,644

Country of origin	Proportion of internationally mobile doctoral candidates (%)
Ecuador ⁸	88.2
Sri Lanka	74.0
Nepal	73.2
Saudi Arabia	51.6
Colombia	47.5
Lebanon	36.7
Bangladesh	33.1
Vietnam	32.8
Chile	32.7
Italy	32.4

Source: OECD student statistics; Federal Statistical Office student statistics; US Department of Homeland Security SEVIS data; country-specific reporting periods; DAAD calculations

↓ A2.3 International academics and researchers at public universities and research institutes of major host countries³



Sources: Individual countries' statistical agencies; ETER database (Finland, Italy, Portugal, Sweden)

2.2 European mobility of academics and researchers in the context of ERC funding

The European Research Council (ERC) has been promoting basic research in Europe since its foundation in 2007. Horizon 2020 is the 8th Research Framework Programme (RFP) of the European Union and an important component of the European Research Area, which aims to promote the mobility of European academics and researchers and the exchange of scientific and technological knowledge in Europe.¹

Looking at the number and origin of those receiving funding in this way, it becomes clear that between 2007 and 2018, without exception, the greatest number of funding recipients came from the United Kingdom. In 2019, however, Germany was the top-ranked country of origin of ERC grant holders for the first time (18% of all grant holders), followed by the United Kingdom (16%), France (12%), the Netherlands (11%) and Switzerland (8%). These five countries account for almost two-thirds of ERC grant holders (64%). The fact that the United Kingdom will not have the largest number of ERC grantees for the first time in 2019 is obviously related to the country's withdrawal from the EU but can still be considered surprising. According to the exit agreement, researchers and academics from the United Kingdom can also apply for ERC funding until the end of the Horizon 2020 period (i.e. until the end of 2020) and, if their application is successful, they will also be funded until the end of the project period (i.e. also beyond 2020).

ERC-funded researchers can conduct research at a location of their choice for a maximum period of five years. The grants are thus awarded on an individual basis but do not provide for any ties to a country or institution. An analysis of the countries of origin as well as the research locations of ERC-funded researchers therefore allows a comparison of the attractiveness of different host countries as research locations. The data can also be used to draw conclusions about the

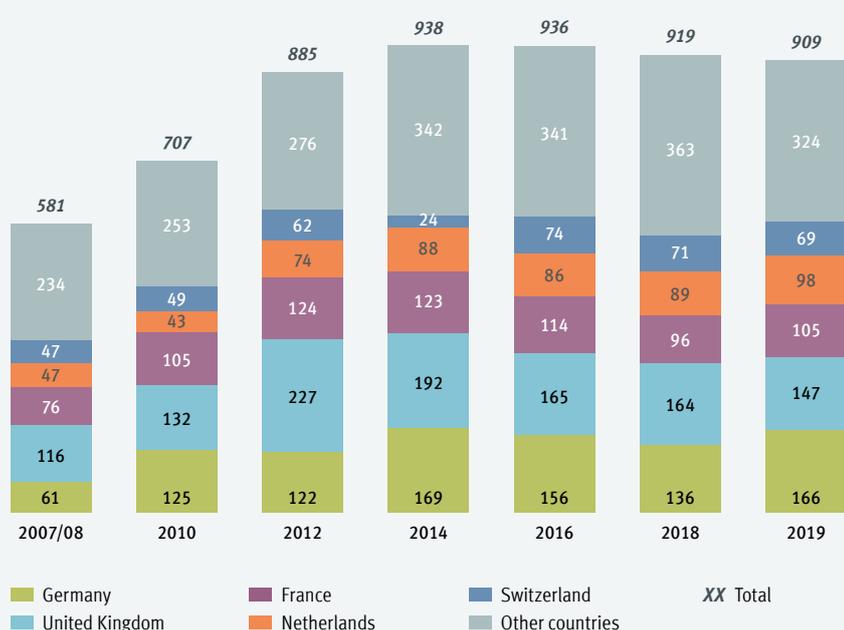
“ Half of all Austrian and Italian ERC grantees conduct research outside their own country of origin.

mobility of top European researchers. However, it should be noted that, in the field of basic scientific research in particular, the choice of country is limited by the equipment and infrastructure required for this purpose, since this is only available in certain countries.

If we first look at the inward mobility of ERC grant holders, i.e. the share of foreign ERC grant holders in relation to the total number of ERC grant holders in the respective host country, Switzerland, with 77%, is clearly ahead of the United Kingdom (64%), Austria (60%) and Sweden (51%). In these countries, the share of foreign ERC grant holders is higher than that of domestic ERC grant holders – a finding that for the previous 7th EURFP (2007–2013) only applied to Switzerland.² Significantly lower shares are found in countries such as Israel (22%) or Italy (12%), while in Germany, as in France, the proportion is 36%.

An interesting finding also emerges from the analysis of outgoing mobility, i.e. the proportion of ERC grantees conducting research outside their own country of origin. This shows that Austria is one of those countries with a particularly high share of both incoming and outgoing ERC grant holders at the same time, with half of all Austrian ERC grantees (50%) conducting research outside their country of origin. They are followed by Italy (49%), Germany (37%), Switzerland (34%) and Spain (30%). In contrast, mobility rates are comparatively low in France (20%), the United Kingdom (19%), the Netherlands (18%) and especially Israel (8%). Overall, however, mobility rates for Horizon 2020 are higher than those of the 7th EU RFP (2007–2013). On average, an increase of around ten percentage points (PP) is recorded, with significant increases in particular in the United Kingdom (+20 PP), Sweden and the Netherlands (+19 PP each) and Belgium (+14 PP).

A2.4 Recipients of ERC funding from major countries of origin since 2007³



↓ A2.5 Proportion of foreign recipients of ERC funding in the EU Research Framework Programme Horizon 2020 (2014–2020), of all recipients of ERC funding by major host countries^{4,5}

Host country	Foreign recipients of ERC funding (%)
Switzerland	76.6
United Kingdom	64.1
Austria	60.1
Sweden	51.1
Denmark	45.1
Netherlands	45.0
Germany	35.9
France	35.7
Spain	29.7
Finland	28.3
Belgium	27.7
Israel	21.5
Italy	11.5

Source: EU office of the Federal Ministry of Education and Research (Bundesministerium für Bildung und Forschung – BMBF); calculations from EU ECORDA database of ERC funding (as of 02/02/2020)

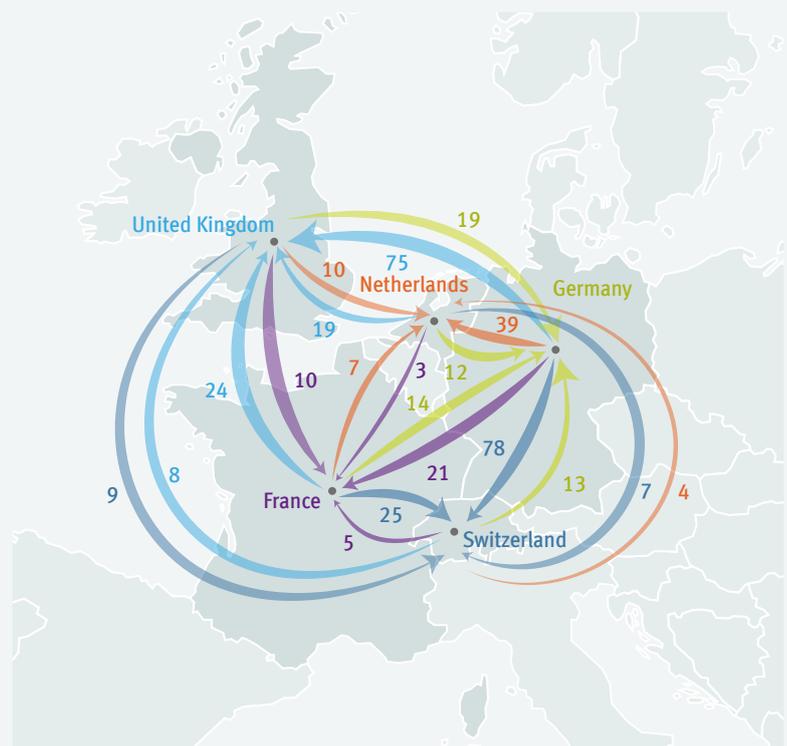
↓ A2.6 Proportion of recipients of ERC funding resident outside their home country engaged in the EU Research Framework Programme Horizon 2020 (2014–2020), by major countries of origin^{4,5}

Country of origin	Recipients of ERC funding abroad (%)
Austria	49.6
Italy	48.7
Germany	36.9
Switzerland	34.1
Spain	30.4
Belgium	27.7
Denmark	26.4
Finland	22.4
Sweden	20.5
France	20.1
United Kingdom	19.1
Netherlands	18.4
Israel	8.4

Source: EU office of the Federal Ministry of Education and Research (Bundesministerium für Bildung und Forschung – BMBF); calculations from EU ECORDA database of ERC funding (as of 02/02/2020)

In conclusion, if we look at the mobility flows between the five countries with the most ERC grant holders during the period under review, the largest outbound flows are to Germany. Of all 402 ERC grant holders who were mobile between the five countries between early 2014 and early 2020, more than half (53%) were mobile German ERC grant holders, most of them choosing Switzerland (19%) and the United Kingdom (19%) as their research location. The United Kingdom (31%) and Switzerland (30%) also attracted the most mobile ERC grant holders from the other four countries.

↓ A2.7 Movements of recipients of ERC funding between leading research member states in the EU Research Framework Programme Horizon 2020 (2014–2020)⁶



Source: EU office of the Federal Ministry of Education and Research (Bundesministerium für Bildung und Forschung – BMBF); calculations from EU ECORDA database of ERC funding

* Footnotes

- 1 The ERC awards grants to young researchers (“Starting Grants”), researchers at the beginning of an independent career (“Consolidator Grants”) and established researchers (“Advanced Grants”).
- 2 See the focus chapter in “Wissenschaft weltoffen 2016”, p. 165.
- 3 Only Starting Grants, Consolidator Grants and Advanced Grants
- 4 Only signed or completed projects (as of 02.02.2020)
- 5 All countries with at least 100 beneficiaries
- 6 Countries with the most ERC-funded projects in the period 01.01.2014 to 02.02.2020

2.3 International co-publications

Scientific co-publications in different countries, which are based on transnational cooperation, are an important indicator for the international networking of academics and researchers. These international co-publication networks can be analysed with the help of international publication and citation databases (see the infobox on the database). According to data from the “Scopus” publication and citation database, 72% of all publications in which academics and researchers in Switzerland were involved in 2018 were written jointly with authors in other countries. Of the countries considered here, only Austria, Belgium (70% each), Sweden, Denmark (67% each) and the Netherlands (64%) have similarly high shares. In contrast, larger countries such as Germany (56%), Canada (56%), France (59%) and the United Kingdom (60%) have slightly lower shares of international co-publications. China (24%) and India (21%) have particularly low shares, but also South Korea (30%), Japan (32%) and the USA (40%).

It is therefore evident that smaller countries in particular have comparatively high shares of international co-publications. An important reason for this is that academics and researchers

in these countries are more dependent on co-authors in other countries for their research than researchers in larger countries, who can also address a larger number of potential co-authors within their own country. Another important finding resulting from the figures presented above is that low shares of international co-publications are not only limited to countries with a rather low level of scientific development, which is usually also associated with limited international networking. In the case of the USA and Japan, these are countries that, despite their highly developed scientific systems, have a comparatively low level of international networking in terms of transnational co-authorships. Co-authors in these countries are obviously more in demand within their own science systems than in other countries. In the case of Japan, this is also shown by a comparatively low increase in international co-publications between 2008 and 2018 (+50%). The corresponding growth rates are higher in all other countries considered here, including the USA (+94%). However, China (+321%), India (+192%) and Denmark (+144%) have seen particularly strong growth in the number of international co-publications.

“ The share of international co-publications is particularly high, ranging from 64% to 72% in smaller countries such as Switzerland, Austria, Belgium, Sweden, Denmark and the Netherlands.

↓ A2.8 International co-publications by selected countries of location of authors, 2008 and 2018

Country of location	2008		2018		International co-publications %
	All publications	International co-publications	All publications	International co-publications	
Switzerland	21,774	13,428	36,771	26,654	72
Austria	11,568	6,510	19,298	13,424	70
Belgium	17,109	9,319	26,607	18,742	70
Denmark	11,516	6,211	22,559	15,133	67
Sweden	19,893	10,464	33,177	22,213	67
Netherlands	29,888	14,591	47,853	30,808	64
United Kingdom	102,095	44,043	151,309	91,061	60
France	67,116	30,871	88,961	52,442	59
Canada	56,472	24,593	83,096	46,624	56
Germany	90,279	40,742	129,968	72,382	56
Italy	53,960	20,693	86,888	43,807	50
USA	356,912	99,779	482,279	193,549	40
Japan	88,375	20,247	95,525	30,539	32
South Korea	36,145	9,616	70,512	20,943	30
China	197,283	27,216	481,578	114,541	24
India	46,565	7,994	113,197	23,327	21

Source: Scopus database (Elsevier); DZHW calculations

If one regards the share of international co-publications of a country as an indicator of the internationalisation of academic collaboration, the question arises as to whether certain countries dominate these relations and which countries are involved.¹ Among the countries considered here, the Netherlands (82%) and Switzerland (88%) show a high concentration on the three key countries of origin where co-authors are based. By contrast, in the USA, this share accounts for just half of all international co-publications (50%), and the diversification of international co-authorship is therefore comparatively high here. In the United Kingdom (58%), Germany (62%), China (63%) and France (64%), too, authors from the three most important countries of residence account for less than two-thirds of international co-publications.

If one determines the five key countries of location of the co-authors for all countries considered here, it becomes clear that the USA is the key location for the co-authors for all of these countries without exception, often by a clear margin to the second key country. This is particularly clear in the case of China and Canada, where authors in the USA account for over 40% of international co-publications. Germany and the United Kingdom are also among the five key locations for international co-authors. In comparison, among the countries considered here, China has so far only been among the five most important countries for co-authors among the Anglo-American countries USA, Canada and Great Britain as well as Japan.

* Footnotes

- 1 See also Zhao, R./Wei, X. (2018).
- 2 The share of the three key countries of location together does not correspond to the sum of the respective shares, as double counting has been avoided. If, for example, academics and researchers in Germany have cooperated with academics and researchers in the USA and the United Kingdom on a publication, this publication is counted for the individual countries, but only once for the share of the top three countries of location.

Database

The international publication and citation database “Scopus” (Elsevier) was used in order to analyse the international co-publications presented here. It contains a large number of the articles published in (English-language) academic journals worldwide. For each article, the country of the institution at which the respective authors were employed at the time of publication is recorded. On this basis, a differentiation can be made between national and international co-publications. However, bibliometric analyses are subject to several important restrictions. In particular, only researchers who have (already) published in academic journals are included, which in turn are recorded by the publication database used here. These are primarily English-language journals from the natural sciences and economics. Researchers from disciplines in which monographs and anthologies also play an important role as publication media (i.e. mainly in the humanities and social sciences) are strongly under-represented.

A2.9 Proportion of key countries of location of academics and researchers’ international co-authors, selected countries, 2018²



Source: Scopus database (Elsevier); DZHW calculations

The European Union’s “Horizon 2020” Research Framework Programme (RFP) is proving to be an important instrument for promoting the internationalisation and international mobility of science and research in the participating countries. In addition to academic excellence, a prerequisite for projects within this RFP is usually the initiation of an international consortium of cooperating institutions. These consortia, which may include companies in addition to universities and non-university research institutes, must each include three independent institutions from three different EU member states or associated states.¹ The implementation of an EU research project therefore requires substantial cooperation with institutions in other countries and is therefore a further indicator of the networking of the participating academics and researchers.

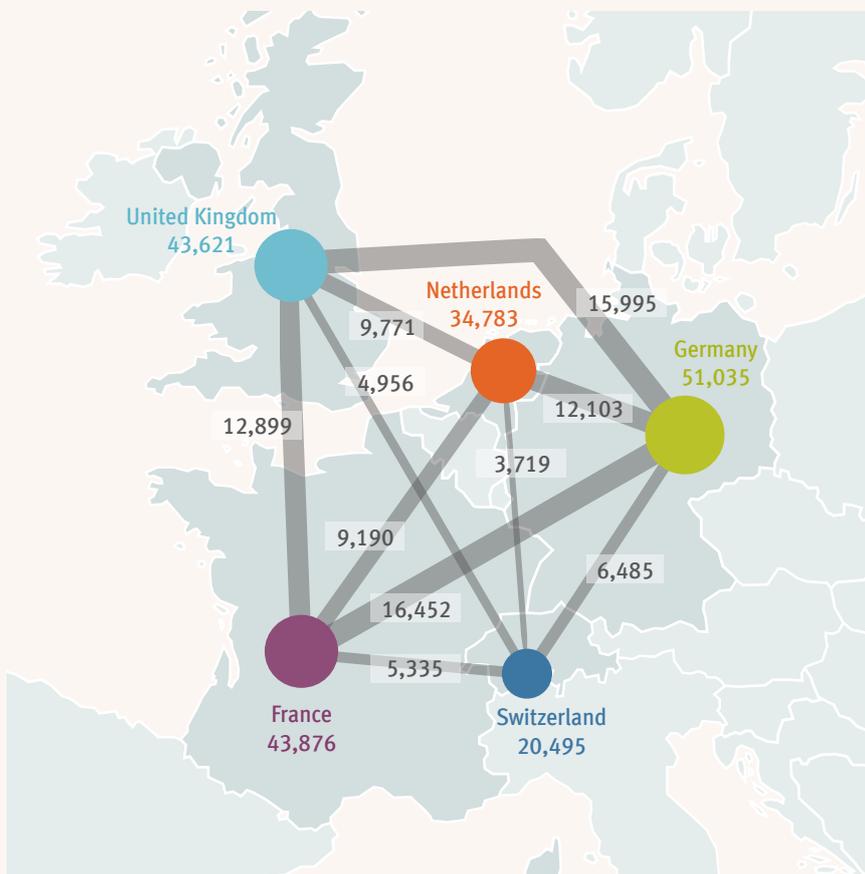
“To date, there are almost 200,000 bilateral cooperation links between Germany, France, the United Kingdom, the Netherlands and Switzerland under Horizon 2020.

However, this potential for internationalisation did not exist in the EU’s RFPs from the outset, and the programmes have changed over time with the development of the research systems and their funding, but also with the process of European integration as a whole.² In addition to the changes in the content orientation of the RFPs, their funding volume has also grown continuously since the first programme. While the funding volume of the first period still amounted to 3.3 billion euros, it already amounted to 56 billion euros in RFP7 and rose again to 80 billion euros for Horizon 2020.

The internationalisation effects for Horizon 2020 (H2020) result from the networking between academics and researchers. For their analysis, the cooperation or, more precisely, the cooperation links of a country within the framework of European research funding

can be used. A cooperation link is a link between two participating institutions from different countries within an EU-funded research project. The more institutions and countries are involved in such research projects, the more cooperation links are created. For example, if an EU-funded project consists of one French and four German institutions, the project will result in four cooperation links between the two countries. The same applies to a project involving two institutions in both countries. In order to be able to assess how balanced the academic networking of two countries

AS1.1 Cooperation between selected countries in the EU Research Framework Programme Horizon 2020 (2014–2020)⁴



Source: EU office of the Federal Ministry of Education and Research; calculations from EU ECORDA database of ERC funding (as of 01/03/2020)

* Footnotes

- 1 The following countries are currently associated with Horizon 2020: Albania, Armenia, Bosnia and Herzegovina, Faroe Islands, Georgia, Iceland, Israel, Macedonia (FYR), Moldova, Montenegro, Norway, Switzerland, Serbia, Turkey, Tunisia and Ukraine.
- 2 Cf David/Gaul (2009).
- 3 The countries with the strongest research performance are the countries with the highest citation impact, cf for example Wissenschaft weltoffen 2016, p. 161, Fig. F81. These are also the five countries with the most ERC funding (cf p. 22/23 in Chapter A2).
- 4 A cooperation link is the connection between two participating institutions from different countries within an EU-funded research project.

AS1.2 Bilateral networks and project participation of major European countries within the EU Research Framework Programme Horizon 2020 (2014–2020)

Country 1	Participants in country 1		Participants in country 2		Country 2
	Number	(%)	Number	(%)	
Germany	8,242	50	8,210	50	France
Germany	8,487	53	7,508	47	United Kingdom
France	6,878	53	6,021	47	United Kingdom
Germany	6,810	56	5,293	44	Netherlands
United Kingdom	5,210	53	4,561	47	Netherlands
France	5,136	56	4,054	44	Netherlands
Germany	4,259	66	2,226	34	Switzerland
France	3,527	66	1,808	34	Switzerland
United Kingdom	3,097	62	1,859	38	Switzerland
Netherlands	2,200	59	1,519	41	Switzerland

Source: EU office of the Federal Ministry of Education and Research; calculations from EU ECORDA database of ERC funding (as of 01/03/2020)

is within the framework of the cooperation projects considered here, it is therefore also necessary to consider the number of institutions involved in both countries.

In the following, the networking between the five European countries with the strongest research performance – Germany, France, the United Kingdom, the Netherlands and Switzerland – that has been achieved within the framework of the previous H2020 funding will be examined as an example.³ This section alone demonstrates the strong impetus that RFP Horizon 2020 is giving to the internationalisation of research in Europe. For example, the number of cooperation links between any one country and the four other countries currently (as of 1 March 2020) ranges from around 20,000 for Switzerland to around 51,000 for Germany. So far, a total of almost 200,000 cooperation links have been established

between the five countries. A look at the bilateral networking between the countries reveals that most links are between Germany and France (16,500) and Germany and the United Kingdom (16,000). There are also well over 10,000 cooperation links between the United Kingdom and France (13,000), and Germany and the Netherlands (12,000).

The balance of these bilateral cooperation links depends in particular on the number of research institutes in the two countries involved. Switzerland, for example, represents a significantly smaller proportion of the participating institutions, especially in the case of collaborations involving institutions in Germany, France or the United Kingdom. In comparison, the project participations in research collaborations between France, the United Kingdom and Germany are relatively balanced.

3 Transnational education projects of German universities

3.1 Locations and forms

Transnational education (TNE) designates a sub-area of internationalisation in which universities from one country bear academic responsibility for study programmes offered in another country that are aimed at prospective students from that country. Thus, TNE primarily refers to the transnational mobility of content, structures and institutions. This is what distinguishes TNEs from the primarily individual international mobility of students and academics and researchers. In 2020, German universities will be present worldwide, with transnational education projects at 64 locations in 36 countries, and with 291 study programmes. Between 2015 and 2019, the number of students enrolled in German TNE projects rose continuously from around 26,000 to 33,000; in 2020, there was a slight decline in the number of students for the first time (of around 400 students, or 1.2%).^{1, 2, 3}

The regional focus of the German TNE projects is on North Africa and the Middle East (Egypt, Jordan, Oman, Turkey) and Asia and the Pacific (China, Vietnam, Singapore, Kazakhstan, Kyrgyzstan). Binational higher education projects are of particular importance here: 39% of the students in German TNE projects are at the German University in Cairo (GUC) alone. In addition, a further 28% of the TNE students are in the North Africa and Middle East region, with 14% at the German-Jordanian University (DJU) in Amman and 7% each at the German University of Technology (GUTech) in Oman at the Muscat site and at the Turkish-German University (TDU) in Istanbul. The projects in China – including the Chinese-German University College (CDHK) and the Chinese-German University of Ap-

Methodology

The data presented here are based on reports from German universities whose TNE activities are currently being funded by the DAAD with funds from the Federal Ministry of Education and Research (BMBF), the Federal Foreign Office (AA) or the Federal Ministry for Economic Cooperation and Development (BMZ), or were funded in a start-up phase. This does not include the overwhelming majority of double (or multiple) degree study programmes between German universities and foreign, in particular European, higher education partners, which are registered with the German Rectors' Conference and which are predominantly geared towards the mutual exchange of students (and which are also funded by the DAAD from federal funds).⁵ Also not covered are TNE activities that were established without DAAD funding. It is therefore not possible to present a complete overview of the TNE involvement of German universities in its entirety here. However, it can be assumed that the data presented here reflect the majority of the overall TNE activities of German universities.

plied Sciences (CDHAW) in Shanghai – together account for around 10% of the students enrolled in German TNE projects.

Since only a few countries have collected TNE data thus far, and there is a lack of data and terminology relating to TNE activities

A3.1 Locations of German universities' transnational education projects with current and former DAAD funding, 2020



Source: DAAD, TNE statistics

internationally, it is not possible to make meaningful comparisons between TNE projects offered by different countries at national and international level. A classification framework for International Programme and Provider Mobility (IPPM), developed on the basis of international consultations and published in 2017, proposes a fundamental distinction between collaborative forms of TNEs – i.e. those that are jointly offered by universities in the country of provider and country of location – and independent TNE formats for which a foreign university is solely responsible.⁴ Within these

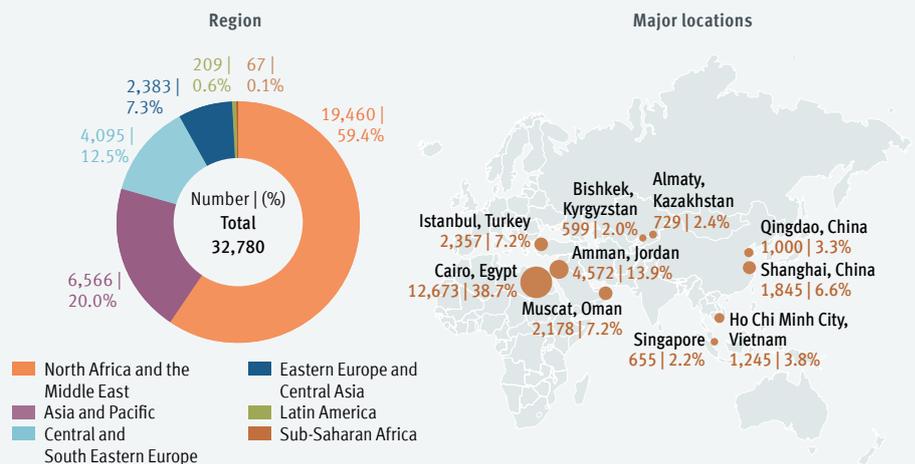
basic categories, a distinction is made between TNE activities at programme level, the establishment of complete TNE institutions and distance learning programmes. The application of the IPPM classification framework to German TNE data shows a continuing dominance of cooperative formats in TNE projects with the participation of German universities. Of all the offers recorded, 94% are within the framework of cooperative study programmes or binational universities. They account for 96% of the total number of enrolled students.

“ German universities are present with TNE projects at 64 locations in 36 countries, with almost 300 study programmes worldwide.

* Footnotes

- 1 Since the data from the German University in Cairo were not yet available in full at the time of going to press, conservative estimates were made for the missing values, assuming that they would remain at the level of the previous year. It is very probable that the actual total figures are slightly higher than the values assumed here.
- 2 An academic year begins in the winter semester and ends in the summer semester of the following year (academic year 2020 = WS 2019/20 and SS 2020).
- 3 Including 176 enrolments in structured doctoral programmes. For methodological reasons, these will not be taken into account in the programme-related evaluations below.
- 4 Cf Knight, J./McNamara, J. (2017).
- 5 Thus, several hundred cooperations with universities in other countries for the award of double or joint degrees are not covered. This category includes the study programmes offered by the German-French University (DFH) and around 100 DAAD-funded study programmes with international double (or multiple) degrees in 2020. Also not counted is an increasing number of around 200 doctorates currently being supervised at binational universities, often with co-supervision in Germany.
- 6 IPPM = International Programme and Provider Mobility

A3.2 Students on German TNE projects currently or previously receiving DAAD funding, by region and major locations, 2020²



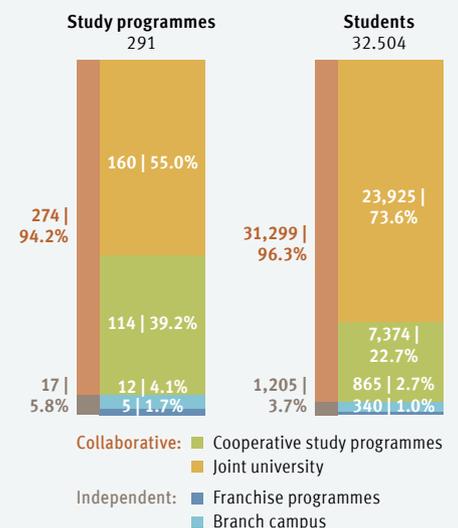
Source: DAAD, TNE statistics

A3.3 Students on German TNE projects currently or previously receiving DAAD funding, since 2015^{1,2}



Source: DAAD, TNE statistics

A3.4 German TNE projects, by joint IPPM classification, 2020⁶



Number and in %

Source: DAAD, TNE statistics

3 Transnational education projects of German universities

3.2 Features of the German TNE projects

Although it is difficult to formulate a clear definition of the German approach to transnational education (TNE) due to the smooth transitions, a number of characteristics can be identified that are generally typical of German TNE projects. In contrast to commercially oriented programmes, such as those developed by universities in Australia, the United Kingdom or the USA, German TNE projects are characterised by the partnership-based pursuit of political objectives and interaction between the following actors:

- the German universities, whose commitment and the assumption of academic responsibility play a decisive role in shaping the field of the German TNE;
- the universities and higher education policy players in the respective host country, whose regional competence is decisive for the successful design of the TNE projects to meet the needs of the target groups;
- the financing ministries (BMBF, AA, BMZ), whose TNE funding addresses issues of foreign science policy, university internationalisation and development promotion in equal measure;¹
- the DAAD, which acts as a mediator and coordinator to ensure that the implementation of the TNE projects meets the interests of all the actors involved.

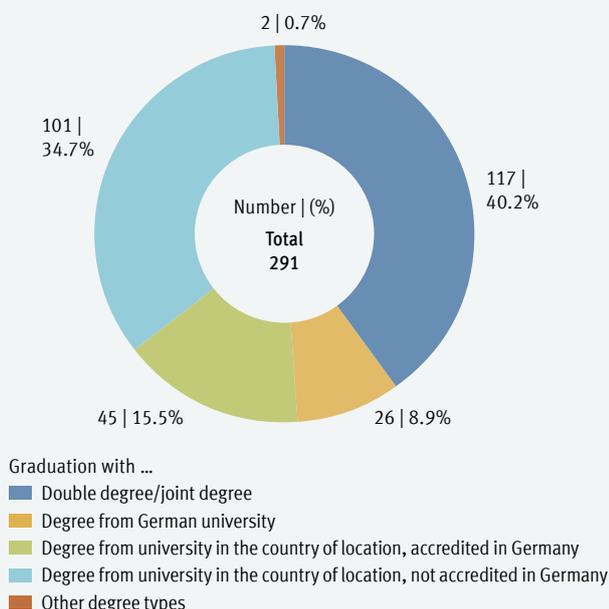
“ German transnational education projects are characterised by flexible instruments, a high degree of responsibility for shaping the future on the part of German universities and a partnership-based approach.

Other important features of the German TNE approach are the academic responsibility of the participating German universities (usually through the application or transfer of quality-checked curricula), the flexible, demand-oriented and partnership-based design of the projects and the strengthening of references to Germany within the curricula. For German universities, the DAAD and funding bodies, the TNE activities are an important instrument for strengthening the ties between TNE students and Germany. In this context,

the political objectives of foreign science policy (focusing on foreign institutions) and development promotion as well as the internationalisation of German universities (focusing on German institutions) complement each other.

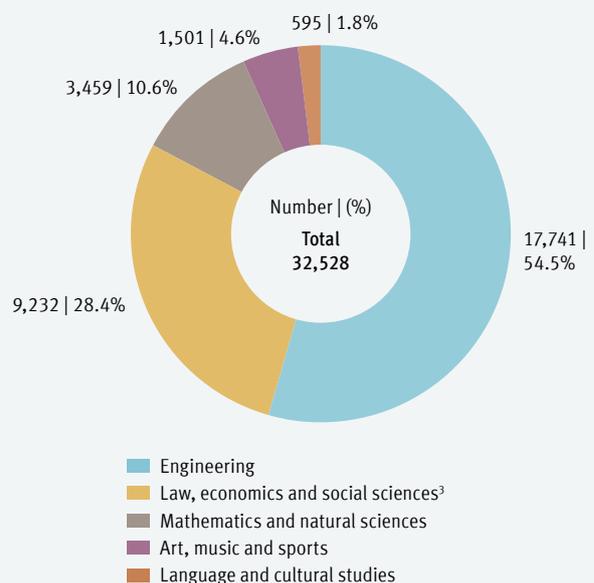
The TNE study programmes support the promotion of a connection to Germany in various ways. First and foremost is the curricular responsibility borne by German universities, which leads to the award of German degrees or a combination of German and foreign degrees. In just under half of the TNE study programmes covered (49%), a German university degree is awarded as the sole degree or in combination with a foreign degree as a double or joint degree.² In addition, there are also programmes offered by TNEs where the degree is awarded by a university in the country

A3.5 TNE study programmes currently or previously funded by DAAD, by nature of connection to Germany, 2020



Source: DAAD, TNE statistics

A3.6 Students on German TNE projects currently or previously receiving DAAD funding, by subject group, 2020



Source: DAAD, TNE statistics

of location but the programme in question is accredited in Germany. This applies to 16% of the study programmes covered here.

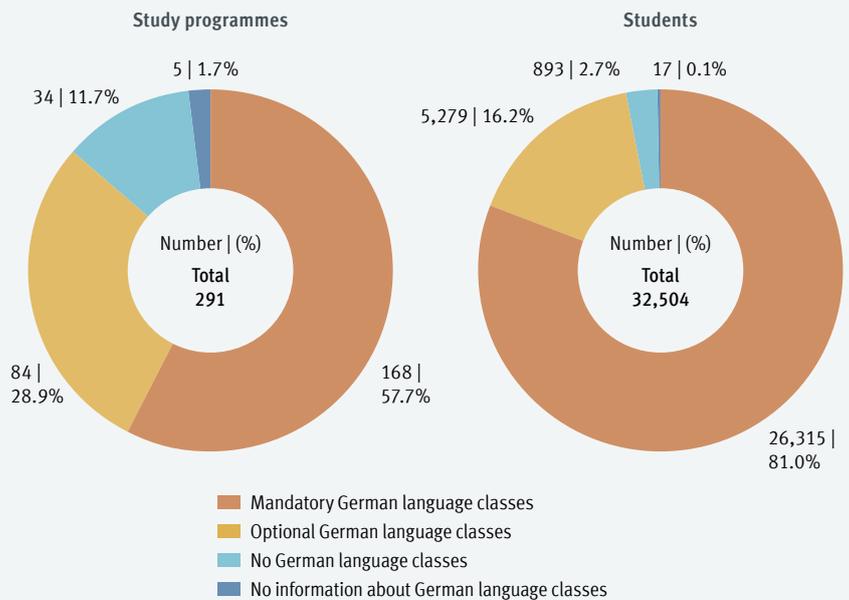
In addition, the clear majority of TNE students (81%) are enrolled in study programmes that provide for compulsory German language instruction, and a further 16% can take advantage of optional German language instruction. The curricula of a good quarter of TNE students (27%) also integrate a compulsory stay in Germany. A further two-thirds of the TNE students (68%) can complete an optional period of stay in Germany as part of their studies, which is fully integrated into the curriculum.

As in previous years, more than half (55%) of all TNE students are enrolled in engineering study programmes. This dominance can be seen as a further characteristic of the German TNE project. The law, economics and social sciences (28%) and mathematics and natural sciences (11%) are considerably further behind. Other subject groups only play a subordinate role. The overwhelming majority (83%) of the students in the TNE projects surveyed aim for an undergraduate degree, i.e. bachelor's or comparable first degree, and 16% for a master's degree. Doctorates are only offered at a small number of the registered TNE institutions and are not fully recorded statistically (1%).

* Footnotes

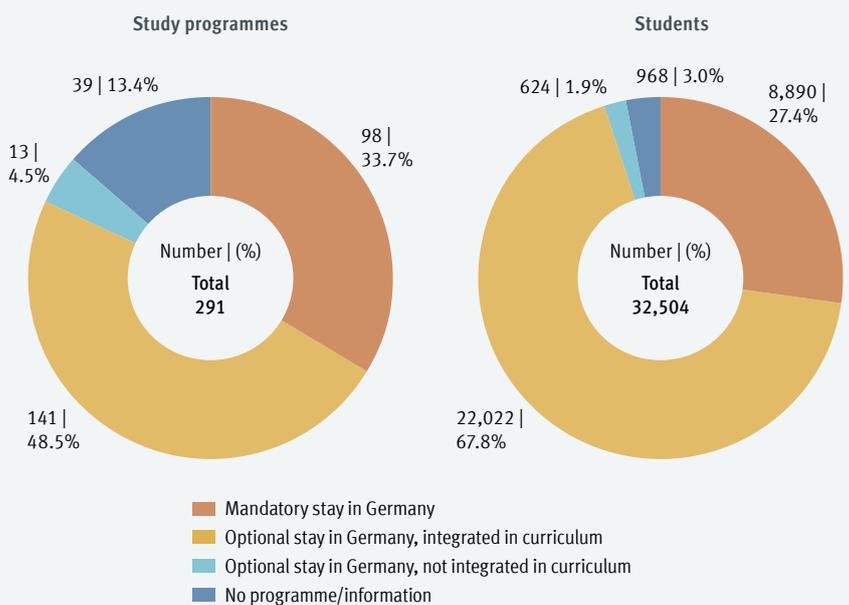
- 1 BMBF: Federal Ministry of Education and Research; AA: Federal Foreign Office; BMZ: Federal Ministry for Economic Cooperation and Development
- 2 In the case of a double degree, each partner university awards its own degree, documented either by two separate certificates or by a joint certificate listing both degrees. In the case of a joint degree, the partner universities award a joint degree, documented by a joint certificate.
- 3 Incl. veterinary/agricultural/forestry/environmental sciences
- 4 Since no differentiated data on student mobility were available for 2020, the data for 2019 are presented here.

A3.7 TNE study programmes and students on TNE study programmes currently or previously funded by DAAD, by provision of German language classes, 2020



Source: DAAD, TNE statistics

A3.8 TNE study programmes and students on TNE study programmes currently or previously funded by DAAD, by option of mobility to Germany, 2019⁴



Source: DAAD, TNE statistics

On 9 January 2020, the World Health Organization (WHO) announced the discovery of a novel coronavirus: SARS-CoV2, which causes the infectious lung disease COVID-19. Starting in the city of Wuhan in China, where the first cases of COVID-19 had emerged, the novel virus spread to more and more countries around the world in the following weeks and months. On 11 March 2020, the WHO officially classified the spread of the virus as a pandemic and issued a recommendation for countermeasures by governments. As a result, most countries imposed extensive restrictions on public life from March onwards, including curfews, contact restrictions and the closure of shops, restaurants, libraries and other public places. In most countries, the measures also included the temporary cessation of classroom teaching and other classroom and counselling services at universities and the closure of university premises for students and staff. This posed a unique challenge to the international higher education world, affecting both the regular operation of universities in their own countries and, due to worldwide travel restrictions, international cooperation between universities as well as the cross-border mobility of students, academics and researchers.

“ According to UNESCO, schools and universities in 185 countries were closed on 1 April 2020, affecting 89% of all pupils and students worldwide.

Against this background, the following special chapter of “Wissenschaft weltoffen” will provide an initial overview of the consequences of the COVID-19 pandemic for global student mobility and a cautious outlook on further developments. (This presentation must be limited to student mobility, since as yet, no findings on the effects on the international mobility of academics and researchers are available). Data from various national and international survey studies will be used. Since a large number of analyses and forecasts on the (possible) effects of COVID-19 in higher education were already published in the first months since the beginning of the pandemic, only a selection of the initial findings can be presented here. The focus here is on results which, due to their survey and analysis methodology (sample, survey period, questionnaire content), are highly informative and allow conclusions to be drawn about transnational effects and the major host countries or countries of origin of international students. In the first section, this analysis focuses on the effects of the COVID-19 pandemic on the teaching and everyday life of students worldwide, which are also closely related to the international mobility of students. The second section looks at the direct consequences of the pandemic for international student mobility. Finally, the third section provides an initial cautious outlook on possible medium and long-term effects of the pandemic on the internationalisation of higher education worldwide.

The development of the COVID-19 pandemic and its consequences for university operations

A central feature of the COVID-19 pandemic was and still is the enormous dynamic of its development. It is therefore difficult to give an initial overview without limiting the period to which this overview refers. In the following, therefore, mainly those survey studies are used as a basis for the analysis that were carried out from mid-March at the earliest. It should be noted that the findings of the individual studies can only be valid for their respective survey periods (cf also Figure AS2.14).

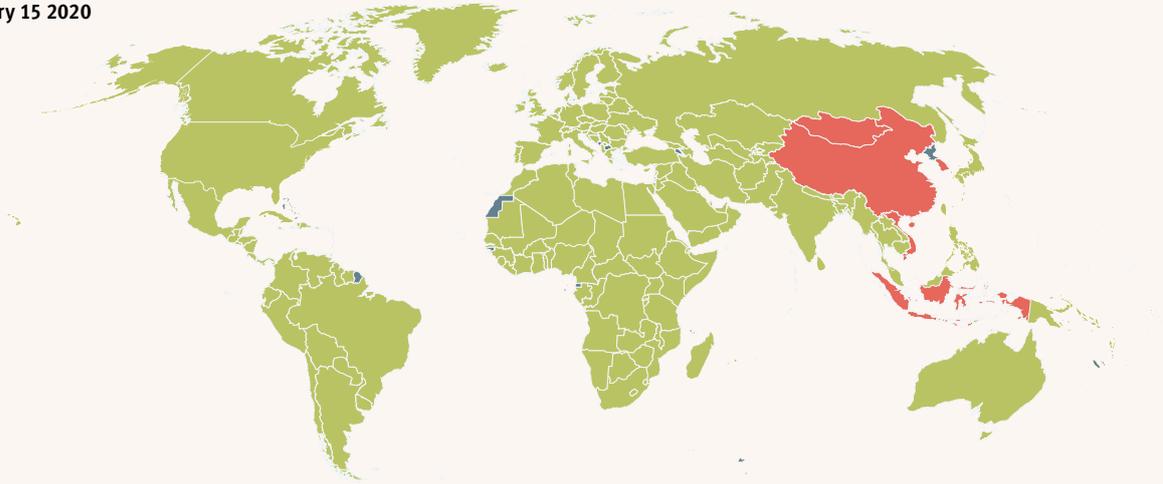
The dynamics of the COVID-19 pandemic can be very clearly illustrated by the worldwide school and university closures that occurred as a result of the pandemic from the end of January 2020 (cf Figure AS2.1). In mid-February, such closures initially only affected China and several neighbouring countries. However, following the WHO pandemic warning on 11 March, schools and universities were closed in more and more countries worldwide until an almost complete global lockdown was finally achieved in April.¹ According to UNESCO, schools and universities in 185 countries were closed on 1 April 2020, affecting 1.5 billion pupils and students, or 89% of all pupils and students worldwide.

The International Association of Universities (IAU) conducted a worldwide survey of 424 universities in 109 countries from the end of March to mid-April 2020.² On the basis of this survey, initial trend statements can be made on the development of the teaching sector. Just under 60% of the universities surveyed by the IAU stated that their university was closed at the time of the survey and that campus operations had ceased (cf Figure AS2.2). A further 30% reported that their university was only open to a limited extent and that campus operations were severely impaired. Only 11% of the universities were still open at the time of the survey, but almost all of these (10%) had already taken initial measures to combat the pandemic. It can therefore be assumed that the operation of universities was also restricted even more at these universities following their participation in the IAU survey. A regional comparison of the responses reveals that the proportion of campus closures in Africa (77%) was much higher. In spite of the low infection rates in Africa at the time of the survey, the universities surveyed there evidently discontinued face-to-face teaching more quickly than universities in other regions of the world.

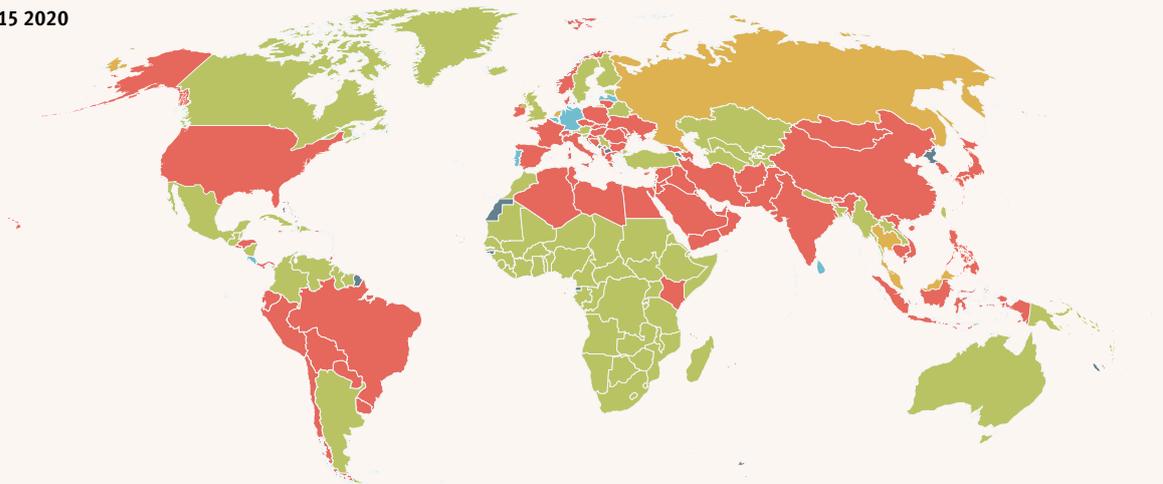
The impairment of university operations by the COVID-19 pandemic is also reflected in the statements of the universities surveyed by the IAU on teaching operations (cf Figure AS2.3). Two-thirds of the universities stated that attendance-based study had already been converted to distance learning, and a further quarter were in the process of preparing a corresponding conversion at the time of the survey. At 7% of the universities surveyed, attendance teaching had even been completely discontinued without any simultaneous conversion to distance learning or preparations being made for it. Here, too, there are sometimes clear differences between the world

AS2.1 School and university closures worldwide between February 15 and April 15

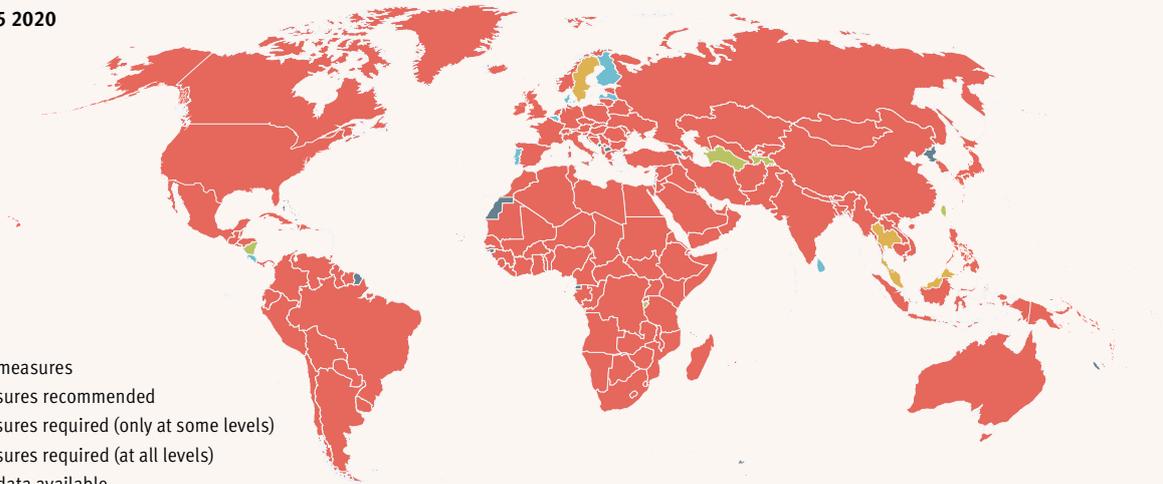
February 15 2020



March 15 2020



April 15 2020

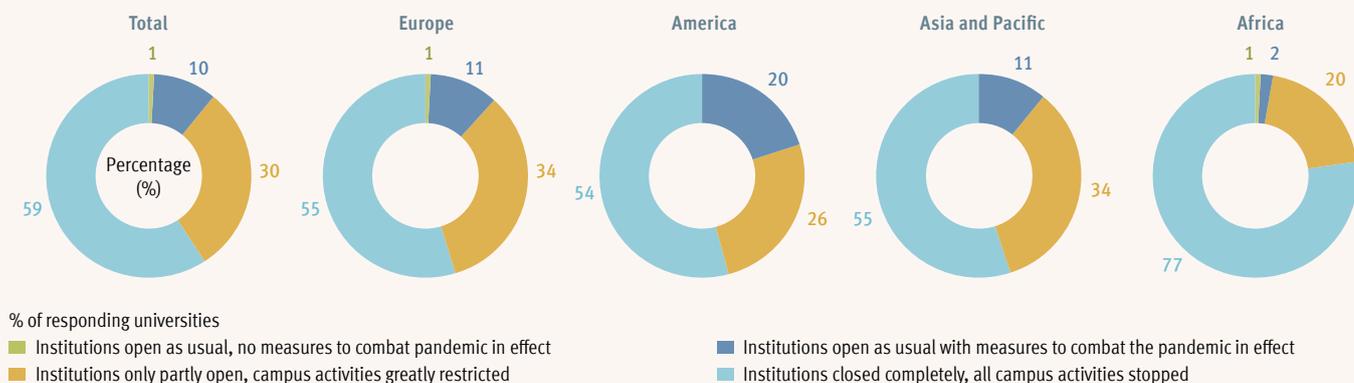


- No measures
- Closures recommended
- Closures required (only at some levels)
- Closures required (at all levels)
- No data available

Note: In federal systems, the characteristics shown may not apply to all regions. A country was classified under “Closures required” if closures were required in at least one region.

Source: University of Oxford

AS2.2 Effects of the COVID-19 pandemic on higher education worldwide in April 2020¹⁴



Source: International Association of Universities (IAU)

regions. In Africa, for example, 24% of the universities surveyed reported a suspension of face-to-face teaching without parallel preparation of distance learning formats, while in the three other world regions this was true of only 3% of the universities in each of the three other regions. At the same time, only 29% of universities in Africa reported that they had already switched to distance learning, while the corresponding percentages in the other world regions were at least twice as high.

Similar trends can be seen in the “THE Leaders Survey” of the international higher education magazine “Times Higher Education” (THE). This survey among the leaders of 200 selected universities from 53 countries took place in the first three weeks of May.³ More than half (53%) of the universities surveyed stated that all teaching had been converted to digital teaching, while a further third (33%) reported that this applied to at least 75% of the courses. As the most important reason why certain courses have not yet been converted to digital teaching, universities pointed to the unsuitability of certain subjects or modules for digital teaching (60%). The switch to online teaching in medical studies was considered particularly difficult, followed by biology and engineering.

With regard to conducting examinations in the current semester, the IAU survey revealed even greater uncertainty among universities than in the case of the introduction of distance learning formats (cf Figure AS2.4). At the time of the survey, only 6% of the universities were of the opinion that they would be able to conduct the examinations as originally planned. In contrast, almost half (45%) were already planning to switch to new examination formats, while a further 14% were planning to switch to a mixture of alternative examination formats and the postponement of examinations. 13% of the universities stated that the majority of exams would probably be postponed and 11% each reported that no decision had yet been made on this issue or that they could not

yet comment on it. In the THE survey, 44% of the universities stated that attendance examinations were generally switched to online examinations and almost as many universities (43%) pointed out that this was handled differently depending on the event. The most important alternative to digital examination formats cited by THE respondents was a continuous assessment of students based on written performance during the semester (60%).

The impact of the pandemic on students’ everyday lives

As part of the project “COVID-19 Social Science Lab” (CovidSocLab) at the University of Ljubljana, more than 30,000 students from almost 130 countries were surveyed about their studies in times of the coronavirus crisis between 5 May and 15 June 2020, with the support of a large number of cooperating universities worldwide.⁴ This is the only student survey to date that allows trend statements to be made regarding the impact of the COVID-19 pandemic on the everyday lives of students worldwide.

The proportion of respondents who indicated that their studies had been switched to online teaching differs according to the world region under consideration. The percentage is comparatively low in Asia (75%) and Africa (78%) and comparatively high in Europe (86%), South America (89%) and North America (90%). Looking at the technical prerequisites for a smooth flow of online studies (cf Figure AS2.5), it can be seen that three-quarters (75%) of those surveyed had computer access, a good two-thirds each had the necessary software (68%) and their own desk (67%), 60% had a good internet connection and only about half had a quiet workplace (52%). Again, there are significant differences between the regions of the world. For example, only 28% of respondents in South America had their own desk, while only 29% of respondents in Africa had a good internet connection.

Overall, only just under half of the respondents agreed with the statement that they had coped well with the transition to the new teaching and learning conditions (47%). In South America and Africa, this proportion was again significantly lower (29% in each case) than in North America (48%), Europe and Asia (49% in each case). In all likelihood, this is a consequence of the regional differences in the technical requirements for the smooth running of an online study programme, as explained above.

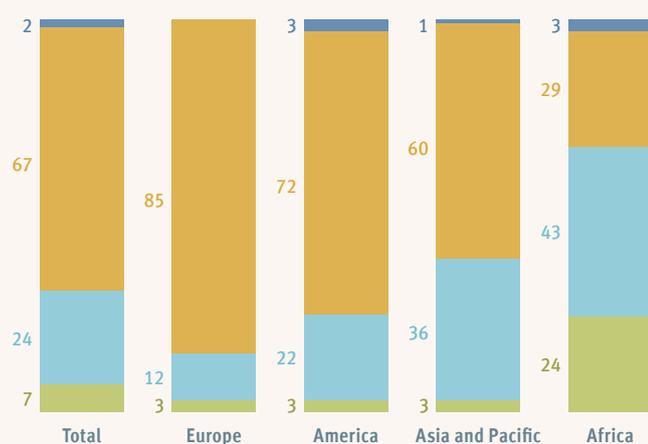
Another consequence of the COVID-19 pandemic, with far-reaching effects on the everyday life of students, was the closure of student halls of residence. This was not recorded in the CovidSocLab survey but corresponding data from national surveys of universities are available for at least two countries, the USA and Germany. In the USA, the Institute of International Education (IIE) surveyed almost 600 universities (representing around 51% of all students in the USA) between mid-April and the beginning of May, and the DAAD surveyed almost 170 universities (representing around 62% of all students in Germany) between the end of April and mid-May.⁵ The findings document clear differences between the pandemic-related measures at universities in the two countries. For example, only 2% of German universities closed their halls of residence, whereas in the USA this measure was adopted by more than half (54%) of all universities. Just how drastic such measures can be for the lives of the students affected is shown in particular by the example of international students. They often have no opportunity

to live temporarily with friends or relatives and are thus forced either to look for another, usually more expensive accommodation or to return to their home country. Unfortunately, the findings of the survey do not reveal whether students in the USA were offered alternative accommodation in the event that their halls of residence were closed.

The consequences of the pandemic for international student mobility

In turn, the international university surveys already cited can be used to analyse the effects of the COVID-19 pandemic on international student mobility. For example, 89% of the respondents in the IAU survey stated that the pandemic had impaired student mobility at their university (cf Figure AS2.6). The most frequent consequence cited here was the fact that international students were unable to return to their home country as planned (47%). A similarly frequent consequence was the cancellation of exchange programmes with certain countries (43%). 39% referred to the fact that international students had interrupted their studies at their own university due to the pandemic, while almost as many reported that their own students who were abroad were unable to return due to travel restrictions at the time of the survey. One-third of the universities (33%) also reported that all student exchange programmes at their university had been discontinued.

AS2.3 Effects of the COVID-19 pandemic on teaching at universities worldwide in April 2020¹⁴

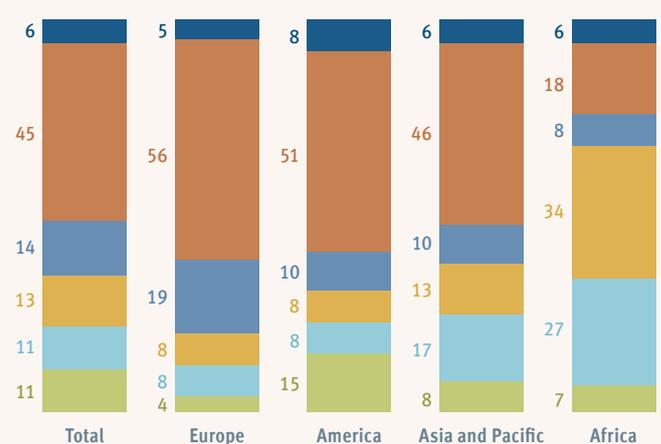


% of responding universities

- No restrictions
- In-person learning replaced by distance learning
- Teaching currently largely suspended, preparing to switch to distance learning
- Teaching currently suspended

Source: International Association of Universities (IAU)

AS2.4 Effects of the COVID-19 pandemic on examination plans at universities worldwide in April 2020



% of responding universities

- No changes to examinations planned
- Changes to alternative examination formats planned
- Plans to change examination formats and also to postpone examinations
- Majority of examinations likely to be postponed
- No decision yet made on examination planning
- Cannot yet say

Source: International Association of Universities (IAU)

AS2.5 Student access to equipment needed for online-based study worldwide, May/June 2020

Equipment	% of students responding					
	Total	Europe	North America	South America	Asia	Africa
Office supplies	80	90	90	81	77	69
Computer	75	86	94	81	70	57
Headphones and microphone	74	82	74	69	69	45
Necessary software	68	79	83	69	64	43
Desk	67	83	69	28	69	56
Good internet connection	60	68	70	56	58	29
Webcam	59	72	89	69	51	30
Seminar materials	52	58	71	55	47	32
Quiet working space	52	61	51	45	52	37
Printer	32	45	55	39	26	15

Source: COVID-19 Social Science Lab

AS2.6 Effects of the COVID-19 pandemic on international student mobility at universities worldwide in April 2020

World region	% of responding universities				
	Total	Europe	America	Asia and Pacific	Africa
International students at their own universities cannot return home as planned	47	53	40	45	38
International students at their own universities have interrupted their studies	39	47	42	29	22
International students at their own universities cannot return from abroad as planned	37	43	32	29	32
Exchange programmes with certain countries suspended	43	47	49	45	26
All exchange programmes suspended	33	30	33	40	34

Source: International Association of Universities (IAU)

AS2.7 Consequences of the COVID-19 pandemic for international student mobility, from the perspective of exchange students affected by problems associated with the pandemic in Europe in March 2020

Consequences	% of responding students affected by problems associated with the pandemic
Return home as planned not possible	75
No access to some basic necessities (e.g. food, hygiene products)	17
Loss of housing due to closure or eviction	15
No access to medical care	10
Problems with visas or residency permits	3

Source: Erasmus Student Network (ESN)

The national surveys of universities in the USA and Germany mentioned above also provide a somewhat more detailed view of the situation of internationally mobile students in individual major host countries and countries of origin. In the USA, 31% of the universities reported problems with the entry of the international students expected for the summer semester; in Germany, this figure was even twice the size (62%). This can probably be explained above all by the later start of the summer semester in Germany; here too, the consequences of the regional dynamics of the spread of the pandemic during the first months of 2020 again become apparent. However, exchange programmes were completely suspended in the USA in the spring semester of 2020 much more frequently (83%) than in the summer semester in Germany (22%). Similar to the closure of student halls of residence, it can be seen that universities in different countries reacted very differently to the COVID-19 pandemic. In addition to the various organisational requirements, such as different semester times, the national or regional requirements of the responsible health authorities probably played a particularly important role here.

International student mobility is not only dependent on student motivation but also on good administrative and institutional coordination between the host country and country of origin. For this reason, the different administrative requirements and the equally varying measures taken by the universities have in some cases meant that international students – as mentioned above – have not been able to return to their home countries as intended. This problem is reflected in a student survey conducted by the Erasmus Student Network (ESN) from mid- to late March 2020 and involving nearly 22,000 exchange students in Europe.⁶ Nearly 40% of respondents said that they had experienced problems during their stay abroad due to the COVID-19 pandemic. By far the most common reason (75%) was difficulties in returning home, followed by lack of access to certain basic goods such as food and hygiene products (17%),

as well as housing problems (15%). An earlier return to the home country, if successful, is also likely to have led to an increased financial burden for many students, e.g. due to greatly increased transport costs and non-refundable expenses already incurred in the host country. This is also supported by the findings of a survey of around 1,000 internationally mobile US students towards the end of the spring semester 2020 (10 to 29 April).⁷ More than half of the respondents (54%) who returned to the US earlier due to the pandemic said they had suffered a significant financial loss as a result. For students with already low financial resources, this proportion was even just under two-thirds (65%).

“ 83% of US universities stopped their exchange programmes in the spring semester.

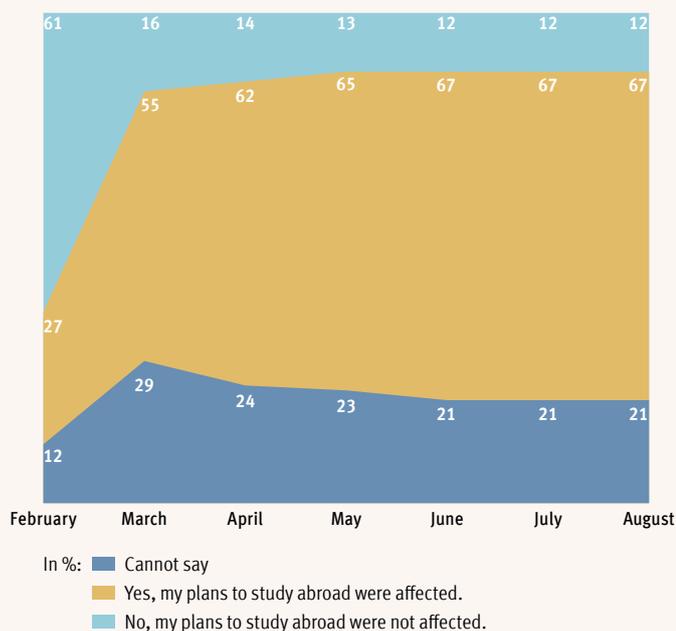
A comparatively rare but all the more burdensome consequence of the COVID-19 pandemic for internationally mobile students is discriminatory behaviour based on their own origin. For example, 6% of all respondents in the Erasmus Student Network’s student survey cited above reported experiences of discrimination in connection with the pandemic. However, among Italian (24%)

and Asian (19%) students, the proportion of respondents affected by such experiences was much higher than the average for all respondents.

Student mobility planning under pandemic conditions

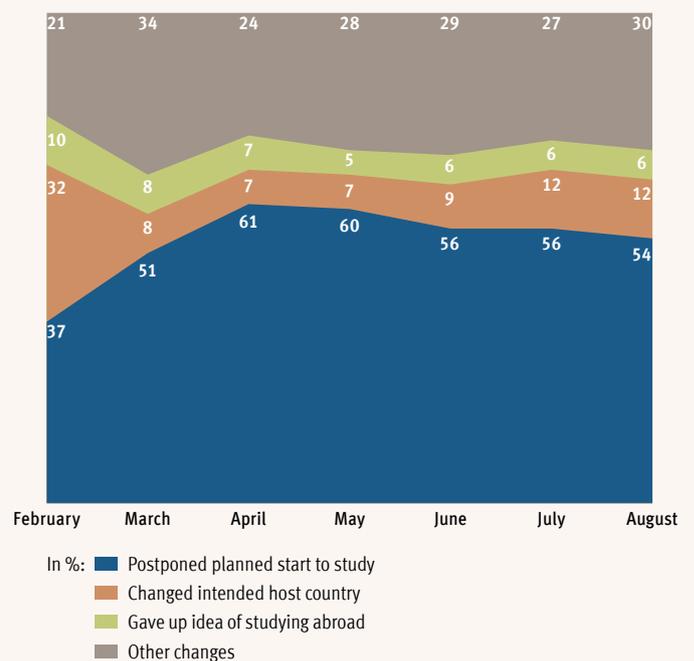
The private education service provider Quacquarelli Symonds (QS) has been conducting weekly surveys of “prospective international students” (i.e. school leavers and students interested in studying abroad) on their study plans and the impact of the pandemic on these plans.⁸ Every week, almost 3,000 people worldwide are asked, among other things, whether the pandemic has influenced their study plans. If we look at the development of responses between February and May (cf Figure AS2.8), we see that at the beginning of the pandemic, only around a quarter of those surveyed reported that they had changed their study plans due to the pandemic, while the clear majority (60%) did not plan any change and 12% of those surveyed were not yet able to make a clear statement on this. Corresponding to the spread of the COVID-19 pandemic and the corresponding containment measures, the proportion of respondents who had changed their study plans rose to over 50% in March, while the proportion of respondents who were unable to give a clear answer also increased significantly. From May onwards, the mood stabilised among a good two-thirds of respondents who

AS2.8 Effects of the COVID-19 pandemic on plans to study abroad of school leavers and students interested in studying abroad, February – August 2020¹⁴



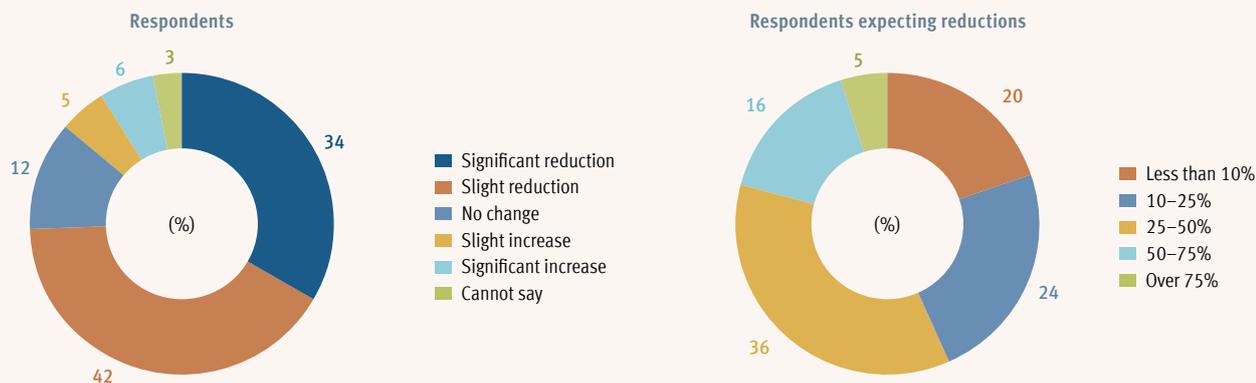
Source: Quacquarelli Symonds (QS)

AS2.9 Changes to plans to study abroad of students and school leavers interested in studying abroad and whose intentions changed as a consequence of the COVID-19 pandemic, February – August 2020¹⁴



Source: Quacquarelli Symonds (QS)

AS2.10 Effects of the COVID-19 pandemic on numbers of international students in the new academic year, as predicted by university leaders worldwide in May 2020^{9, 14}



Source: Times Higher Education

indicated that they had changed their study plans, about one-fifth of those who were undecided and a good tenth of those who still assumed that their study plans would remain unchanged.

In the QS surveys, those with modified curricula were also asked about the changes they had made to their plans (cf Figure AS2.9). Here it can be seen that, between February and April, there was a sharp increase in the share of respondents who wanted to postpone the start of their studies due to the pandemic (from 37% to 61%). At the same time, between February and March in particular, the proportion of respondents who planned to study in another host country due to the pandemic fell significantly (from 32% to 7%). This development is easily explained: while until February, there were still many countries where no COVID-19 cases had been reported and no containment measures had been taken, this situation changed within a few days from March onwards. Within a very short space of time, the option of avoiding the pandemic by changing the choice of study country was therefore no longer available.

Surprisingly low in the QS surveys is the proportion of respondents who stated that they had completely abandoned their plans to study abroad due to the pandemic. Moreover, contrary to what might be expected, the share of these respondents did not increase over the period considered but instead, halved from 10% in February to 6% in August 2020. Clearly, the COVID-19 pandemic did not have a strong deterrent effect on the mobility intentions of international students from the outset and this effect seems to have diminished in the course of the pandemic, probably due to a certain habituation process. However, it should be noted here that the survey data available and cited here show a common weakness: the recruitment of respondents via online portals containing information on studying abroad. This leads to a systematic distortion of the sample because those students who

abandoned their study abroad plans before looking for information on these portals are not included. It can therefore be assumed that the available surveys underestimate the proportion of this group of people.

At universities worldwide, it is assumed that the COVID-19 pandemic will lead to a decline in the number of international students in the coming academic year (cf Figure AS2.10). Almost four-fifths (78%) of the universities surveyed in THE Leaders Survey agreed with the statement that fewer international students than originally expected will enrol at their university in the coming academic year. A good third of those surveyed (36%) expect a decline of between 25% and 50%, while a good fifth (21%) even expect a drop of more than 50%.⁹ The remaining 44% expect smaller declines of no more than

“ Only 6% of those interviewed in August who were interested in studying abroad have abandoned their mobility plans.

25%. As the IIE and DAAD university surveys show, however, there are clear differences in these assessments between individual host countries. For example, the expectations of the German universities surveyed by the DAAD are much more optimistic than those of the US universities surveyed by the IIE. While almost nine out of ten universities in the USA expect a decline in enrolments by international students (88%), in Germany this applies to just under six out of ten (57%). Here too, only a good fifth of the universities expect a sharp decline (21%), while in the USA this applies to just under a third (30%).

Outlook: forecasts for the medium- and long-term development of international student mobility

In order to make medium- and long-term predictions regarding the development of international student mobility, it is inevitable that certain assumptions will have to be made regarding the framework conditions. On this basis, possible scenarios for further development can then be developed. Such an approach with different scenarios is pursued by the forecast of the consulting agency EY-Parthenon in its analysis “COVID-19 crisis: planning towards the new normal”. The two optimistic scenarios assume that the immediate effects of the COVID-19 pandemic will only affect the year 2020 (scenario 1) or the next one to two years (scenario 2) (cf Figure AS2.11). In the pessimistic scenario 3 it is assumed that the effects of the pandemic will continue to be felt until 2024. It is also assumed that the effects of the pandemic will be overshadowed from 2021 onwards by an annual growth in the number of international students of 5% or 2%. On this basis, forecasts are made on the development of the number of international first-year students in the most important English-speaking host countries (USA, the United Kingdom, Australia, Canada and New Zealand).

This shows that even with a very pessimistic prognosis regarding the further course of the pandemic, there are grounds for assuming that from 2021 onwards, the total number of international first-year students in the host countries under review will be higher than before the outbreak of the pandemic in 2019.¹⁰ However, there may be considerable differences between the various host countries. In the forecast by EY-Parthenon, it is assumed that in particular, the comparatively successful fight against the pandemic in Canada, Australia and New Zealand could lead to these countries becoming more attractive for international students, while the USA and the United Kingdom could lose attractiveness due to their problems in dealing with the pandemic. Corresponding evaluations by students and universities are not only available for the five host countries considered by EY-Parthenon. For example, THE Leaders Survey asked which countries had had the best and worse response to the pandemic from the perspective of the surveyed university leaders. 21% of the respondents said that New Zealand had the best pandemic management, followed by China (18%), South Korea (14%) and Germany (10%). Two-thirds of those surveyed (66%) believe that the countries with the worst response to the pandemic are the USA, followed by Brazil, Italy (8% each), the United Kingdom and China (4% each). Very similar findings are shown in a QA survey

AS2.11 Potential scenarios for developments in numbers of international first-year students in major anglophone host countries (USA, UK, Australia, Canada and New Zealand)



(first-year students in millions)

Source: EY-Parthenon

of school leavers and students interested in studying abroad, which was conducted in June 2020 but which only asked about the country with the best pandemic management.¹¹ Here, too, New Zealand (28%) is mentioned most frequently, followed by China (12%), Germany (9%), South Korea (8%) and Australia (5%).

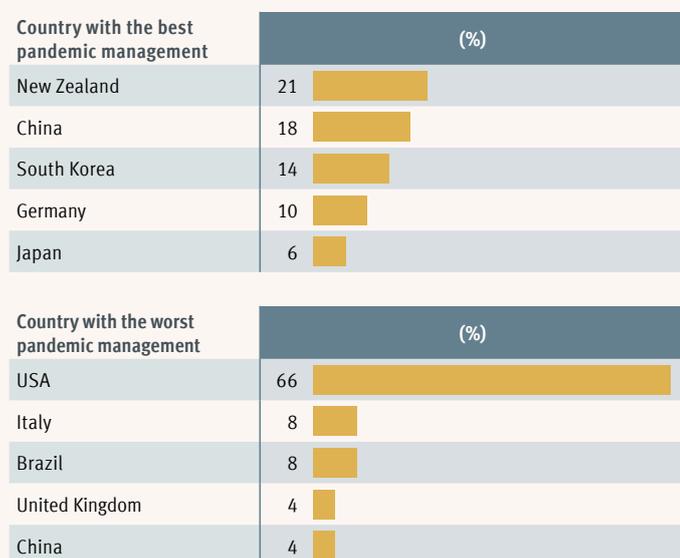
“ From the perspective of the vast majority of the universities surveyed worldwide, the importance of digital forms of teaching and working is increasing as a result of the pandemic.

Should countries such as the USA or the United Kingdom actually experience a long-term negative trend among international students, this would result in considerable loss of income for the universities concerned. For it is precisely in these countries that tuition fees paid by international students play an important role in university financing. For example, the UK think tank “Institute for Fiscal Studies” (IFS) published a scenario analysis in July 2020, the central scenario of which concludes that 13 UK universities (which account for about 5% of all students in the United Kingdom) are threatened with insolvency as a result of the COVID-19 pandemic without a state rescue programme (to the tune of about

£140 million).¹² Similar risk analyses are also available for the USA and Australia.¹³ The fact that such risks not only exist in the United Kingdom, the USA and Australia is confirmed by another survey conducted by THE Leaders Survey. Of the university managers surveyed worldwide, 42% agreed with the statement that the COVID-19 pandemic is likely to lead to university insolvencies in their country.

In addition to these undeniable risks, however, the consequences of the pandemic undoubtedly also present opportunities, especially in the area of digitalisation. For example, 84% of the respondents in THE Leaders Survey agreed with the statement that the pandemic-related experience with online distance learning will contribute to the fact that partially digitalised teaching concepts (so-called blended learning) will become more important in the future, even under regular study conditions. There is also a large consensus (95%) among the respondents that digital forms of working and information exchange at universities will be used more frequently as a result of the pandemic. This undoubtedly also applies to international research cooperations and transnational course offerings. The pandemic-related digitalisation surge thus offers the opportunity to diversify and intensify international academic mobility and cooperation. An optimistic perspective also dominates among the respondents of THE Leaders Survey in this regard: 60% agree with the statement that international cooperation in science and research will be strengthened by the reactions of universities to the pandemic, while only 12% fear a weakening.

AS2.12 Assessment of national pandemic management, by university leaders worldwide in May 2020



Source: Times Higher Education

AS2.13 Assessment of national pandemic management by school leavers and students considering studying abroad, worldwide in June 2020



Source: Quacquarelli Symonds (QS)

AS2.14 Table of sources

Title	Author	Respondents	Survey period
Policy Responses to the Coronavirus Pandemic	Oxford Martin School, University of Oxford	No respondents	Ongoing since 21/01/2020
The impact of COVID-19 on higher education around the world: IAU Global Survey Report	International Association of Universities (IAU)	Employees at 424 universities in 109 countries	25/03/2020–17/04/2020
COVID-19 Social Science Lab: Global Student Survey	University of Ljubljana	30,877 students in 127 countries	05/05/2020–15/06/2020
COVID-19 Effects on US Higher Education Campuses: From Emergency Response to Planning for Future Student Mobility	Institute of International Education (IIE)	Employees at 599 US universities	16/04/2020–01/05/2020
Corona und die Folgen für die internationale Studentennobilität in Germany: Ergebnisse einer DAAD-Befragung von International Offices und Akademischen Auslandsämtern	German Academic Exchange Service (DAAD)	Heads of International Offices at 168 German universities	27/04/2020–18/05/2020
Student Exchanges in Times of Crisis: Research report on the impact of COVID-19 on student exchanges in Europe	Erasmus Student Network (ESN)	21,930 internationally mobile students across the whole of Europe	19/03/2020–30/03/2020
Snapshot Survey: Student Study Abroad Experiences During COVID-19	Diversity Abroad	984 US students on study-related visits abroad	10/04/2020–29/04/2020
The Coronavirus Crisis and the Future of Higher Education	Quacquarelli Symonds (QS)	Approximately 66,000 “prospective international students” (~ 2,800 to 3,000 respondents per week)	Ongoing since 14/02/2020
THE Leaders Survey	Times Higher Education	200 university leaders in 53 countries	04/05/2020–22/05/2020
COVID-19 crisis: Planning towards the new normal	EY-Parthenon	No respondents	No primary data collection
Studienanfängerprognose 2020	Research Institute for the Economics of Education and Social Affairs (FIBS)	No respondents	No primary data collection
The Outlook for University Admissions: The Impact of COVID-19 report	Quacquarelli Symonds (QS)	Approximately 48,000 “prospective international students” (~ 2,800 to 3,000 respondents per week)	Ongoing since 14/02/2020
Will universities need a bailout to survive the COVID-19 crisis?	Institute for Fiscal Studies (IFS)	No respondents	No primary data collection

* Endnotes

- 1 Source: University of Oxford: Policy Responses to the Coronavirus Pandemic (online portal).
- 2 Source: International Association of Universities (2020). Almost half of the respondents in the unrepresentative random sample came from Europe (46%), while the other half came from the three remaining world regions: Africa (21%), Asia and the Pacific (17%), and North and South America (15%).
- 3 Source: Times Higher Education (2020). Even in this unrepresentative random sample, the majority of respondents came from Europe (38%), followed by East Asia (27%), North and South America (18%), Africa and the Middle East (8%), South Asia (6%) and Oceania (5%).
- 4 Source: University of Ljubljana (2020). As with the institutional surveys of IAU and THE, this is a non-representative random sample. The majority of respondents came from Europe (44%), followed by Asia (23%), South America (14%), Africa (9%) and North America (8%). The Oceania region accounted for only 186 respondents, and is not included in the regional comparisons below due to the lack of reliable data.
- 5 Sources: IIE (2020), DAAD (2020).
- 6 Source: ESN (2020).
- 7 Source: Diversity Abroad (2020).
- 8 Source: QS (2020): The Coronavirus Crisis and the Future of Higher Education. These are non-representative samples based on the users of the QS online portals.
- 9 Overlapping of the scale at 25% and 50% taken from original source
- 10 By contrast, a scenario analysis by the Research Institute for the Economics of Education and Social Sciences (FIBS) forecasts a much slower recovery in the number of international first-year students in Germany (cf Dohmen 2020). According to this analysis, the 2019 level would not be exceeded again until 2023. However, the DAAD currently already expects the numbers to largely recover to the 2019 level in 2021.
- 11 Source: QS (2020): The Outlook for University Admissions: The Impact of COVID-19 report. These are non-representative random samples based on the users of the QS online portals.
- 12 Source: IFS (2020).
- 13 Source: Marshman, I./Larkins, F. (2020); Anderson, S. (2020).
- 14 Deviations from 100% are due to rounding.

1 International students

1.1 Mobility trends, first-year students and federal states

In the 2019/20 winter semester, approximately 411,600 students¹ with foreign citizenship were studying at German universities. The majority of these international students, around 319,900 (78%), gained their university entrance certificate abroad and only came to Germany for their studies afterwards. In contrast to earlier editions of “Wissenschaft weltoffen”, these students will be referred to in the following as “international students”. Unlike “Bildungsausländer”, which is used only in Germany, this designation follows standard international usage. Compared to 2019, the number of international students in Germany rose by around 17,700 (6%) in the 2019/20 winter semester. From 2018 to 2019 there was also an increase of 7%. The number of international students has thus been growing steadily for ten years by a total of 76%.

With the increase in the number of international students, German universities are part of a corresponding global development of international student mobility. As in Germany, annual growth rates of 5% to 7% have been recorded worldwide since 2010 (cf. pp. 12/13).²

The majority (73%) of international students in Germany were enrolled at universities in 2019, numbering approximately 220,200 students.³ The percentage of German students in the same year was only 62%. Although the number of international students at universities of applied sciences is significantly lower than at universities, the above-average growth rate that universities of applied sciences have been recording for years should not be over-

looked. Compared to 2018, the number of international students here increased by 10%.

The situation is similar regarding the relationship between private and public universities. In 2019 only about 19,800 (7%) of international students were enrolled at private universities, but their number has increased by 13% in one year and by 224% in ten years.⁵ By contrast, the vast majority – approximately 282,300 international students – studied at public universities. Their number increased by 7% compared to the previous year and by 62% compared to 2009.

In the 2019 academic year, around 111,000 international first-year students began their studies in Germany, 1% more than in the previous year,⁶ the lowest growth rate in the last ten years. It is currently impossible to estimate how the number of international first-year students will develop in the coming years. It depends primarily on how the COVID-19 pandemic continues to unfold (see pp. 32–41).

Both the positive development in the number of international students and the stagnating numbers of German students contribute to

the fact that the share of international students among all students in Germany has risen from 9.9% in the 2018 academic year to 10.5% in the 2019 academic year and 11.1% in the 2019/20 winter semester. For the second time in a row, international students thus represent more than one-tenth of all students in Germany. At universities, this figure rose from 11.4% in 2018 to 12.1% in 2019, and from 7.3% to

7.8% at universities of applied sciences.³ The percentages also increased at private universities, where the share of international students rose from 6.7% to 7.1%. At public universities, it rose from 10.2% to 10.9%. The highest values were recorded by the public colleges of art and music, with 28.9%, and private universities, with 22.8%.

There are some considerable differences between the various federal states. Measured in absolute numbers, around half of all international students study in the three federal states of North Rhine-Westphalia, Bavaria and Baden-Wuerttemberg alone. However, particularly high proportions can be found in other federal states, with Berlin (17%), Saxony (15%), Thuringia (14%)

“International students account for more than a tenth of all students in Germany.”

B1.1 International students in Germany by type of university since 2009^{1, 3, 4}



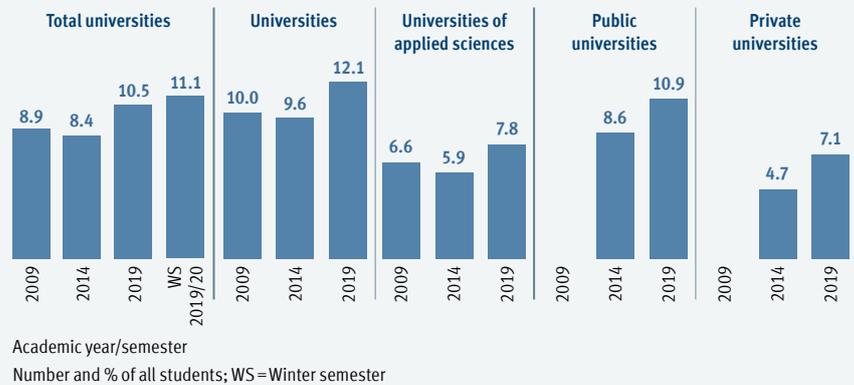
Source: Federal Statistical Office, student statistics

and Brandenburg (14%) at the fore. Although the above-average figures in the former East German states are also a result of reduced enrolment figures among German students, these federal states have nevertheless managed not only to prevent a decline in international students but in some cases to achieve significant increases in enrolment. The strongest increases over five years have been recorded by the universities in Mecklenburg-Western Pomerania (+71%) and Bavaria (+58%). Below-average figures, on the other hand, can be found in Saarland (+14%) and Baden-Wuerttemberg (+18%).

*** Footnotes**

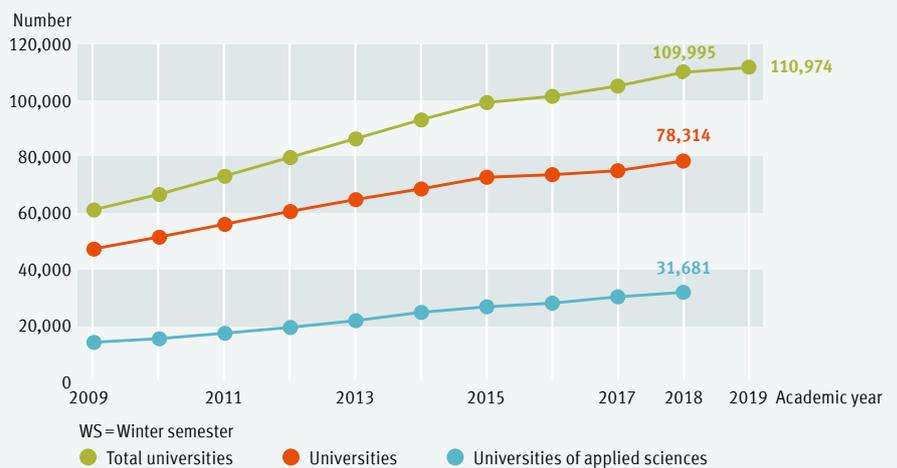
- 1 The data on international students for the 2019 academic year are taken from the official statistics for the 2018/19 winter semester. The data on previous academic years also refer to the corresponding winter semesters, as it could previously be assumed that there would be no significant changes in the number of international students between the winter and summer semesters. Due to the COVID-19 pandemic and the resulting changes in study conditions, the number of international students only refers to this winter semester and not to the entire 2020 academic year.
- 2 See OECD (2019).
- 3 At the time of going to press with Wissenschaft weltoffen 2020, no differentiated data were available from official statistics on international students for the 2019/20 winter semester.
- 4 Values for universities, including colleges of art, music, education and theology
- 5 Values for private universities, including church-run universities
- 6 The information for international first-year students refers to one academic year and includes the corresponding summer semester and the following winter semester. First-year students in the 2019 academic year = summer semester 2019 + winter semester 2019/20

B1.2 International students as a proportion of all students by type of university and type of sponsor 2009, 2014, 2019^{1, 3, 4, 5}



Source: Federal Statistical Office, student statistics; DZHW calculations

B1.3 International first-year students in Germany by type of university, since 2009^{1, 3, 4, 6}



Source: Federal Statistical Office, student statistics

B1.4 International students by federal state 2014 and 2019, with development 2014–2019

Germany	2014		2019		Development 2016–2019 in %
	Number	Proportion in %	Number	Proportion in %	
Baden-Wuerttemberg	31,743	9.1	37,292	10.4	17.5
Bavaria	27,022	7.6	42,791	10.9	58.4
Berlin	22,220	13.4	33,434	17.4	50.5
Brandenburg	5,617	11.2	7,028	14.2	25.1
Bremen	3,739	10.6	4,721	12.6	26.3
Hamburg	7,264	7.7	10,245	9.3	41.0
Hesse	19,508	8.6	24,948	9.5	27.9
Mecklenburg-Western Pomerania	2,036	5.2	3,486	9.1	71.2
Lower Saxony	12,534	7.1	19,186	9.1	53.1
North Rhine-Westphalia	50,276	7.2	68,992	8.8	37.2
Rhineland-Palatinate	8,335	6.8	11,663	9.4	39.9
Saarland	3,356	11.7	3,812	12.1	13.6
Saxony	12,242	10.8	16,477	15.1	34.6
Saxony-Anhalt	5,203	9.3	6,864	12.5	31.9
Schleswig-Holstein	3,080	5.5	4,119	6.4	33.7
Thuringia	4,673	9.0	7,099	14.3	51.9
States total	218,848	8.4	302,157	10.5	38.1

Number and % of all students

Source: Federal Statistical Office, student statistics; DZHW calculations

1 International students

1.2 Regions and countries of origin

Asia and Pacific is the key region of origin for international students at German universities. This region alone accounts for 30% of all international students. Since 2016, the number of students originating from this region has also risen by 30%, above the average. Students from Western Europe follow in second place with 18%. However, their number has only increased by 8% in the last three years. Students from North Africa and Middle East have seen the strongest growth at 63%, now accounting for 18%. By contrast, hardly any increase in enrolment figures is to be observed for students from Central and South Eastern Europe, who currently make up 12%. Finally, a slight decline in enrolment of 3% can be observed for the Eastern Europe and Central Asia region of origin. 9% of international students currently come from this region. The declines or only slight increases in student numbers from Eastern, Central and South Eastern European countries are, however, due less to a declining interest in Germany as a country of study than to demographic changes in some of these countries. Here, the population figures in age cohorts relevant to university study have declined significantly. Finally, Latin America and Sub-Saharan Africa have shares of 6% and 5% respectively. The smallest group, 2%, is made up of students from North America.

The great importance of students from Asian-Pacific countries of origin corresponds to associated developments in global student mobility (cf. pp. 12/13). Students from this region account for 40%

of all internationally mobile students. This can be explained on the one hand by demographic factors: 51% of the world population live in the countries concerned, while only 6% live in Western

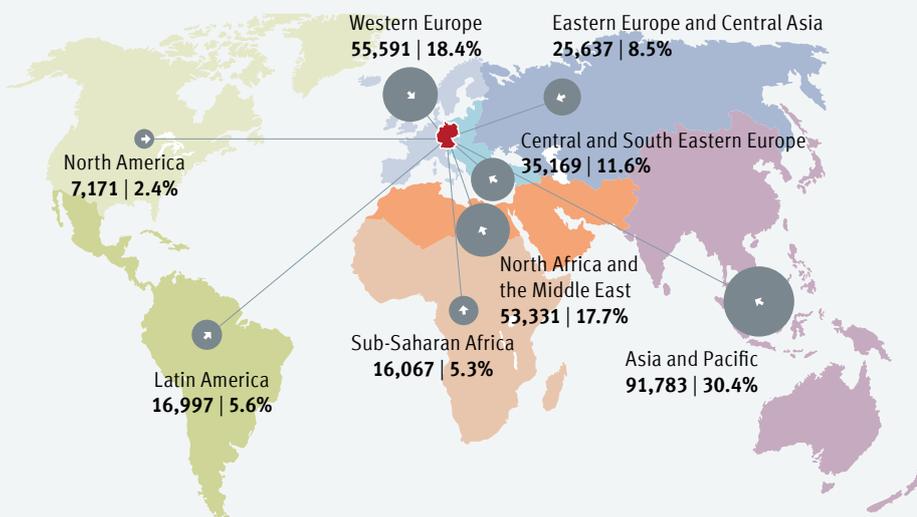
“ Syria is now the third most important country of origin for international students in Germany.

Europe.¹ On the other hand, many countries in this region, such as China, India, Vietnam, South Korea and Indonesia, are emerging economies in transition. Their economic development means there is a demand for well-educated academic staff in these countries, but there are still relatively few universities that enjoy international renown. This situation continues to lead to increased interest in studying abroad.

The large number of Western European students at German universities compared to other countries is not only a sign of German universities' attractiveness within Europe but also a result of the increased student exchange between the countries in a region. It is true for all regions of the world that an above-average share of mobility takes place within their region of origin. The increase in the number of internationally mobile students from North Africa and Middle East is also a worldwide phenomenon, associated with the political and social changes there.

Regional developments in international student mobility are also reflected in the ranking of countries of origin. At German universities, students from China have been in first place for 20 years now. At 13%, they account for more than one in ten international students. In the last three years, their number has risen by a further

↓ B1.5 International students by region of origin, since 2019



Total international students at German universities 302,157
(including 411 students who cannot be allocated to a country of origin)

Number and % of all international students at German universities

* Footnote

1 Data on the world population are taken from the Federal Statistical Office Germany.

24% to around 39,900. Students from India, who are in second place in the rankings, have seen an even stronger increase. Since 2016, their number has risen by 52% to around 20,600. However, the strongest growth is recorded in students from Syria, primarily due to the ongoing civil war in their home country. In the last three years, their number has increased by 275%, and by 51% to around 13,000 in the last year alone. Syria is thus now the third most important country of origin of international students in Germany. In 2016, this figure was still around 3,500 and Syria was not yet represented among the 20 key countries of origin.

The key Western European countries of origin are Austria (around 11,500 students), Italy (around 9,200 students) and France (around 7,000 students). In the Eastern Europe and Central Asia region, Russia (around 10,400 students) and Ukraine (around 6,900 students) are out in front, although the number of students from Russia has fallen by 9% in the last three years. The most important countries in Central and South Eastern Europe are Turkey (around 8,500 students), Bulgaria (around 6,200 students) and Poland (around 4,700 students). Finally, if we look at the regions of North Africa and Middle East and Sub-Saharan Africa, most students here – with the exception of those from Syria – come from Iran (around 8,500 students) and Cameroon (around 7,200 students).

Along with Syria, Nigeria (+93%), Sri Lanka (+87%) and the Palestinian territories (+80%) have recorded particularly strong increases in student numbers in Germany since 2016. In contrast, the sharpest declines in this period have been recorded for the United Arab Emirates (-80%), Slovakia (-26%), Gabon (-24%), Moldova (-22%), Poland (-21%) and Sweden (-20%).

B1.6 Key countries of origin by proportion of international students 2019 and development 2016–2019

Country of origin	Number	Proportion in %	Development 2016–2019 in %
China	39,871	13.2	+24
India	20,562	6.8	+52
Syria	13,032	4.3	+275
Austria	11,495	3.8	+14
Russia	10,439	3.5	-9
Italy	9,246	3.1	+15
Iran	8,534	2.8	+32
Turkey	8,470	2.8	+22
Cameroon	7,211	2.4	+2
France	7,047	2.3	-4
Ukraine	6,926	2.3	0
Spain	6,354	2.1	+7
Bulgaria	6,216	2.1	-9
USA	6,111	2.0	+17
South Korea	6,090	2.0	+19
Tunisia	6,042	2.0	+72
Pakistan	5,753	1.9	+50
Morocco	5,555	1.8	+16
Vietnam	5,402	1.8	+42
Indonesia	5,158	1.7	+24

Source: Federal Statistical Office, student statistics; DZHW calculations

B1.7 Countries of origin with largest increases and decreases of international students 2016–2019

Countries of origin	Development 2016–2019 in %
Syria	+275
Nigeria	+93
Sri Lanka	+87
Palestinian territories	+80
Ghana	+78
Egypt	+73
Albania	+73
Kosovo	+73
Tunisia	+72
Afghanistan	+69
UAE	-80
Slovakia	-26
Gabon	-24
Moldavia	-22
Poland	-21
Sweden	-20
Oman	-19
Tanzania	-18
Estonia	-18
Latvia	-15

Source: Federal Statistical Office, student statistics; DZHW calculations

1 International students

1.3 Types of degree and subject groups

In 2019, 38% of international students at German universities were aiming for bachelor's degrees, with the same number studying for master's degrees. By way of comparison, 64% of German students were studying for bachelor's and 19% for master's degrees.

Compared to 2018, the number of international students on bachelor's programmes has increased by 9%, and by 10% for master's programmes. This has led to the rates of increase converging. In previous years, the number of master's degree students grew significantly faster than that for bachelor's degrees. A total of 9% of international students do not plan to complete a degree in Germany. These are exchange students or other students on temporary visits. For some years now, their absolute number has been largely stable but their share is declining. The regions of origin show different intentions concerning the type of degree they are aiming for. While international students from Sub-Saharan Africa (49%) and North Africa and Middle East (48%) are particularly likely to enrol in bachelor's programmes, students from Asia and Pacific (51%) and North America (45%) are more likely than average to aim for a master's degree.

There are considerable differences between universities and universities of applied sciences concerning the intentions of graduates. At universities, significantly more international students are on master's programmes (41%) than on bachelor's programmes (29%). 12% intend to complete a doctorate in Germany. At universities of applied sciences, this ratio is reversed, with

62% aiming for a bachelor's degree and 30% hoping to achieve a master's degree. Although the number of students studying for master's degrees at universities of applied sciences is lower, it remains the case that master's degrees at both types of institution are particularly attractive to international students. 21% of all master's students at universities come from abroad; at universities of applied sciences, this is 15%. It is only among doctoral students that international students make up a higher share, at 25%.

However, while not all German doctoral students are also enrolled at universities, residence permit requirements mean that around two thirds of international doctoral students are enrolled at universities. As a result, official enrolment statistics overestimate international doctoral

students as a percentage of all doctoral students and the reality is likely to be somewhat lower. In all, international students make up 7% of all bachelor's students at universities and 6% at universities of applied sciences.

The strong interest shown by international students in the master's programmes offered by German universities is partly the result of a growing number of relevant study opportunities, especially those offered in English. However, it is also in line with "the international norm" to complete a bachelor's programme as the first phase of academic education in one's home country and then feel prepared for a master's programme abroad. The following applies to all host countries and countries of origin: the higher the desired level of education, the greater the proportion of internationally mobile students.¹

“ 21% of all master's students at universities come from abroad; at universities of applied sciences, the share is 15%.”

↓ B1.8 International students by type of university and degree 2019

Type of degree	Number			Proportion in %		
	Total universities	Universities	Universities of applied science	Total universities	Universities	Universities of applied science
Bachelor's degree	113,730	63,071	50,659	37.6	28.6	61.8
Master's degree	114,641	89,981	24,660	37.9	40.9	30.1
Doctorate	27,107	27,064	43	9.0	12.3	0.1
Other type of degree	20,644	19,002	1,642	6.8	8.6	2.0
Not studying for a degree	26,035	21,131	4,904	8.6	9.6	6.0
Total	302,157	220,249	81,908	100	100	100

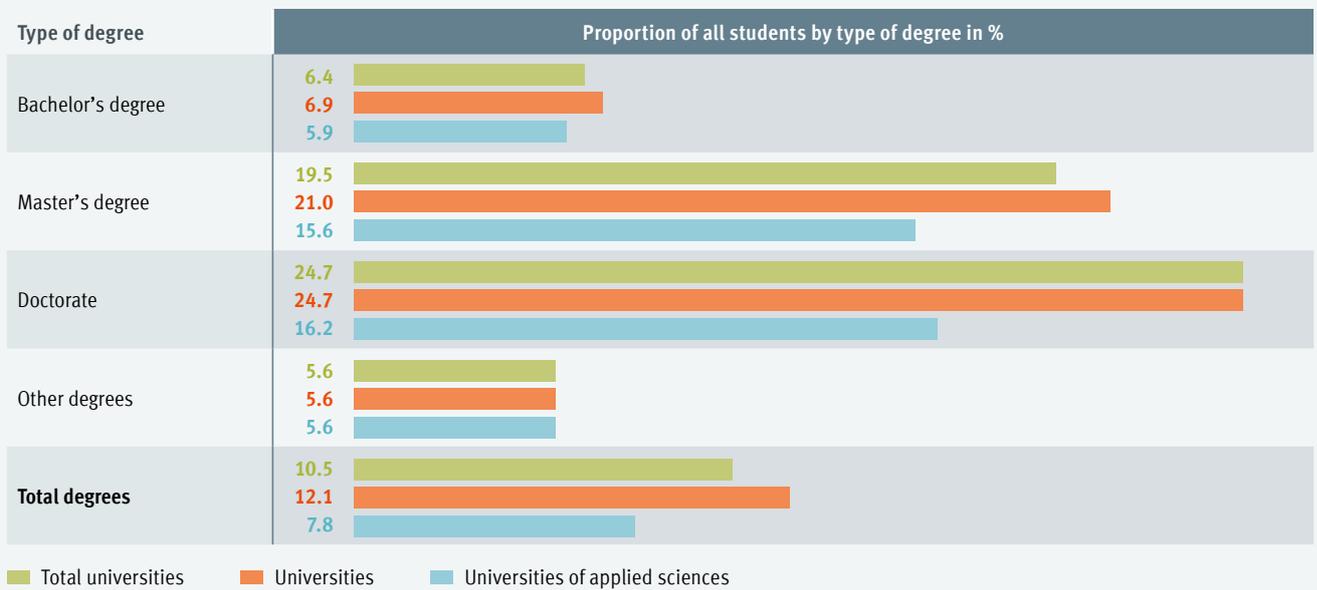
An analysis of the enrolment figures by individual subject groups shows that the importance of engineering, in particular, has grown for international students. One in three international students is now enrolled in an engineering subject at universities (34%) and one in two at universities of applied sciences (54%). Law, economics and social sciences (universities: 21%, universities of applied sciences: 34%) and, at universities, humanities (15%) and mathematics and natural sciences

* Footnotes

1 S. OECD (Ed.) (2019), p. 273 f.

2 Deviations from 100% are due to rounding.

↓ B1.9 International students as a proportion of all students by type of degree and university 2019



Source: Federal Statistical Office, student statistics; DZHW calculations

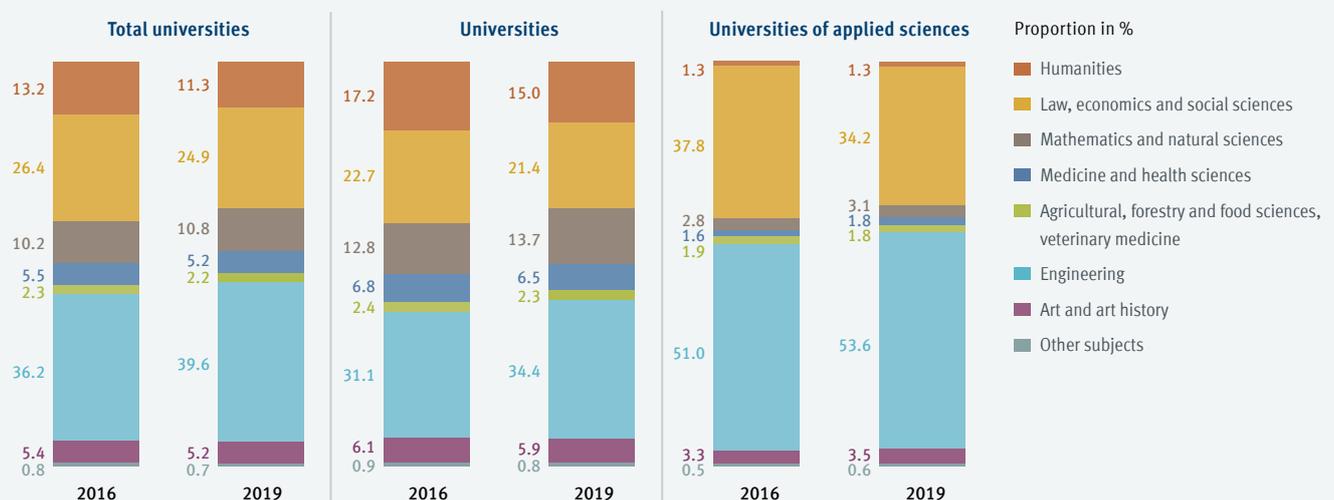
(14%) also account for a high proportion. By comparison, a higher share of German students are enrolled in law, economics and social sciences, but also in the humanities, mathematics and natural sciences, and a lower percentage in engineering, art and art history.

In line with this level of interest, international students make up an above-average proportion of students of engineering at both universities (21%) and universities of applied sciences (11%). This also applies to study programmes in art and art history at universities

(20%), and mathematics and natural sciences (13%), and the humanities (11%) at universities of applied sciences.

However, international students' levels of interest in different subjects vary depending on their region of origin. While students from European regions and Latin America are more interested than average in the subject areas of law, economics and social sciences, students from North Africa and Middle East, Asia and Pacific and Sub-Saharan Africa enrol on engineering degrees particularly frequently.

↓ B1.10 International students by type of university and subject group 2016 and 2019²



Source: Federal Statistical Office, student statistics; DZHW calculations

2.1 Mobility trends, type of degree, subject group and graduates

Approximately 276,100 international students were aiming to graduate from German universities in the 2019 academic year. Their number has increased by 72% over the past 10 years, and by 8% since 2018 alone. This means that the development of degree-related international mobility is currently more dynamic than that of temporary study-related mobility (cf. pp. 60/61). The attractiveness of a degree in Germany has evidently continued to grow internationally. Universities of applied sciences have experienced particularly strong growth, where the number of international students intending to graduate has risen by 63% since 2014. The growth rate at universities is 38%. Nevertheless, the vast majority (72%) of international students seeking a degree are still enrolled at universities. As a consequence of these developments, 10% of all students at German universities are now international students seeking a degree. At universities, this proportion is 11%, with 7.4% at universities of applied sciences.

Interest in master's degrees has grown particularly strongly, surging by 72% in five years. This is significantly higher than the figure for bachelor's degrees: the number of international students who want to complete their studies with a bachelor's degree has risen by 50%. Some 27,100 international students are aiming for a doctorate, an increase of 12% compared to 2014. The lower growth rates in doctoral studies can be explained by the limited number of available doctoral positions, the admission requirements for doctoral studies and strong international competition for particularly well-qualified applicants. However, it should not be overlooked that the share of international students in doctoral

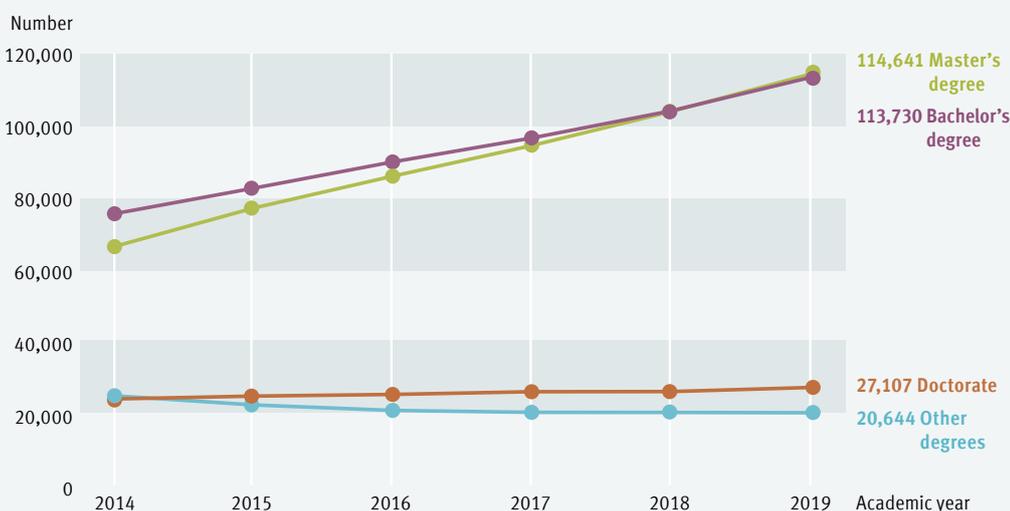
studies is higher than the share of international students in bachelor's and master's programmes.

Of the international students or doctoral candidates intending to graduate in Germany in 2019, a total of 42% were aiming for a master's degree, 41% for a bachelor's degree and 10% for a doctorate. 7% planned to complete their studies with a state examination or other type of degree. At universities, the dominance of the master's degree is even stronger: 45% of the students concerned enrolled on master's programmes and 32% on bachelor's programmes. 14% aim to achieve a doctorate. At the universities of applied sciences, the situation is reversed: 32% are aiming for a master's and 66% for a bachelor's degree. While 45% of all international students hoping to achieve a bachelor's degree are studying at universities of applied sciences, this is only true for 22% of those working towards a master's degree. The situation is similar among German students, where 48% of bachelor's and 27% of master's students are enrolled at universities of applied sciences.

“ More than half of international graduates achieved a master's degree in 2018.

International students' strong interest in master's degrees is also reflected in the fact that one fifth (20%) of all those enrolled in a master's programme with the intention of obtaining a degree are international students. At universities, this figure is 21% and 16% at universities of applied sciences. The share of international doctoral students is even higher, at 25%. By contrast, international students enrolled in a bachelor's programme with the intention of obtaining a degree account for only 6% (universities: 7%, universities of applied sciences: 6%).

B2.1 International students intending to graduate by type of degree since 2014



Source: Federal Statistical Office, student statistics

* Footnotes

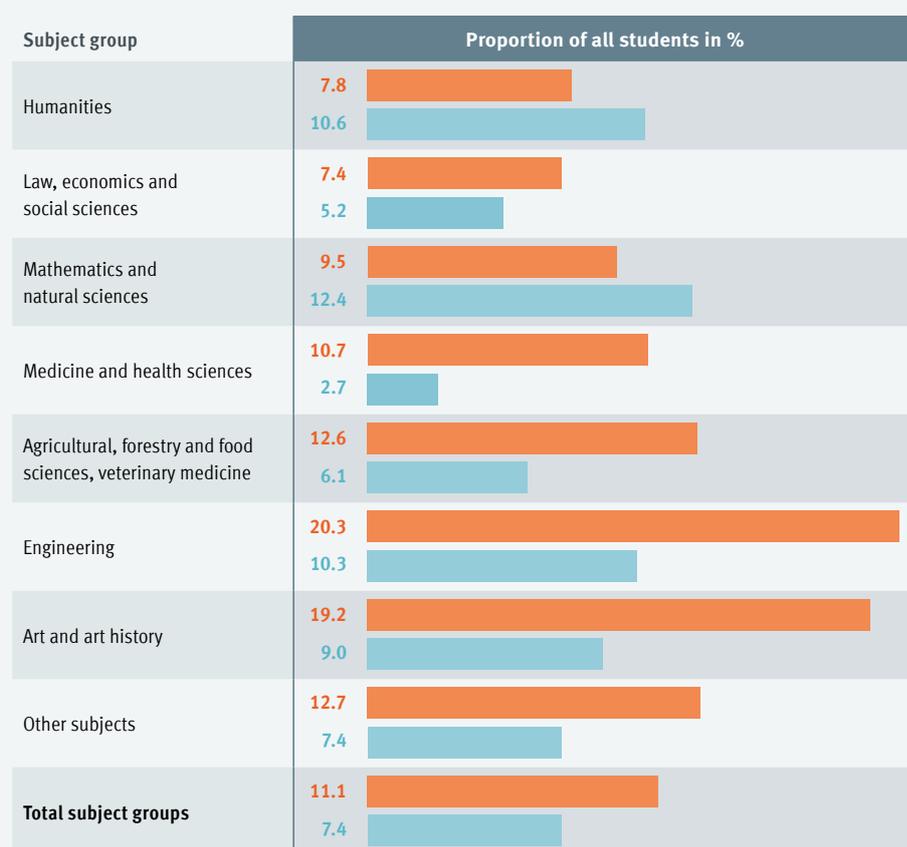
- 1 The number of graduates of the 2018 examination year is calculated from the number of graduates of the 2017/18 winter semester and the 2018 summer semester.
- 2 At the time of printing Wissenschaft weltoffen 2020, no differentiated data from official statistics were available on international graduates in the 2019 examination year.

The majority of international students are working towards a degree in engineering (42%) and law, economics and social sciences (24%). This applies both to universities and to universities of applied sciences. These two subject groups are also the most important for German students, although the ratio is reversed. Here law, economics and social sciences are at the top with 41%, followed by engineering with 25%.

Along with the number of international students intending to graduate, the number of international graduates has also risen continuously, growing by 79% to around 48,600 between 2009 and 2019. The growth rate of graduates thus exceeds the increase in the number of international students intending to graduate. The number of international graduates rose particularly strongly, by 10%, from 2018 to 2019. 74% of international graduates completed their studies at a university and 26% at a university of applied sciences in 2018.² The share of international graduates among all graduates has risen from 7% to 9% since 2013. At universities, this proportion is 11% and 6% at universities of applied sciences.

More than half of international graduates achieved a master's degree in 2018 (56%), over a quarter (27%) a bachelor's degree and more than a tenth achieved doctorates (11%). 6% completed their studies with the state examination or other type of degree. Among all holders of master's degrees, 16% – an above-average share – are international graduates. Only international graduates who have completed a doctorate make up a larger proportion, at around 18%. Among the bachelor's graduates, this figure is around 5%. As with international students, engineering (37%) and law, economics and social sciences (28%) also dominate among graduates.

↓ B2.2 International students intending to graduate as a proportion of all students by type of university and subject group 2019



Proportion in %: ■ Universities ■ Universities of applied sciences

Source: Federal Statistical Office, student statistics; DZHW calculations

↓ B2.3 International graduates by type of university, since 2008^{1,2}



Source: Federal Statistical Office, graduation statistics

2.2 Regions and countries of origin

Most international students seeking a degree in Germany come from the Asia and Pacific region, accounting for 31%. Students from North Africa and Middle East come second with 19%. This is followed by Western Europe (17%), Central and South Eastern Europe (11%) and Eastern Europe and Central Asia (9%). Sub-Saharan Africa and Latin America each account for 6% of international students intending to achieve a degree, and North America 2%.

Depending on their region of origin, international students prefer different types of degrees. About half of all students from European regions, North Africa and Middle East, and also Sub-Saharan Africa aim to obtain a bachelor's and about one third a master's degree. This ratio is reversed in the case of American, and Asia and Pacific regions of origin, whereby more than half of students want to complete their studies with a master's degree and only about one third with a bachelor's degree. A particularly high proportion of doctoral students (15%) are from North America.

Since 2014, three regions in particular have seen above-average growth in their student numbers: North Africa and Middle East (+65%), Asia and Pacific (+31%) and North America (+30%). Below-average increases in student numbers can be observed for Central and South Eastern Europe (+3%), Western Europe and Sub-Saharan Africa (both 13%). A slight decline can be observed for Eastern Europe and Central Asia (-3%). The reasons for declining or only slightly increasing student numbers from Eastern, Central and South-Eastern European countries are due less to declining interest

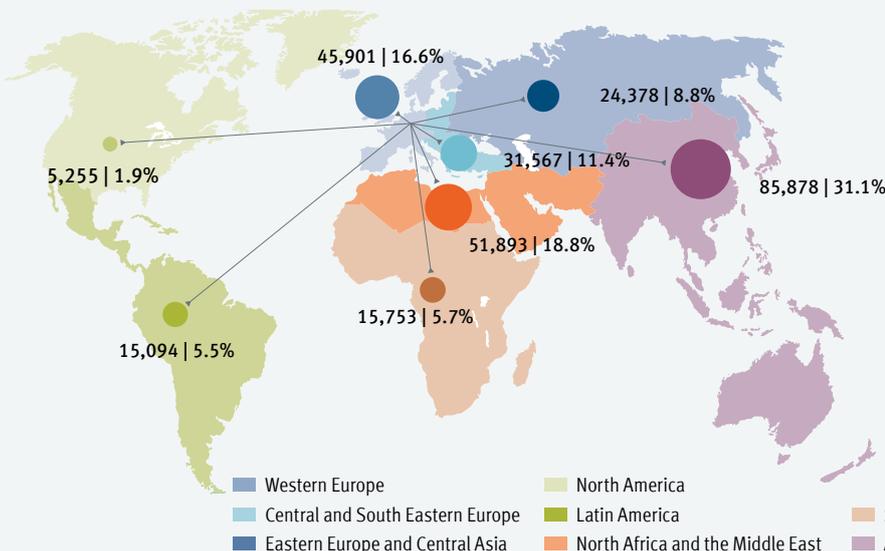
in Germany as a country of study than in demographic changes in some of these countries. Here, the population figures in the age cohorts relevant for a degree programme have declined significantly. As a result of this development, the significance of the Central and South Eastern Europe regions, as well as Eastern Europe and Central Asia, in particular, has declined over the last five years. While in 2014 together they still accounted for 28% of all students intending to graduate, this figure has now fallen to just 20%.

These changes also have an impact on the distribution of international students across individual subject groups. While the share of international students in engineering is increasing, the percentage of those studying law, economics and social sciences is decreasing. This shift can partly be explained by the strong preferences of students from the Asia-Pacific region and North Africa and Middle East for engineering courses (more than half of the students in these regions choose to study engineering), while students from European regions are mainly interested in law, economics and social sciences. About one third each choose to study subjects within this subject group.

The countries of origin of most international students with the intention of obtaining a degree are the three Asian countries of China, India and Syria. China has been at the top of the ranking by a clear margin since the early 2000s. With 37,400 students, 14% of graduate students come from this country. Their number has increased by 24% since 2015. The number of Syrian (+288%) and

“Above all, the number of internationally mobile students from North Africa and Middle East, and from Asia and Pacific has increased.”

B2.4 International students intending to graduate by region of origin 2019²



Total international students intending to graduate at German universities 276,122 (including 403 students who cannot be allocated to a region of origin)

Number and in % of all international students intending to graduate at German universities

* Footnotes

- 1 Only countries with at least 100 students at German universities
- 2 Deviations from 100% are due to rounding.

Indian students (+53%) has grown even more strongly. These countries of origin are followed in the ranking by Austria and Russia, which were in third and second place five years ago. The number of Austrian students has increased by 14% since 2016 and the number of Russian students has decreased by 9%. Other major countries of origin are Iran, Turkey, Cameroon, Italy and Ukraine.

It is not only among Syrian students, forced to leave their home country due to the civil war that has been going on for years, that strong, above-average increases have been recorded in recent years. Countries of origin such as Nigeria (+98%), Sri Lanka (+90%), the Palestinian territories (+79%), Ghana (+78%), Egypt (+77%), Afghanistan (+75%), Tunisia (+74%), Albania (+74%) and Taiwan (+70%) have also recorded considerable growth over the last three years. In contrast, there has been a significant decrease in student numbers over the same period for the United Arab Emirates (-80%), Gabon (-27%), Moldova (-22%), Oman (-22%), Slovakia (-22%), Tanzania (-20%) and Poland (-18%).¹

Even though specific reasons for student trends can be given for each country, certain overarching regional trends are striking: in particular, the number of internationally mobile students from North Africa and Middle East, and Asia and Pacific is increasing, while the number of internationally mobile students from European, especially Eastern European regions, is increasing less strongly and even stagnating or declining. In addition to political, humanitarian, economic and demographic issues in these countries of origin, varying levels of development of higher education and academic systems in both the countries of origin and the host countries also influence international mobility.

B2.5 International students intending to graduate by key countries of origin 2014 and 2019

Country of origin 2014	Number	Proportion in %	Country of origin 2019	Number	Proportion in %
China	26,293	13.7	China	37,373	13.5
Russia	10,296	5.4	India	20,083	7.3
Austria	9,142	4.8	Syria	12,749	4.6
India	9,009	4.7	Austria	11,375	4.1
Bulgaria	6,529	3.4	Russia	9,787	3.5
Ukraine	6,156	3.2	Iran	8,339	3.0
Cameroon	6,121	3.2	Turkey	7,393	2.7
Turkey	5,645	2.9	Cameroon	7,167	2.6
Iran	5,340	2.8	Italy	6,923	2.5
Poland	5,097	2.7	Ukraine	6,644	2.4
Morocco	4,426	2.3	Bulgaria	6,107	2.2
Italy	4,388	2.3	Tunisia	5,990	2.2
France	4,321	2.3	Pakistan	5,687	2.1
South Korea	3,778	2.0	Morocco	5,478	2.0
Luxembourg	3,322	1.7	Vietnam	5,307	1.9
Indonesia	3,144	1.6	France	5,287	1.9
Spain	3,033	1.6	South Korea	5,107	1.8
Vietnam	2,945	1.5	Indonesia	5,099	1.8
Greece	2,892	1.5	Egypt	4,590	1.7
Pakistan	2,701	1.4	Luxembourg	4,463	1.6

Source: Federal Statistical Office, student statistics; DZHW calculations

B2.6 Countries of origin of international students with the largest increases and decreases of international students intending to graduate 2016–2019¹

Country of origin	Development 2016–2019 in %
Syria	+288
Nigeria	+98
Sri Lanka	+90
Palestinian territories	+79
Ghana	+78
Egypt	+77
Afghanistan	+75
Tunisia	+74
Albania	+74
Taiwan	+70
Estonia	-13
Latvia	-14
Sweden	-16
Poland	-18
Tanzania	-20
Slovakia	-22
Oman	-22
Moldavia	-22
Gabon	-27
UAE	-80

Source: Federal Statistical Office, student statistics; DZHW calculations

2.3 Applicants

Around half of all international students in Germany are enrolled at universities that are members of uni-assist. Data on international applicants can be collected for these universities.¹ In the 2019 academic year – unlike the two previous years – most applicants came from India (15%), which has seen a 170% increase in the number of applicants since 2016.² Overall, the number of international applicants has risen by 52% since 2016. Syria, which in the previous two years was the country with the highest number of applicants, is now in second place, accounting for 9%. Although Syria is also experiencing above-average growth of 87% compared to 2016, this is primarily due to the strong increase in Syrian applicants in the 2017 academic year. Compared to the 2018 academic year, however, there has been a 23% decline in Syrian applicants. A large proportion of the Syrians who fled to Germany mainly in 2015 and 2016 and who are interested in studying here seem now to have arrived in the German higher education system.

However, it is not only in the cases of India and Syria that the number of applicants has shown very lively growth over the last three years. The number of applicants from Nigeria (+246%), Bangladesh (+168), Ghana (+175%) and Pakistan (+151%) has also more than doubled since the 2016 academic year; in the case of Nigeria it has more than tripled. Conversely, some other countries of origin have lost much of their significance in the last three years, with below-average growth rates or even declines in

What is uni-assist?

uni-assist is a registered association, which all state universities in Germany can join. Currently, 177 universities make use of uni-assist's services. The core task of uni-assist is to evaluate international certificates. On behalf of its member universities, uni-assist checks whether the certificates submitted are equivalent to German school-leaving or university degrees and are sufficient to qualify students to study in Germany. If the check is positive, uni-assist forwards the application electronically to the respective universities.

the number of applicants. These particularly include Indonesia (–2%), Tunisia (–4%), Ukraine (–6%) and Vietnam (–11%).

There are also clear differences between the key countries of origin of applicants in terms of success rates in the formal application process through uni-assist. Only applications that meet all formal criteria are forwarded by uni-assist to the respective university for the final (and above all, subject-based) decision on student admission. Among the 20 key countries of origin in the 2019 academic year, the share of applications forwarded by uni-assist ranges from about 58% for applicants from Ghana to about 91% for applicants from Vietnam.

The most important reasons for uni-assist to reject an application are incomplete documents (27%), insufficient German language proficiency (20%), exceeding deadlines (12%) and falling below a specified minimum grade (11%). Depending on the country of origin, however, the significance of the reasons for rejection varies somewhat. For example, while incomplete documents are more likely



B2.7 Key countries of origin of international applicants via uni-assist 2016 and 2019, with development 2016–2019^{1, 2}

Country of origin	Proportion in %		Development 2016–2019 in %
	2016	2019	
India	8.2	14.5	+170
Syria	7.0	8.5	+87
China	8.2	6.8	+27
Pakistan	3.0	5.0	+151
Iran	4.1	4.7	+74
Nigeria	1.9	4.4	+246
Turkey	2.9	3.8	+101
Bangladesh	1.5	2.7	+168
Russia	3.3	2.6	+22
Cameroon	3.2	2.6	+26
Egypt	2.1	2.6	+89
Morocco	3.2	2.5	+20
Tunisia	3.2	2.0	–4
Vietnam	3.0	1.8	–11
Indonesia	2.7	1.7	–2
USA	2.0	1.6	+23
Ukraine	2.6	1.6	–6
South Korea	2.0	1.4	+10
Ghana	0.8	1.4	+175
Colombia	1.1	1.1	+47
All countries	100	100	+52

Source: uni-assist; DAAD calculations

* Footnotes

- 1 Currently, 177 universities are members of uni-assist. However, the data presented here only refer to the 154 universities that have been members since the summer semester 2016, in order to ensure the comparability of the data.
- 2 An academic year always includes the summer semester and the following winter semester. Accordingly, the 2019 academic year includes applications for the 2019 summer semester and the 2019/20 winter semester.
- 3 Deviations from 100% are due to rounding.

↓ B2.8 Forwarding rate of foreign applicants via uni-assist by selected countries of origin 2019^{1, 2}

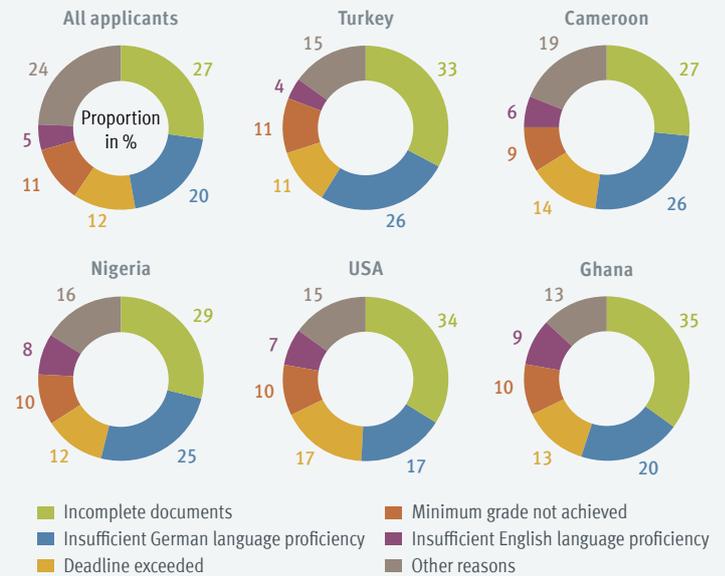
Country of origin	Forwarding rate in %
Vietnam	91
Bangladesh	90
Indonesia	88
Ukraine	87
Russia	87
Tunisia	87
Morocco	86
China	85
India	85
Syria	83
Pakistan	83
Iran	83
South Korea	82
Colombia	82
Egypt	80
Turkey	79
Cameroon	73
Nigeria	71
USA	69
Ghana	58

Source: uni-assist; DAAD calculations

than average to lead to rejection of applications from Ghana and the USA, the same applies to insufficient German language skills in the case of applicants from Nigeria and Cameroon. In addition, a particularly high proportion of US-American applicants are found to have had their applications rejected because they lacked a university entrance certificate. In the case of high school graduates from the USA, this is only awarded directly if a certain combination of subjects is available; otherwise, these applicants must first attend a preparatory course for higher education admission (Studienkolleg) to gain a university entrance certificate in Germany.

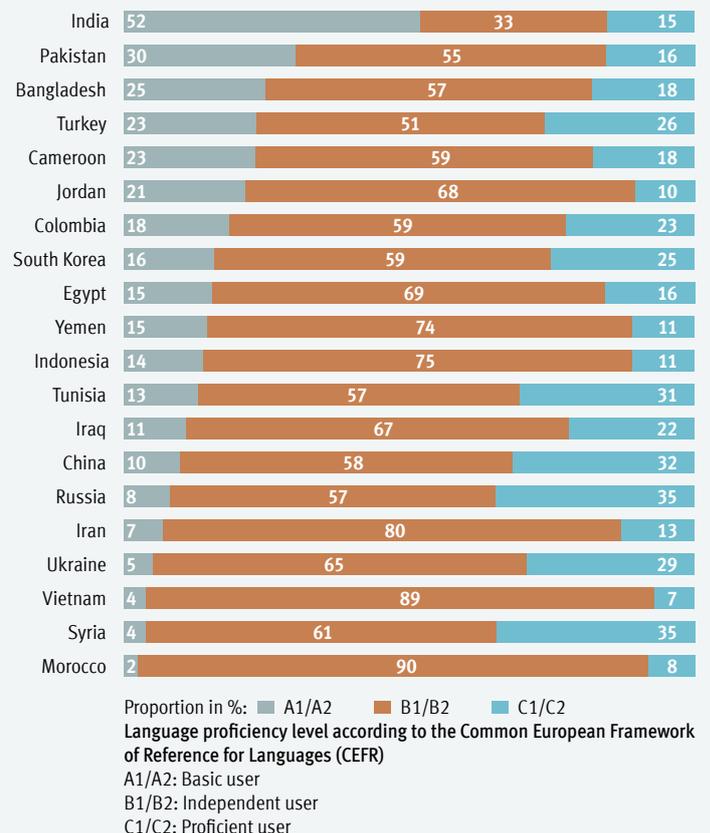
There are also clear differences between the 20 key countries of origin concerning the German language skills tested in the uni-assist application process. The highest shares of applicants who are proficient users of language (C1/C2) according to the Common European Framework of Reference for Languages (CEFR) in the 2019 academic year are from Russia (35%), Syria (35%) and China (32%). High percentages of applicants with an intermediate language level (B1/B2) come mainly from Vietnam (89%) and Morocco (90%) and Iran (80%). Finally, the highest proportion of applicants with only a basic command of the language (A1/A2) is to be found among applicants from India (52%).

↓ B2.9 Key formal reasons for rejection of international applicants via uni-assist, total and by selected countries of origin 2019^{1, 2, 3}



Source: uni-assist; DAAD calculations

↓ B2.10 Knowledge of German of international applicants via uni-assist by selected countries of origin 2019^{1, 2, 3}



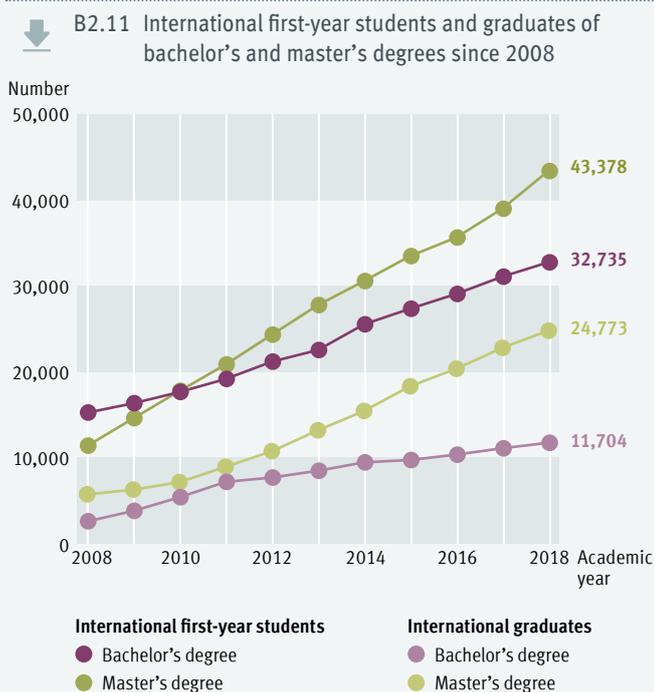
Source: uni-assist; DAAD calculations

2.4 Withdrawal rates

The extent to which students withdraw from their studies is one of the central criteria for educational success. When assessing withdrawal rates of international students, it should be noted that these relate exclusively to studies completed in Germany. Students who switch from a German university to a university abroad during their studies, e.g. one in their home country, are therefore counted as having withdrawn in Germany, even if they obtain their degree abroad. It can therefore be safely assumed that the reported rates overestimate the number of international students who withdraw from their studies. Students from Western Europe, in particular, could decide to discontinue their studies in Germany and continue them in their home country if their study expectations were not fulfilled, as doing this means students rarely, if ever, have to accept a lower quality of studies or lose out in the job market.

“ In bachelor’s programmes, the withdrawal rate of international students increases by 4 percentage points, in master’s programmes it decreases by 3 percentage points.

The number of first-year students and graduates is included in the calculation of the number of students withdrawing from university. This shows that the number of international first-year students in bachelor’s programmes increased between 2008 and 2016 from



Source: Federal Statistical Office, student and graduation statistics

Methodology

Students withdrawing from their studies are former students who leave a first degree programme at a German university without a degree. The withdrawal rate reflects the share of first-year students in a year group who complete their first degree without earning a degree. The withdrawal rates are calculated using a method based on a comparison of a graduate cohort with the corresponding first-year student cohorts. Students who only change their subject or university are not considered to have withdrawn from their studies. Visiting students who do not pursue a degree in Germany are not included in the calculations. Students who complete a master’s programme without a degree do not withdraw in the narrower sense as they already have a first higher education degree with a bachelor’s degree. For reasons of clarity, they are nevertheless referred to here as students withdrawing from their studies.¹

15,200 to 29,100 and in master’s programmes from 11,400 to 35,600. The number of international graduates also rose between 2008 and 2018 from 2,600 to 11,700 (bachelor’s degrees) and from 5,700 to 24,800 (master’s degrees). If the number of graduates in 2018 is compared with the number of first-year students in 2015 and 2016², the difference is no less than 15,600 (bachelor’s degrees) and 10,900 (master’s degrees).

* Footnotes

- Further information on the procedure for calculating withdrawal rates can be found at www.dzhw.eu/pdf/pub_brief/dzhw_brief_03_2020_anhang.pdf (only available in German). With the amendment of the Higher Education Statistics Act in 2016, it was decided to introduce a study course statistics system. This will make it possible in the future to depict withdrawal and success rates on the basis of individual courses of study as values in official statistics.
- Corresponds to the values of official statistics on the average duration of study of bachelor’s and master’s graduates, cf. Federal Statistical Office (2019b).
- Due to a lack of representative findings on the subject change of international students, it is not possible to calculate the withdrawal rate in the individual subject groups. Corresponding data cannot be obtained by analogy either. It cannot be concluded from the above-average withdrawal rate among German students in engineering sciences that a similar situation also applies to international students.
- The Bavarian State Institute for Higher Education Research and Planning, the Distance-Learning University of Hagen and the DAAD are currently conducting a comprehensive joint project that is looking into the causes of international students withdrawing from bachelor’s and master’s programmes in Germany. Previously published results of the project can be found online at <https://www.daad.de/en/the-daad/what-we-do/education-expertise-services/sesaba/>.

The number of international students withdrawing from a bachelor's programme still clearly exceeds the withdrawal rate among German students. Based on the 2018 graduate cohort, the withdrawal rate for first-year students in 2014 and 2015 was 49%. This represents an increase of four percentage points compared to the calculation for the 2016 graduate cohort.³ Among German students, this figure is 27%. Little is currently known about the causes of withdrawal among international students.⁴ In terms of regions of origin, slightly above-average rates can be observed for students from Latin America (55%), Asia (excluding East Asia) (52%) and Western Europe (51%). By contrast, the figures for Africa (47%), Eastern Europe (45%) and East Asia (43%) are below average.

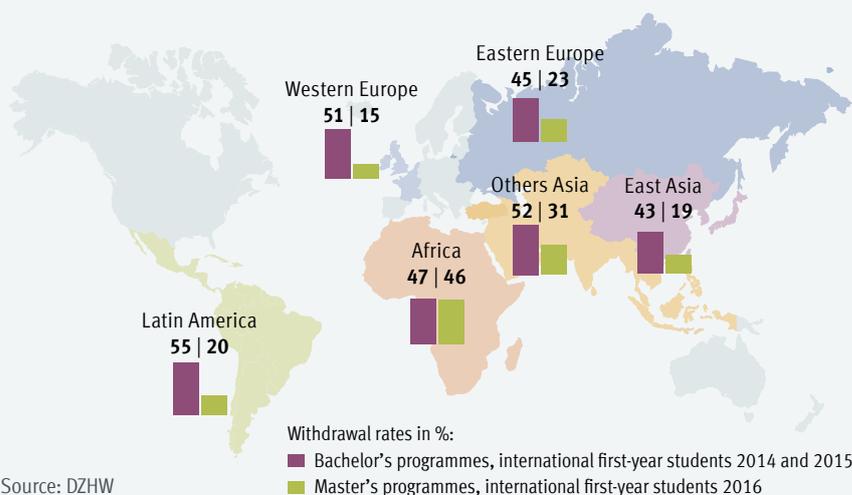
As is the case for German students, the withdrawal rate for international students on master's programmes is, at 26% for first-year students in 2016, significantly lower than for bachelor's programmes. This is three percentage points lower than in the last calculation (for first-year students from 2014). For German master's students, the corresponding figure is 17%. At 15%, the lowest withdrawal rate is among students from Western Europe. This figure is even lower than that of their German fellow students. It seems to be the case for first-year master's students from Western Europe that, despite the majority completing their bachelor's degrees abroad (73%), they are particularly likely to start their master's programme with appropriate study expectations and the necessary requirements for study. Relatively low withdrawal rates of 19% and 20% respectively can also be observed for students from East Asia and Latin America. For students from Eastern Europe, the withdrawal rate is 23%. By contrast, the figure for master's students from Asian countries outside East Asia is 31% and for students from Africa 46%.

B2.12 Withdrawal rates of international and German students of bachelor's and master's degrees



Source: DZHW

B2.13 Withdrawal rates of international students in bachelor's and master's programmes by selected regions of origin



Source: DZHW

B2.14 Withdrawal rates of international students in bachelor's and master's programmes by selected countries of origin

Country of origin	Withdrawal rates in %
Bachelor's programmes, international first-year students 2014 and 2015	
Austria	36
China	38
Russia	38
France	43
Cameroon	43
Master's programmes, international first-year students 2016	
China	18
Russia	21
India	25
USA	35

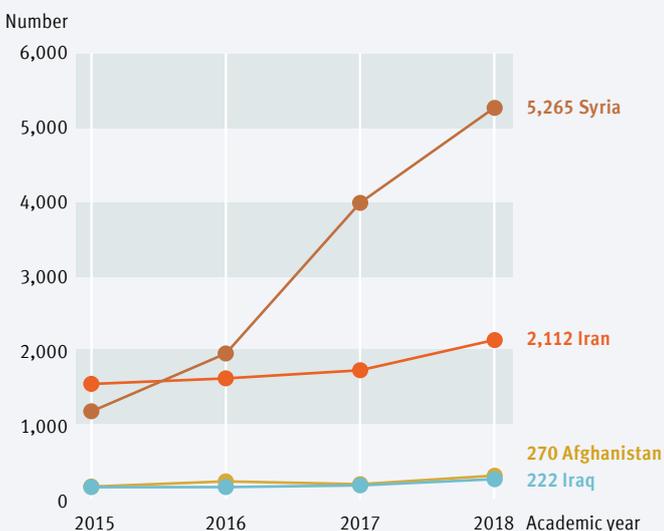
Source: DZHW

Education is the key to integrating refugees into society and the workforce. Around 37% of the people who have found refuge in Germany since 2015 are between 18 and 30 years of age – i.e. at an age at which they aspire to an education.¹ For people of this age in particular, flight means not only leaving their home country and often their families, but also saying farewell to educational paths already begun or planned, which are of decisive importance for their lives now and in the future. The aim of German education and higher education policy is, therefore, to establish suitable access to educational opportunities to create new perspectives for the refugees, whether for their future life in Germany or, in the case of a later return, in their home countries. The DAAD's higher education programmes for refugees, which have enabled thousands of refugees to gain access to a German university over the past four years, can make a major contribution to this.

Numbers of refugee students at German universities

When students enrol at German universities, it is not recorded whether they come from refugee backgrounds. The number of students in Germany who arrived as refugees can therefore only be estimated. Between 2016 and 2019, around 30,000 refugees prepared for university studies on language and subject-specific courses. Based on DAAD funding data, it can be assumed that the four key countries of origin for refugee students (Syria, Afghanistan, Iran and Iraq) easily account for 90% of all refugee students in Germany. If one also assumes that a majority (around 90%) of the students from these countries of origin are from refugee backgrounds, this results in a figure of around 22,000 refugee

BS1 First-year students intending to graduate in Germany from the four key countries of origin of students from refugee backgrounds 2015–2018



Source: DAAD

DAAD funding programmes for refugees

The BMBF-funded DAAD Integra – Integration of Refugees into Studies programme supports language and subject courses at German universities and preparatory courses for higher education admission to prepare students for and support their studies. In addition, the programme supports measures to ensure the success of their studies by focusing more strongly on study guidance and measures to prepare students for the labour market.

The NRWege ins Studium programme is currently financing additional staff at 28 North Rhine-Westphalian universities to coordinate and expand the advice and support structures at the universities, in addition to measures to prepare and support students. It also awards scholarships for especially talented and committed refugees.

This approach is rounded off by the BMBF-funded Welcome – Students Helping Refugees programme, which funds student projects to help prospective students who have experienced being refugees to get to and integrate at university.

Based on a 2016 survey conducted by the BAMF (SOEP), it is assumed that around 11% of the refugees in Germany have at least a first university degree.² In order to tap this academic potential, the BMBF's "PROFI" programme has created a new type of support programme in addition to the existing refugee programmes from 2020 onwards. It aims to enable highly qualified refugees to find employment in Germany in line with their qualifications and, at the same time, to counteract the shortage of skilled workers that has been identified in many areas of the German labour market.

A similar programme has been created at state level in North Rhine-Westphalia: NRWege Lighthouses – Projects for the sustainable internationalisation of universities. One focus here is on the development and implementation of shortened study programmes for teachers who have fled, which at the same time promote (labour market) integration and address the prevailing shortage of skilled workers.

students who were seeking a degree at a German university in 2019. The corresponding figure in 2015 was still around 9,000 students. If this trend continues, as DAAD funding data suggest, it can be assumed that around 30,000 refugee students at German universities will have fled in 2020. If the same assumptions are applied to international first-year students, the total number of first-year students with a refugee background in the years 2015 to 2018 was around 21,000 (data for 2019 will not be available until the end of 2020). Based on the available data from the DAAD funding programmes, it can also be assumed that, since 2015, around 2,000 to 3,000 students from refugee backgrounds have successfully completed a master's programme at a university in Germany.

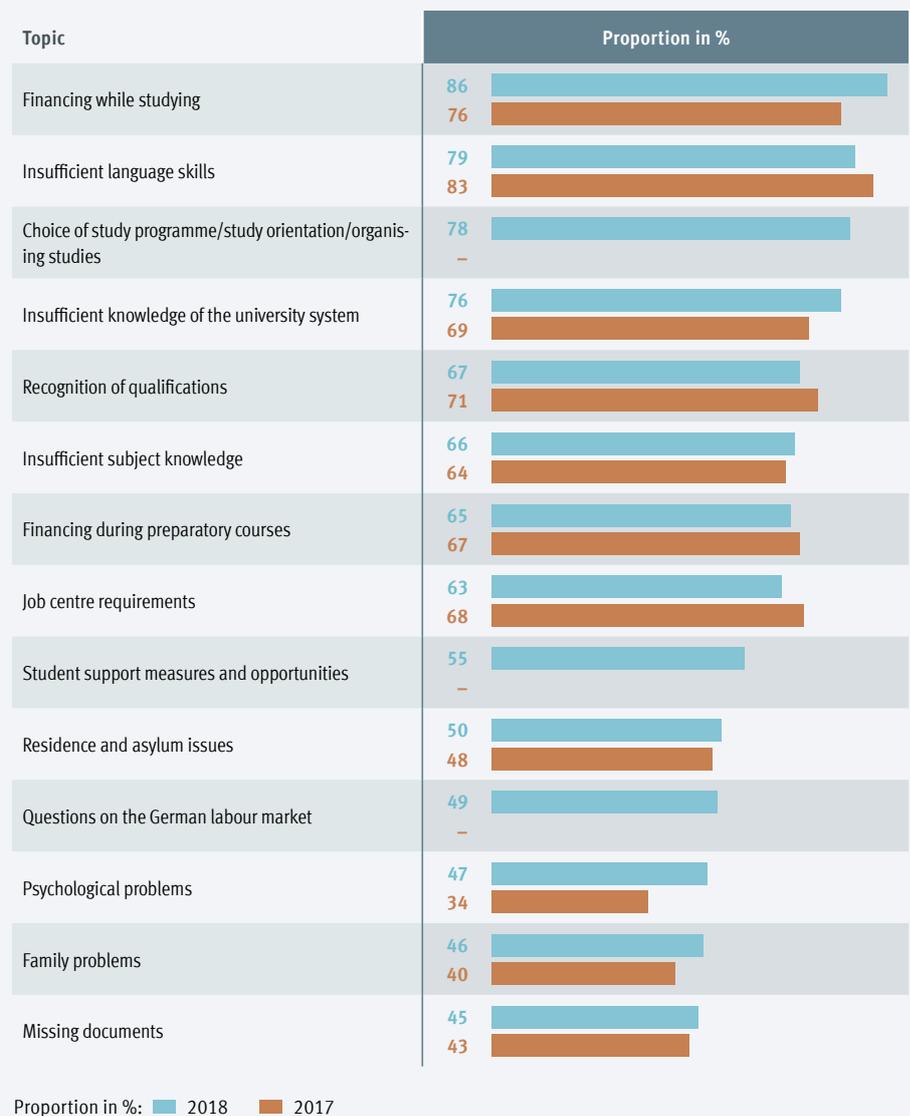
Support requirements and intentions to stay

Each year, universities provide over 43,000 advisory sessions for refugees interested in studying. When advising refugees, the universities and preparatory courses for higher education admission are confronted with many different and sometimes complex issues that go far beyond the usual subjects of advice and competencies of student advisory services. At the same time, however, there are also many areas of overlap with counselling for other international and also German students.

Consultations with prospective refugee students most often address limited or non-existent German language skills. Inadequate language skills thus continue to be one of the biggest obstacles to successfully starting a course of study. Almost as frequently in 2018, there were questions about the choice of study programme, study orientation and organisation: topics that were not yet issues in consultations in 2017. Insufficient knowledge of the German higher education system continues to be one of the topics most frequently addressed, as are financing issues. While, in 2017, covering living expenses during preparatory courses was still one of the topics that arose most often, this question extended to financing options for university study in 2018. A lack of specialist knowledge and questions about measures and opportunities related to study were also addressed much more frequently last year than in 2017. More inquiries were also received about the labour market and job opportunities in Germany.

This indicates that students who have experienced being refugees are looking into ca-

BS2 Major topics of advice for prospective students from refugee backgrounds in Germany 2017 and 2018



Source: DAAD

reer opportunities in Germany, both before and during their studies. Evidently, a significant proportion of these students see their working future in Germany rather than in their country of origin. This corresponds to the results of a DAAD survey of people funded within the Integra programme, according to which 89% of the refugees from the 2017 cohort surveyed intend to work in Germany after completing their studies, while only 6% were unable to answer this ques-

tion with certainty and 5% said they had no intention or gave no response.

Starting university and study characteristics

The refugees surveyed by the DAAD who were already studying at the time of the survey enrolled primarily in the subject groups of engineering sciences (47%), law,

* Footnotes

- 1 Cf. Bundesamt für Migration und Flüchtlinge (BAMF): Das Bundesamt in Zahlen (years 2015–2019).
- 2 Cf. Brücker et al. (2018).

economics and social sciences (16%), and mathematics and natural sciences (12%). At 57%, most aspire to a bachelor’s degree, almost 1 in 3 hope to obtain a master’s degree (32%), 7% want to take a state examination, and as many as 3% are aiming for a doctorate. While 33% of the refugees felt well prepared in their studies, 50% reported that they were not sure whether they would be able to meet the academic requirements. 17% considered themselves to be badly or very badly prepared. It is interesting to note in this context that, despite these assessments, a clear majority of 81% say that they are likely or very likely to complete their studies successfully in Germany. Only 5% assume that they are less likely to complete their studies successfully.

The most common reason given by refugees for withdrawing from their studies in Germany is language problems. This was cited by around a third of the respondents (32%) who were concerned about the possibility of withdrawing. Academic reasons were also cited by as many as 14% as a possible reason for withdrawal, as were problems in their private lives (13%) or financial problems (11%). Almost one in three also stated that other reasons could prevent the successful completion of their studies or that several reasons could have a combined impact.

Outlook: challenges and perspectives

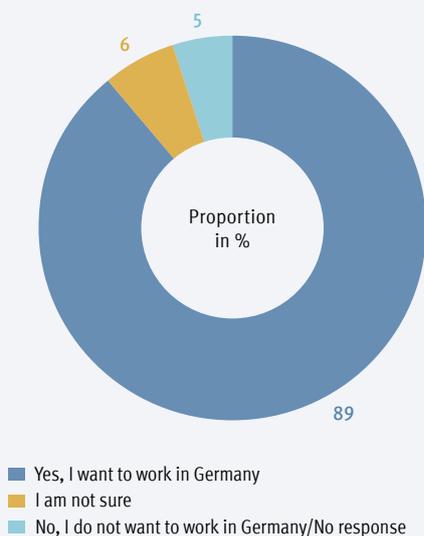
Refugees’ interest in tertiary education remains high. This is indicated by the high number of advisory sessions provided by universities, the well-attended preparatory courses for higher education admission and the increasing number of enrolled students from refugee backgrounds. In future, it will be important

to focus more strongly on ensuring the success in their studies. The higher education programmes for refugees were developed in such a way that it is possible to react flexibly to the educational progress of prospective students or students with a refugee background and to expand the programme design in line with requirements. Based on the experience of the universities and course participants, the call for proposals for the higher education programmes for the funding period from 2020 onwards placed extra emphasis on such measures as the language, specialist and methodological courses to support university study, as well as on measures to prepare students for the labour market. In addition, the courses have been partially opened to allow international students to participate.

The experiences of refugees in higher education provide evidence that offering specialist support, including specialist terminology, and social assistance, can reduce the withdrawal rate and thus contribute to improving the rates of success among international students in Germany.

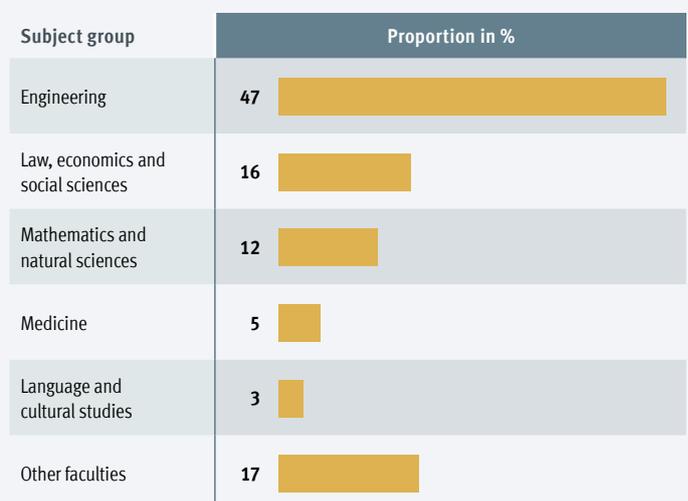
The integration of refugees and international skilled workers into the German labour market is one of the most important challenges for the years to come. For this reason, making international students more eligible for funding programmes and targeting their preparation for the German labour market during their studies represent two further central fields of action for future programme design. By expanding the programmes in line with demand, the challenges can be met with foresight and a strong foundation can be laid for the successful integration of international students into our society and labour market.

BS3 Integra programme participants by intention to remain 2018



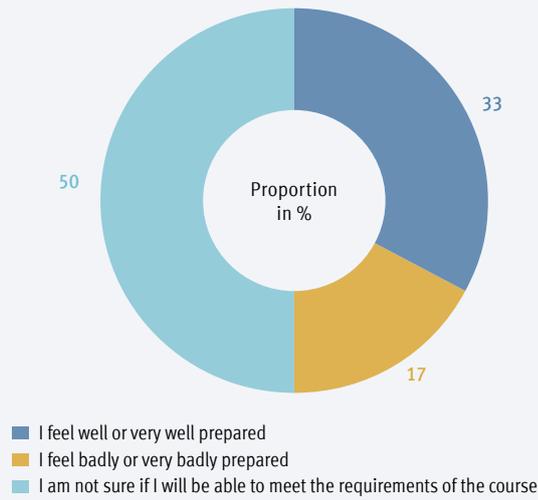
Source: DAAD

BS4 Former Integra participants who have started a degree course, by selected subject group 2018



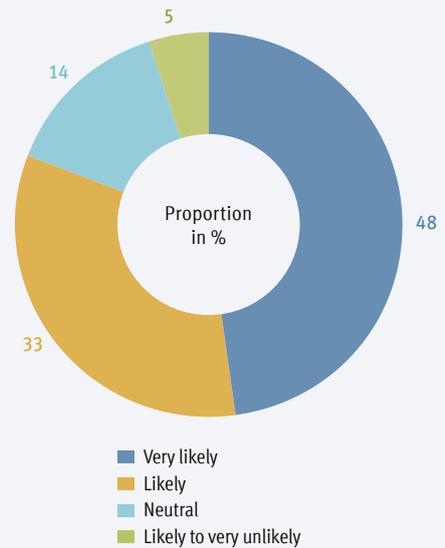
Source: DAAD

BS5 Integra programme participants who have started a degree course, by evaluation of degree requirements 2018



Source: DAAD

BS6 Integra programme participants who have started a degree course, by assessment of the likelihood of graduating successfully 2018



Source: DAAD

BS7 Integra programme participants who have started a degree course and are considering withdrawing, by possible reasons for lack of success in studies 2018

Possible reasons	Proportion in %
Language problems	32
Academic problems	14
Problems in private life	13
Financial problems	11
Multiple/other reasons	30

Source: DAAD

3 Temporary study-related visits abroad

3.1 Mobility trends and subject groups

In the 2018/19 winter semester, around 26,000 international students were enrolled for a temporary visit at a German university, 9% of all international students. However, this figure underestimates the total number of students in the 2018 academic year who came to Germany for a temporary visit. This figure does not include those students who enrol for a visit of this kind in the summer semester and stay at the university for one semester only, which is the case for many visiting and exchange students. Their number for the 2018 summer semester was around 12,500, which means that the total number of temporary visiting and exchange students who were enrolled at German universities during the 2018 academic year was around 38,500.

In the 2018/19 winter semester, the number of international students on a temporary study visit to Germany decreased by 2,600 students (9%), compared to the maximum number in the 2015/16 winter semester. The reasons for this development are complex, as the number of such visits is not only influenced by individual motives for mobility, but also by existing exchange programmes, cooperation relationships and corresponding study programmes, as well as by concrete support from universities and other institutions. In addition, demographic and economic developments in the respective countries of origin also play an important role.

The vast majority of international students (81%) enrolled for their temporary visit at a university, while 19% completed their temporary

visit abroad at a university of applied sciences. However, while the decline in numbers at universities has remained unchanged since 2016, an increase can be observed again at universities of applied sciences, although without returning to the peak of 2016.

International students who come to a German university for a shorter period of study enrolled in law, economics and social sciences (31%) and the humanities (28%) with notable frequency. By contrast, the share of engineering is 19%. 7% study mathematics and natural sciences, 4% medicine and health sciences, 3% art and art history and 1% agricultural, forestry and food sciences. 8% are enrolled

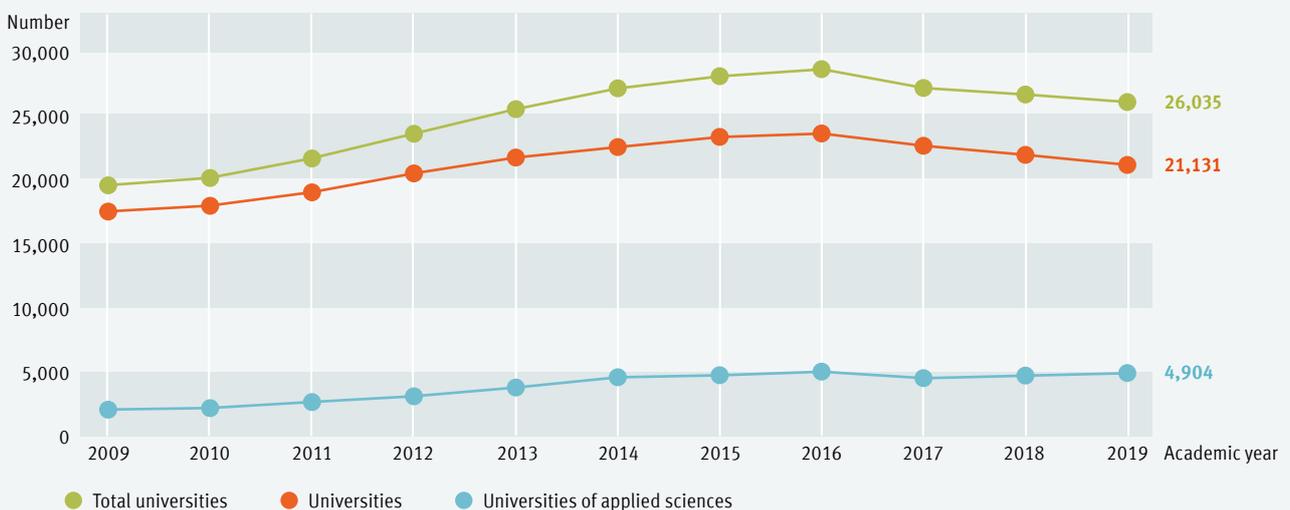
in other subjects. Compared to international students seeking a degree in Germany, the high proportion of temporary visits in the humanities and the low proportion in engineering are particularly striking. The same percentages apply to German students. It is quite obvious that temporary

study visits are associated with different subject-related intentions among international students than a full course of study. The high percentages of temporary enrolments in the humanities can be explained in particular by the strong interest of international students of German in a visit to a German university. In this way, they want to improve their German language skills, conduct research on specific subject areas or experience the culture and language of a German-speaking country. For international engineering students, on the other hand, a temporary visit of this kind to a German university seems to be of much less interest than a full course of study.

“ The number of international students on temporary study visits decreased by 9% in 2019 compared to the high point in 2016.



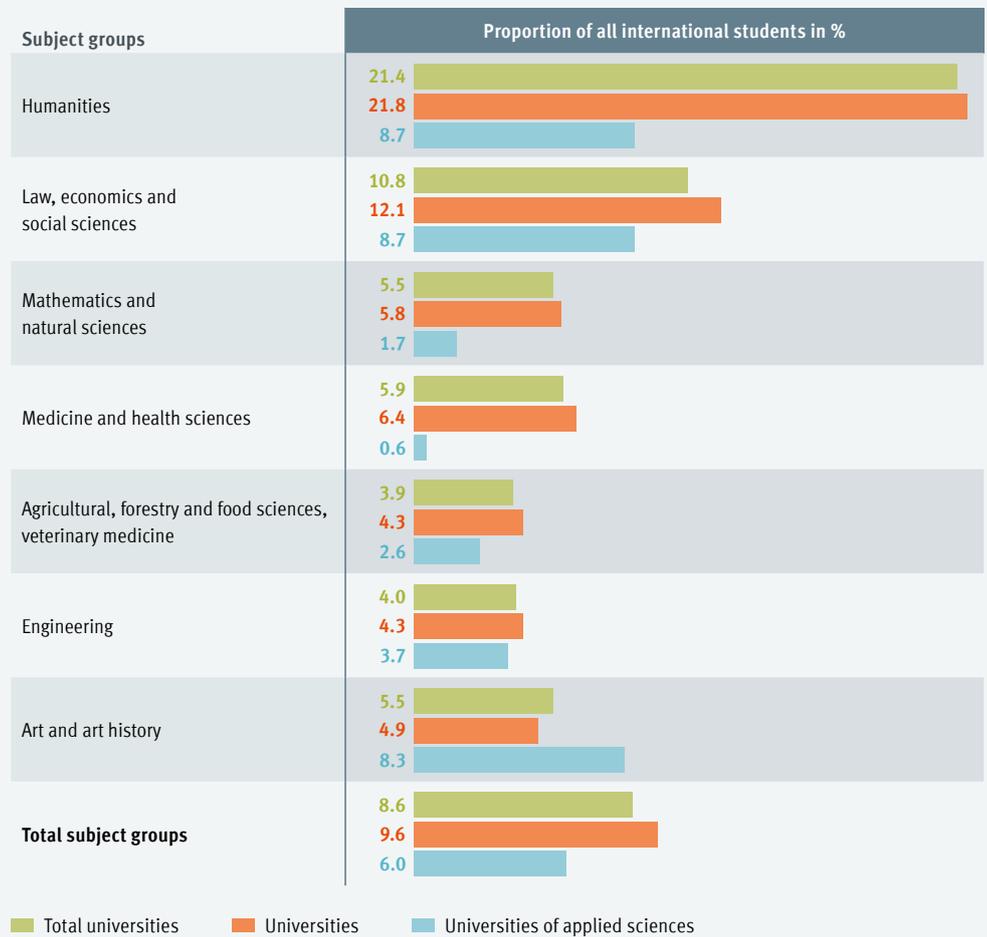
B3.1 International students on temporary study-related visits by type of university since 2009



Source: Federal Statistical Office, student statistics

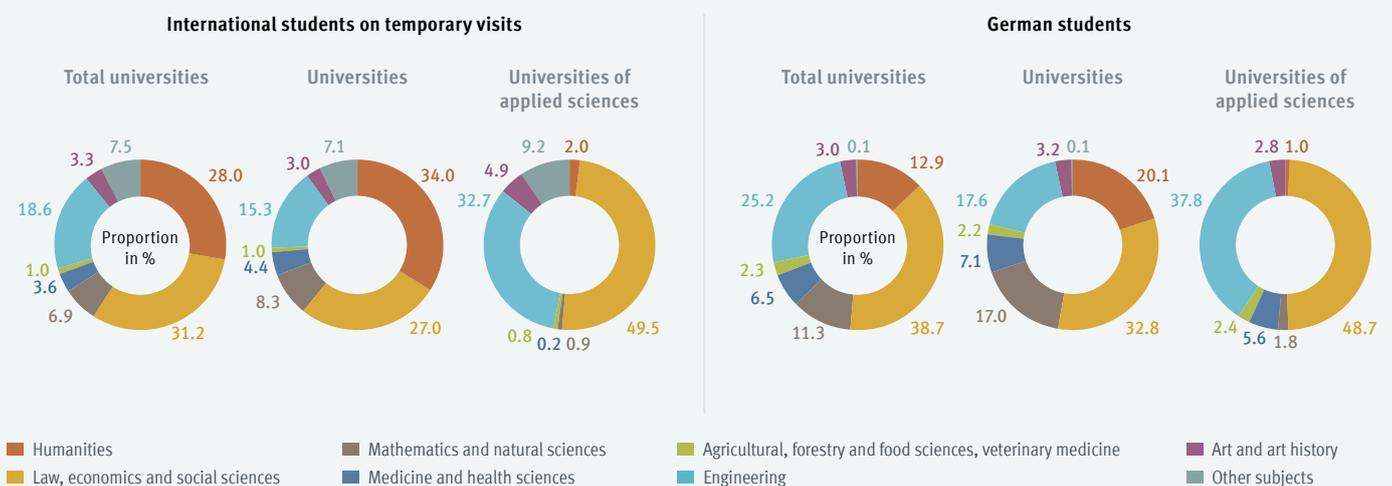
In line with this situation, students on temporary visits represent the highest proportion of all international students in the humanities. At 21%, one in five international students in this subject group is only at university for a limited period. A comparatively high share (11%) is also found in law, economics and social sciences. This figure is below average in all other subject groups, and lowest in engineering and agricultural, forestry and food sciences, at 4% each. Of the international students who cannot be assigned to any subject group, the overwhelming majority of 87% enrolled on a temporary study visit. These are clearly special offerings and short programmes set up primarily for international exchange and visiting students.

B3.2 International students on temporary study-related visits as a proportion of all international students by subject group and type of university 2019



Source: Federal Statistical Office, student statistics; DZHW calculations

B3.3 International students on temporary study-related visits and German students by subject group and type of university 2019



Source: Federal Statistical Office, student statistics; DZHW calculations

3.2 Regions and countries of origin

Most international students on temporary study visits to German universities in the 2018/19 winter semester came from Western European countries. They account for a total of 37% of these students. 14% of temporary visits are made by students from Central and South Eastern Europe. This means that half of internationally mobile students not seeking a degree in Germany come from one of these two European regions. Asian-Pacific countries are also relatively significant, accounting for a total of 23% of temporarily mobile students. By comparison, the other regions of origin play a much smaller role: 7% each of international students on temporary study visits in Germany come from North and Latin America, 6% from North Africa and Middle East, 5% from Eastern Europe and Central Asia, and 1% from Sub-Saharan Africa.

Non-European regions of origin thus also account for a significant share of 47% of international visiting and exchange students. German universities are evidently attractive for short study visits, even for students from countries outside Europe. Compared to international students seeking a German university degree, it is striking that a higher proportion of visiting and exchange students come from Western, Central and South Eastern European countries, and North America. At the same time, they are significantly less likely to come from countries in the regions of North Africa and Middle East as well as Sub-

Saharan Africa. These findings speak on the one hand for the success of European higher education policy in developing the European Higher Education Area and the Erasmus programme. The associated funding and support structures contribute

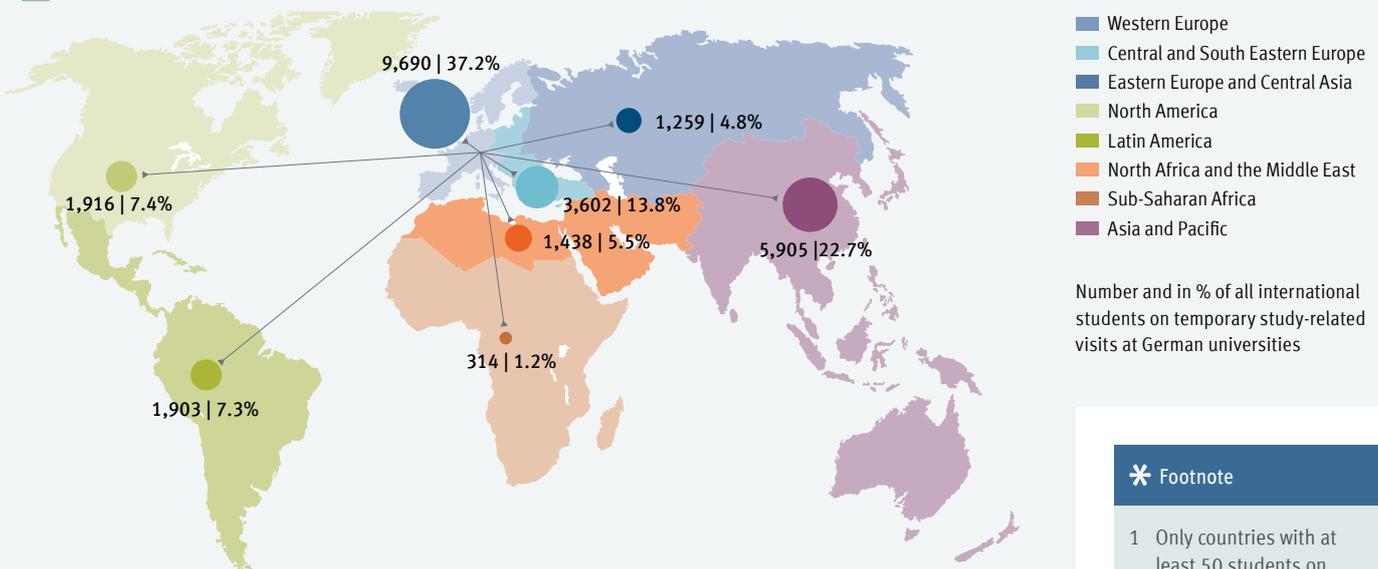
“ The high proportion of visiting and exchange students from European countries of origin attests to the success of European higher education policy.

significantly to the fact that not only has a strong interest in temporary mobility developed in Europe, but that students can also take advantage of it. However, the regional origin of the students concerned also indicates that, without such support and assistance in the form of well-funded programmes, it is more difficult,

especially for students from countries with lower average incomes, to undertake a temporary study visit in Germany. Alongside the time-consuming organisational challenges of arranging a visit with no structural framework, the greatest challenge faced by these students is having to pay the costs of living and study without financial support. Their comparatively short visits, lasting only a few months, and often weaker German language skills mean they do not have the same opportunities to earn sufficient additional income in Germany through gainful employment as their fellow students who complete all their studies in Germany.

As in the case of international students intending to graduate, China tops the ranking of countries of origin. One in ten temporary mobile students is of Chinese origin. This is followed by the

B3.4 International students on temporary study-related visits by region of origin 2019



Source: Federal Statistical Office, student statistics; DZHW calculations

* Footnote

1 Only countries with at least 50 students on temporary visits

Erasmus countries Italy, Spain and France with shares of between 9% and 7%. Other major countries of origin are the USA, Turkey and South Korea. Five years ago, these countries were already among the key countries of origin for international students with temporary study visits in Germany. However, their quantitative development has varied over this period. While more students from China and Italy are coming to German universities on a temporary basis, the number of students from Spain, France, Poland and the USA has declined.

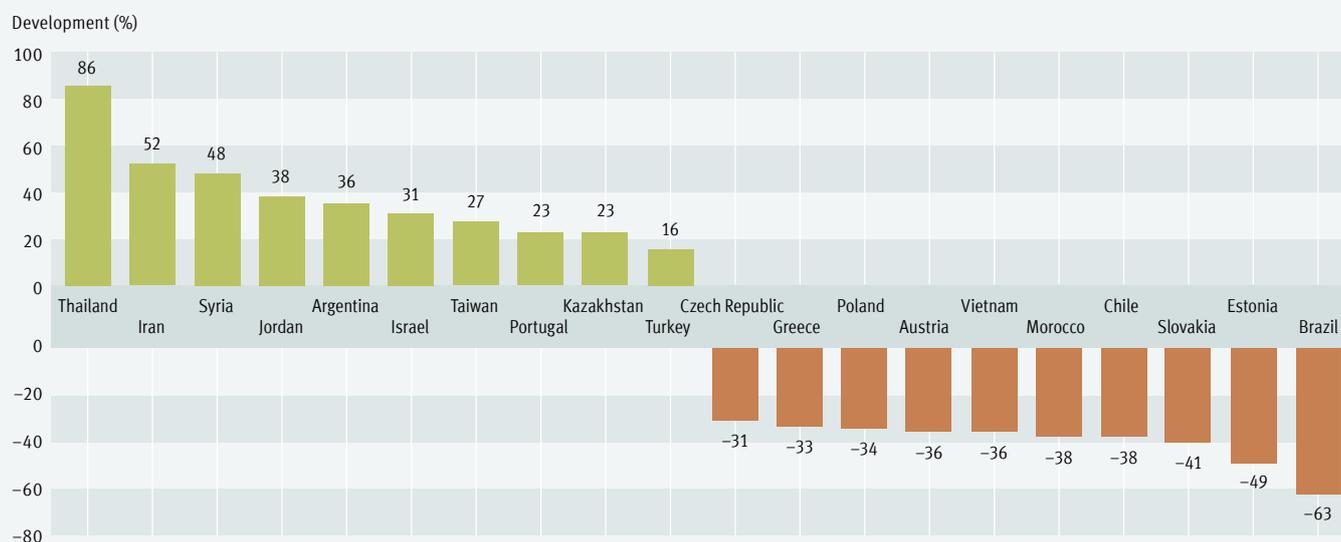
However, since 2016, the most significant changes have occurred in other countries of origin. Particularly significant increases can be seen in the number of students from Thailand (+86%), Iran (+52%), Syria (+48%) and Jordan (+38%). By contrast, a strong decrease can be observed for students from Brazil (-63%), Estonia (-49%), Slovakia (-41%), Chile (-38%), Morocco (-38%), Vietnam (-36%), Austria (-36%), India (-38%), Morocco (-38%), Vietnam (-36%) and Austria (-36%).¹

↓ B3.5 International students on temporary study-related visits by key countries of origin 2014 and 2019

Country of origin 2014	Number	Proportion in %	Country of origin 2019	Number	Proportion in %
Spain	2,864	10.6	China	2,498	9.6
China	2,088	7.7	Italy	2,323	8.9
France	2,000	7.4	Spain	2,131	8.2
Italy	1,822	6.7	France	1,760	6.8
USA	1,782	6.6	USA	1,695	6.5
Brazil	1,393	5.1	Turkey	1,077	4.1
Poland	1,120	4.1	South Korea	983	3.8
Turkey	1,056	3.9	Poland	757	2.9
Russia	830	3.1	Brazil	696	2.7
United Kingdom	778	2.9	United Kingdom	675	2.6
South Korea	756	2.8	Japan	669	2.6
Japan	643	2.4	Russia	652	2.5
Czech Republic	537	2.0	Mexico	548	2.1
Hungary	506	1.9	Taiwan	512	2.0
Mexico	474	1.8	India	479	1.8
Switzerland	394	1.5	Jordan	411	1.6
Finland	375	1.4	Switzerland	397	1.5
India	363	1.3	Czech Republic	343	1.3
Belgium	344	1.3	Hungary	310	1.2
Romania	338	1.3	Finland	300	1.2

Source: Federal Statistical Office, student statistics; DZHW calculations

↓ B3.6 Countries of origin with the largest increases and decreases of international students on temporary study-related visits 2016–2019¹



Source: Federal Statistical Office, student statistics; DZHW calculations

3 Temporary study-related visits abroad

3.3 Erasmus visits

In 2018, around 32,700 Erasmus students from other countries undertook a study-related visit to Germany. This is the second consecutive year in which their number has decreased.¹ Compared to the previous peak in 2016, 700 (2%) fewer students came to Germany. This development is solely the result of reduced Erasmus study visits. In 2018, 21,700 Erasmus students completed such a visit at German universities: 2,500 (7%) fewer students than in 2016. In contrast, the number of Erasmus placements in Germany has continued to increase and partly compensates for the decrease in study visits. Overall, their number has grown by 10% to 11,000 since 2016. This means that 34% of all Erasmus students from other countries recently came to Germany for a placement. This percentage has increased steadily over the past ten years. Since 2008, the year in which placements were introduced as part of the Erasmus programme, their share of all Erasmus visits has more than doubled from an initial 15%.

France, Italy and Spain remain the key countries of origin. Together they account for 39% of all Erasmus students in Germany. Other important countries are Turkey, the United Kingdom, Poland, the Netherlands and Austria, which together account for a further 32% of Erasmus participants. Developments have varied from one country to another. A steady increase in the number of Erasmus students in Germany can be observed for France, Italy and Turkey and, to a lesser extent, the United Kingdom. By contrast, the number of students from Spain and Poland has been decreasing in recent years. A special case

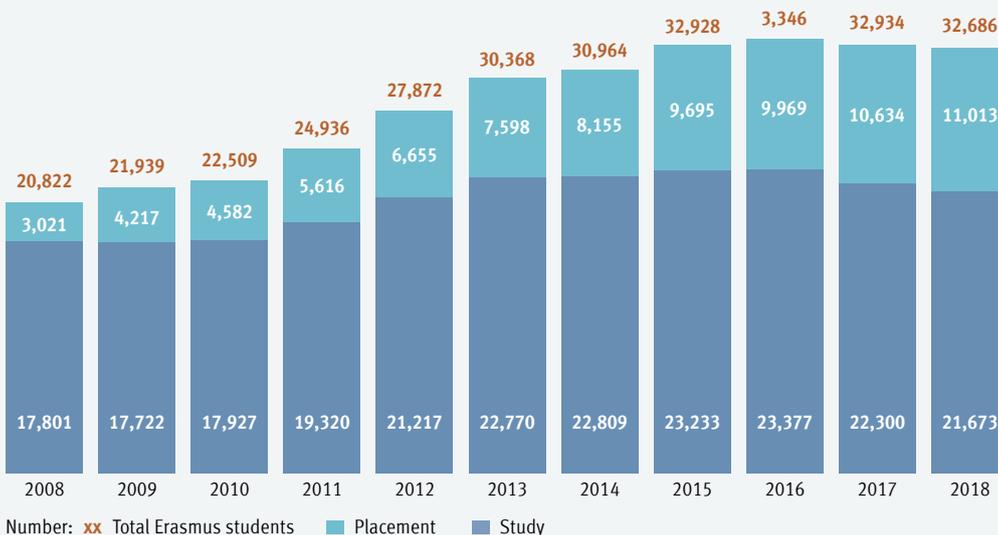
is Austria, where, after a steady increase in recent years, a significant decline can be observed for the first time compared to 2017. In addition, some countries, such as the Netherlands, are characterised by constant numbers of Erasmus students in recent years.

To varying degrees, participants from different countries prefer an Erasmus placement in Germany. Most people on Erasmus placements come from France, Austria, the United Kingdom and Turkey. By contrast, study visits to German universities are mainly undertaken by participants from Italy, France, Spain and Turkey. High percentages of placements in all Erasmus visits are characteristic of students from Austria (72%), the Netherlands (55%) and the United Kingdom (45%). On the other hand, high proportions of study visits are recorded for Italy (79%) and Spain (77%).

Three subject groups are particularly important for Erasmus students in Germany: arts and the humanities alone account for 26% of all participants; business, administration and law 22%; and engineering, manufacturing and construction 18%. A comparison of all international students at German universities shows that Erasmus students are most strongly over-represented in the fields of the arts and the humanities as well as social sciences, journalism and information science. On the other hand, under-representation is particularly noticeable in the fields of engineering, manufacturing and construction, natural sciences, mathematics and statistics, and information and communication

“ 34% of all Erasmus students come to Germany for a placement visit

B3.7 Erasmus students from other countries by type of visit to Germany since 2008¹



Source: DAAD, Erasmus statistics

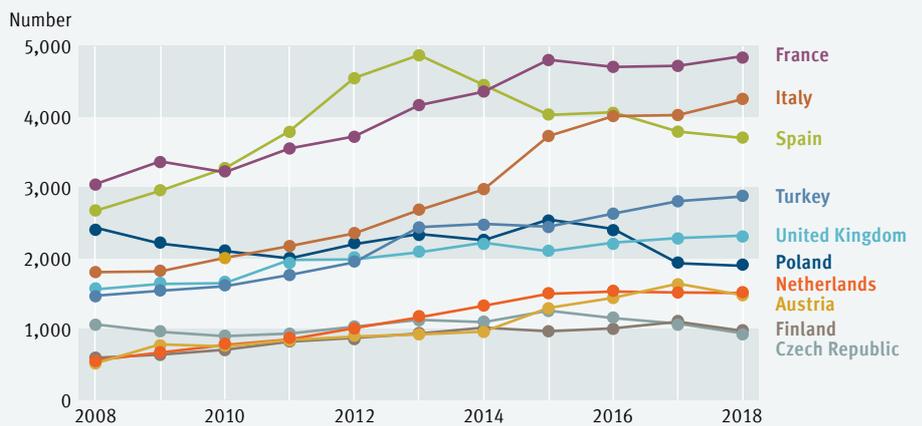
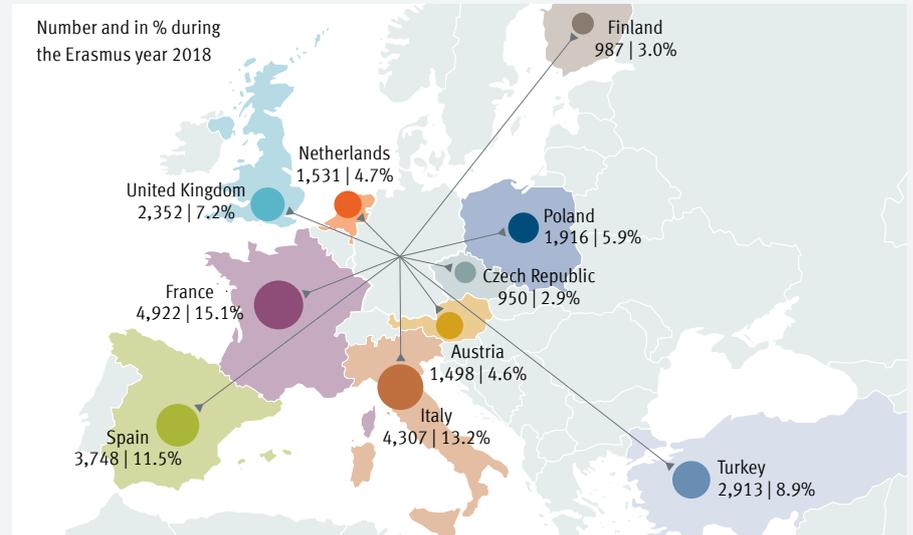
* Footnote

1 Erasmus statistics until 2014: the academic year begins in the winter semester and ends in the summer semester of the following year. 2014 = winter 2013/14 + summer 2014. New Erasmus statistics from 2015: the academic year begins on 1 June of the preceding year and ends on 31 May of the following year. 2018 = 01/06/2017 to 31/05/2019.

“ Increasing numbers of Erasmus students from France, Italy and Turkey, decreasing numbers of students from Spain and Poland

technologies. The differences in subject preferences are partly a result of the regions of origin of Erasmus students compared to all international students. It can be seen that Asian students, who account for a high proportion of international students in Germany, particularly prefer engineering subjects. By contrast, Erasmus students come exclusively from European countries, which are characterised by a higher-than-average interest in the humanities and social sciences among internationally mobile students seeking a university degree in Germany.

B3.8 Erasmus students from other countries in Germany by key countries of origin since 2008



Source: DAAD, Erasmus statistics; DZHW calculations

B3.9 Erasmus students from other countries in Germany and all international students in Germany by subject group 2018

Proportion of all international students in Germany in %	Subject groups	Proportion of all Erasmus students in Germany in %
1.3	Education	2.6
17.0	Arts and the humanities	25.5
3.6	Social sciences, journalism and information	10.4
19.9	Law, economics and administration	21.6
10.6	Natural sciences, mathematics and statistics	6.8
9.1	Information and communication technologies	3.0
29.0	Engineering, manufacturing and construction	17.5
2.2	Agriculture, forestry, fisheries and veterinary medicine	1.3
6.2	Health and welfare	8.5
0.0	Services	2.7

Sources: DAAD, Erasmus statistics; Federal Statistical Office, student statistics; DZHW calculations

1.1 Mobility development and major host countries

In 2017, around 140,000 Germans were studying abroad. Since 2014 (when the figure was around 138,000) their number has remained largely unchanged. However, if we broaden the time frame, the number of German students abroad has more than quadrupled since 1991 and more than doubled since 2000. If we look at this development more closely, it emerges that in the period between 2002 and 2010, i.e. during the introduction of the new, tiered study system, above-average growth rates of 10% and more were achieved in one year. During this time, the proportion of internationally mobile students in relation to the total number of German students rose from 3.3% to 5.6%. This indicates that the option opened up by the new study system of following a bachelor's programme in Germany with a master's programme abroad has been and still is used by a large number of students. There is no doubt that this has led to a significant increase in the degree-related international mobility of German students. However, since the completion of the introduction of the new types of degrees, this expansion in mobility can be regarded as having largely come to an end. Since then, the absolute number of German students abroad has hardly increased at all, and their share in relation to the total number of German students has even fallen slightly since 2011 due to the further increase in the number of students in Germany up to 2015. In 2017 this figure was 5.2%.

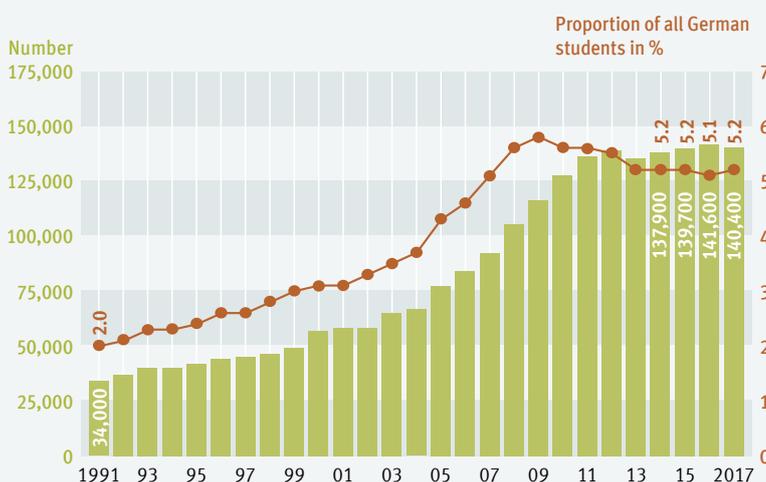
The majority of the students abroad (approx. 90%) recorded by official statistics also aim to obtain a degree abroad (cf information regarding the database). The motives for this form of mobility differ fundamentally from the motives for temporary study-related mobility (cf Chapter C2). While degree-related international mobility is usually motivated by the endeavour to improve the chances for the respective life and career plans by obtaining a foreign university degree, temporary study-related mobility is more dominated by

Database

The data on German students abroad listed on pp. 66–69 are primarily from the Federal Statistical Office. The Federal Statistical Office conducts an annual survey of the institutions responsible for education statistics in around 40 key host countries of German students. The Federal Statistical Office also supplements the survey with UNESCO and Eurostat data on other host countries, in which at least 125 German students were registered in the current year. These students are predominantly, but not exclusively, students seeking a degree abroad. For some countries, Erasmus students and other students with temporary study periods are also included in the data (see also the corresponding footnotes to the figures). However, only some of these countries are able to quantify the exact number or proportion of these temporarily mobile students. In these countries, however, the proportion is below 10% in each case. The data presented here are therefore interpreted primarily as data on degree-related student mobility.

the desire to broaden one's horizon, improve a foreign language and to further one's career, for example. The motives for mobility also strongly influence the choice of the respective host country or host institution. Just under three-quarters of all German students abroad are in Western European countries (73%). The regions of Central and South Eastern Europe (10%), North America and Asia and the Pacific (8% each) follow at a considerable distance. The other regions of the world play hardly any role in the degree-related international mobility of German students, each of which accounts for less than 1%.

↓ C1.1 German students abroad since 1991¹



Source: Federal Statistical Office, German students abroad, country-specific reporting periods

* Footnotes

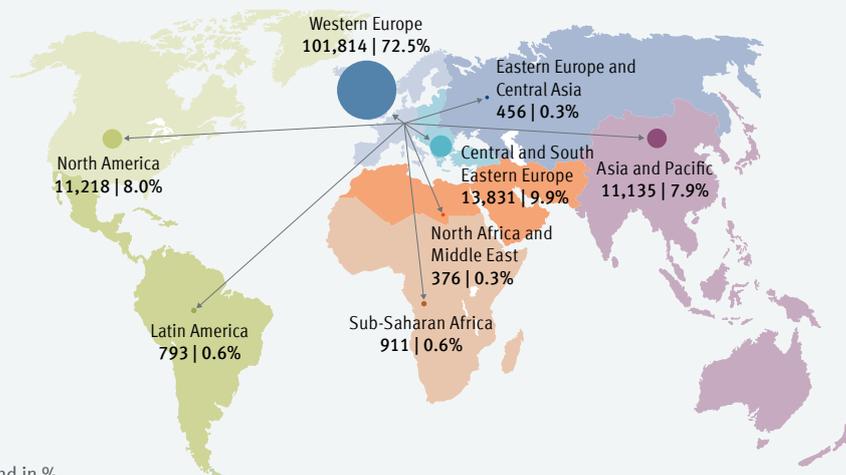
- 1 From 2010: including results of the Doctoral Survey, a separate survey of doctoral students in Germany conducted by the Federal Statistical Office, which, unlike the matriculation statistics, also includes doctoral students who are not enrolled
- 2 In addition to the host countries covered by the Federal Statistical Office, this includes those countries in which, according to UNESCO student statistics, more than ten German students were enrolled in 2016 or 2017.
- 3 Figure from 2016 instead of 2017, as data for 2017 are not yet available
- 4 2017: break in time series compared to previous year
- 5 Figures have been taken from the official statistics of the Higher Education Statistics Agency (HESA), as the report of the Federal Statistical Office does not contain more recent figures on first-year students.
- 6 2014: data from 2013, as 2014 data are not available

The four most popular host countries are still Austria, the Netherlands, the United Kingdom and Switzerland. However, while the numbers of German students in Switzerland and the Netherlands have declined slightly since 2014 (–2% each), an upward trend can be observed for the United Kingdom (+3%) and especially Austria (+7%) over the same period. Among the major host countries with a particularly significant increase in German students between 2014 and 2017, Central and Eastern European countries are particularly well represented, such as Poland (+28%), Romania (+69%), Bulgaria (+142%) and especially Turkey (+404%). Except for Poland, however, these increases are mainly due to the change in student statistics in these countries.

The same applies in a similar way to the key host countries, with a conspicuous decline in the number of German students. In Spain (–31%), Canada (–35%) and Sweden (–62%), the declines are mainly statistical. By contrast, host countries without breaks in the recording pattern show much more moderate developments.

Looking at the number of first-year students in the top ten host countries that can provide such figures, the trend is the opposite for the United Kingdom and the Netherlands. In contrast to the total number of students, a 5% decline in the number of first-year students between 2014 and 2017 can be observed in the United Kingdom, while in the Netherlands there is a 9% increase. There may already be signs of a shift in student mobility from Germany, which could be explained in particular by the sharp rise in tuition fees and the cost of living in the United Kingdom. It can be assumed that this trend will increase further over the coming years, also as a result of the additional impact of the Brexit referendum in 2016.

↓ C1.2 German students abroad by host region 2017²



Number and in %

Sources: Federal Statistical Office, German students abroad; country-specific reporting periods; DAAD calculations; UNESCO student statistics

↓ C1.3 German students abroad by key host countries 2014 and 2017 with development 2014–2017

Host country	Number		Development 2014–2017 in %
	2014	2017	
Austria	26,868	28,670	7
Netherlands	22,265	21,858	–2
United Kingdom	15,330	15,745	3
Switzerland	14,783	14,558	–2
USA	10,193	10,042	–1
China	8,193	7,814	–5
France	6,414	6,432	0
Turkey	706	3,561	404
Denmark ³	3,316	3,468	5
Hungary	2,891	3,257	13
Spain ⁴	2,552	1,766	–31
Sweden ³	4,422	1,689	–62
Greece ³	1,127	1,512	34
Italy ³	1,507	1,458	–3
Portugal ⁴	1,310	1,419	8
Romania	769	1,296	69
Bulgaria ⁴	507	1,227	142
Australia	1,167	1,209	4
Canada ³	1,797	1,176	–35
Poland	908	1,158	28

Source: Federal Statistical Office, German students abroad; country-specific reporting periods; DAAD calculations

↓ C1.4 German first-year students abroad by key host countries 2014 and 2017 with development 2014–2017

Host country	Number		Development 2014–2017 in %
	2014	2017	
Austria	7,402	7,886	7
United Kingdom ⁵	7,480	7,135	–5
Netherlands	5,937	6,452	9
Switzerland	4,464	4,386	–2
France	1,704	1,873	10
Portugal	1,087	1,217	12
Spain ⁶	407	974	139
Australia	421	472	12
Poland	219	288	32
Czech Republic	168	225	34

Source: Federal Statistical Office, German students abroad; country-specific reporting periods; DAAD calculations

1.2 Subject groups and types of degree

The majority of German students abroad are enrolled in business, administration and law (23%), as well as the social sciences, journalism and information studies (21%) as fields of study.¹ These are followed by the humanities and the arts (13%), health and welfare (12%), the natural sciences, mathematics and statistics, and engineering, manufacturing and construction (9% each). Compared to German students at German universities, the social sciences, journalism and information studies are thus clearly over-represented abroad, whereas engineering, manufacturing and construction is noticeably under-represented.

Recognition of medical degrees from other EU countries in Germany

If German students study medicine in another EU country, they may also work as doctors in Germany after obtaining their licence to practise medicine in compliance with the formal requirements. This is because according to the European Directive on the Recognition of Professional Qualifications 2005/36 EC, EU countries recognise each other's university degrees as equivalent. Until now, this has also applied to graduates from Poland. Since mid-2019, however, there have been legal difficulties in approving German graduates with a Polish degree in medicine. The reason for this is a change in the legal situation, which has been in force since April 2019. Accordingly, medical training in Poland is only considered completed if, in addition to the Diploma degree from the university providing training, a certificate of a 13-month work experience period as well as an oral examination on medical law and ethics are also submitted. Several applications for the licensure of medical graduates who had successfully completed their medical studies at the Pomeranian Medical University in Szczecin (PUM) in June 2019, but who did not have this certificate, have thus far been rejected by the Brandenburg licensure authority as incomplete.⁴

A comparison between the individual host countries occasionally shows strong differences in the distribution of subject groups. In the two Anglo-Saxon host countries – Ireland and Australia in particular – as well as in the Netherlands, Portugal and Spain, business, administration and law clearly dominate. The high proportion of health and welfare subjects in the three Eastern European host countries, Hungary, Poland and the Czech Republic, is also striking. This is possibly a consequence of the admission restrictions for German medical study programmes, which cause some applicants to look for alternatives abroad. Countries such as Hungary, Poland and the Czech Republic also use the good reputation of their medical education to specifically advertise for international students, in the case of Poland and the Czech Republic with English-language, in the case of Hungary even German-language study programmes. In addition, the structure of medical studies in these countries is very similar to that of German medical studies, and in the Czech Republic and Hungary, these study programmes also end with a state examination.

Just under half of German students abroad (48%) aim for a bachelor's degree there, just under a third (32%) for a master's degree.² A further 10% do a doctorate abroad, while other types of degree (including type of degree unknown) account for 9% of students. Compared to German students at German universities, master's students are thus clearly over-represented abroad, while bachelor's students are noticeably under-represented.³

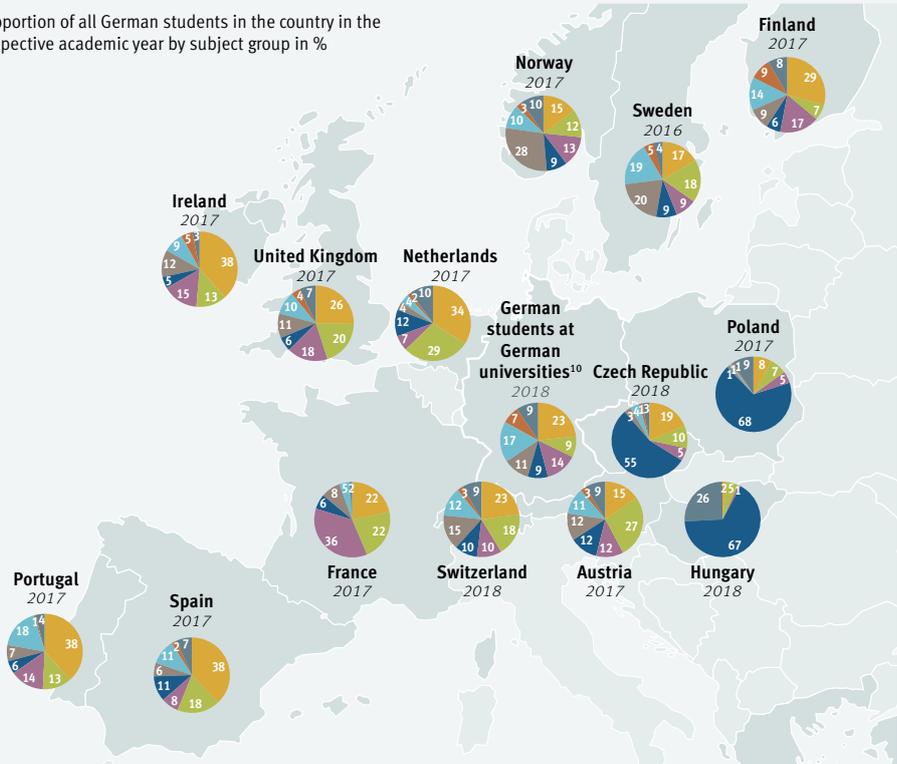
The distribution of the types of degree in the host countries is also very different in some cases. In the Netherlands, Turkey, Greece, Canada and Japan, for example, well over 50% of German students are aiming for a bachelor's degree. In other countries, such as Hungary, Romania, Bulgaria, Poland and Latvia in particular, more than three-quarters of all Germans study in master's programmes. Doctoral students in Anglo-Saxon and Scandinavian host countries such as the United Kingdom, Ireland, Australia, Canada, Denmark, Sweden, Finland and Norway account for a significant proportion of German students. This also applies to Switzerland, Spain and the Czech Republic.

* Footnotes

- 1 Basis: countries that supply the Federal Statistical Office Germany with data on German students and doctoral students abroad, broken down by subject group. These countries account for around 86% of German students abroad. With the exception of China and Denmark, these countries also include all of the 20 major host countries of German students abroad.
- 2 Basis: countries for which data on German students by type of degree are available from the Federal Statistical Office Germany or the OECD. However, these countries account for around 82% of German students abroad and, with the exception of China, also include all of the 20 major host countries of German students abroad.
- 3 It should be noted here that a comparatively high percentage of German students abroad fall into the "Other types of degree" or "Type of degree unknown" categories, which means that it is harder to make a direct comparison between German students abroad and German students at home.
- 4 See also the background article "Streit um Medizinstudierende aus Polen spitzt sich zu" in the *Ärzteblatt*, available at <https://www.aerzteblatt.de/nachrichten/109294/Streit-um-Medizinstudierende-aus-Polen-spitzt-sich-zu>.
- 5 Since the penultimate issue of "German students abroad", the subject groups have been classified according to ISCED standards and therefore deviate from the Federal Statistical Office Germany's standard classification system.
- 6 Deviations from 100% are due to rounding.
- 7 OECD data, since these are more complete, more up-to-date or more accurate than data from the Federal Statistical Office
- 8 OECD data, since these are not included in the data of the Federal Statistical Office
- 9 Data on doctoral students from the database of the Student and Exchange Visitor Information System (SEVIS), since these are not included in the OECD data
- 10 The data on German students at German universities refer to the winter semester 2017/18.

↓ C1.5 German students in selected host countries by subject group^{5,6}

Proportion of all German students in the country in the respective academic year by subject group in %



All countries¹ 2017/2018



Australia 2017



USA 2018



Canada 2016



Greece 2016



Turkey 2018

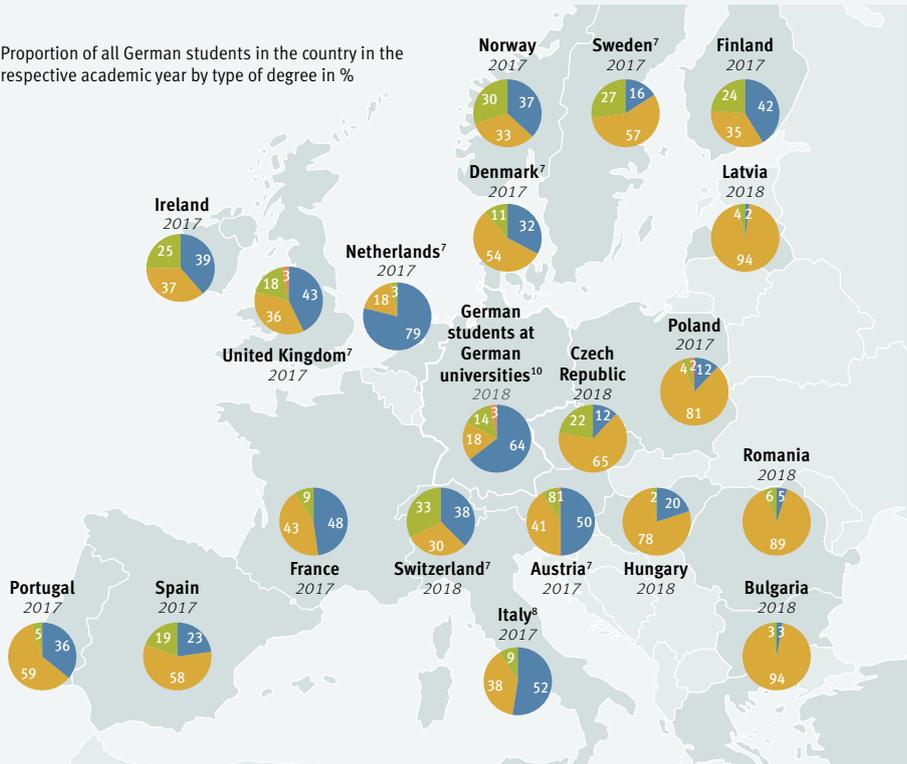


- Business, administration and law
- Social sciences, journalism and information
- Arts and humanities
- Health and welfare
- Natural sciences, mathematics and statistics
- Engineering, manufacturing and construction
- Information and communication technologies
- Other/unknown

Source: Federal Statistical Office, German students abroad, country-specific reporting periods

↓ C1.6 German students in selected host countries by type of degree⁶

Proportion of all German students in the country in the respective academic year by type of degree in %



All countries^{2,3} 2017/2018



Turkey 2018



Greece⁷ 2017



USA^{8,9} 2017



Canada 2016



Australia 2017



Japan 2017



- Bachelor's degree
- Master's degree
- Doctorate
- Other degree/type of degree unknown

Sources: Federal Statistical Office, German students abroad; country-specific reporting periods; OECD student statistics

2.1 Mobility development

The findings of previous Social Surveys show that, between 1991 and 2000, the proportion of students in later semesters with stays abroad rose sharply (from 20% to 32%) and stabilised at this level until 2006.¹ In 2009 and 2012, the figure was slightly lower at 30% in each case, falling further to 28% in 2016. This development can be observed – at different levels in each case – at both universities and universities of applied sciences. In contrast to degree-related international mobility (cf pp. 66/67), there was therefore no increase in the mobility rate for temporary study-related mobility while the two-cycle study system with bachelor's and master's programmes was in the process of being introduced. Instead, there was even a certain decline in temporary student mobility during this period.

“ From 2006 to 2016, the proportion of students with temporary study-related visits abroad fell from 32% to 28%.

Possible reasons for this are the more strongly structured study and examination system introduced as part of the Bologna reforms, as well as the shortening of the standard study periods. From the students' point of view, both aspects may have led to the fact that the newly introduced study programmes offer less scope for study-related visits abroad during the course of study than was previously the case. It will not be possible to know whether this situation has changed in the meantime – because many universities have revised their bachelor's programmes, for example, particularly after they

Database

The data situation regarding the temporary study-related mobility of students at German universities must be described as unsatisfactory at the present time – especially in comparison with other countries. It was not until 2017 that the reformed Higher Education Statistics Act introduced the mandatory survey of study-related visits abroad by students in Germany. This requirement of the new Higher Education Statistics Act still poses major challenges for many universities. The Federal Statistical Office Germany will therefore not be able to publish the first reliable data on the temporary study-related mobility of students at German universities until the end of 2021 at the earliest. It should be noted that these data conform to the definition of the EU mobility benchmark (cf also pp. 72/73). As a result, mobility rates on this basis will be significantly lower than the mobility rates previously collected on the basis of survey data. At present, the data from the Social Surveys, which were conducted jointly by the German National Association for Student Affairs and the German Centre for Research on Higher Education and Science Studies (DZHW), represent the most reliable source of data for analysing the development of temporary study-related mobility of students at German universities. No other representative survey of students or graduates allows a representative view of mobility development over a comparable period of time.⁴

2.1 Proportion of German students in later semesters on study-related visits abroad by type of university since 1991^{1,5}



Proportion of all students in later semesters in %

Sources: DSW Social Surveys 1991–2016

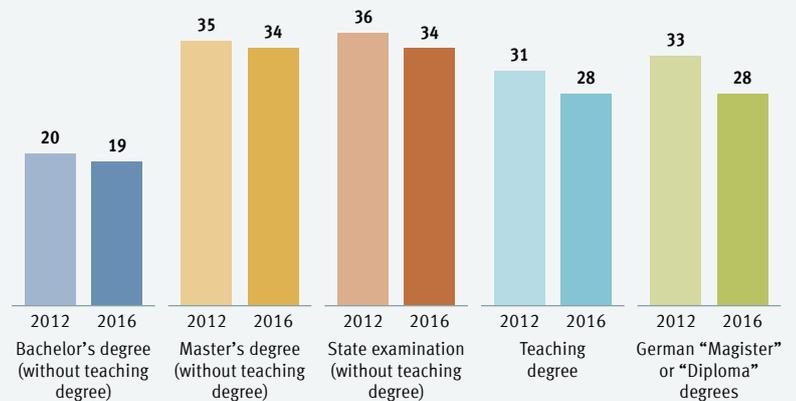
were introduced, and in many cases have also made them more flexible – when new, comparable data on current student mobility are available. However, this is unlikely to occur until the end of 2021 at the earliest, since the next nationwide representative student survey by the DZHW is not planned until mid-2021.²

A closer look at the development of the Social Survey data between 2012 and 2016 reveals that temporary study-related mobility in particular has declined for language and cultural studies and medical studies. In contrast, no striking differences can be observed in the development by type of degree. However, the clear discrepancy between the mobility rates in bachelor's and master's programmes in 2016 points to another reason for the lower overall rate: only master's students will ultimately achieve a mobility rate that is above the level of traditional types of degree, whereas the mobility rate for bachelor's students is significantly lower.³ The decline in temporary student mobility between 2006 and 2016 is therefore likely to be due not least to the sharp rise in the proportion of bachelor's students at German universities during this period (winter semester 2006/07: 20%, winter semester 2016/17: 64%).

* Footnotes

- 1 The mobility rate of students in later semesters or at the end of their studies makes it possible to assess study-related international mobility over the course of an entire study cycle. It is thus more meaningful than mobility rates in relation to all students. Students in later semesters from 1991 to 1994 are: students from the 8th university semester (university) or 6th university semester (university of applied sciences) (1991: West Germany only); from 1997: students from the 9th to 14th university semester (university) or 7th to 11th university semester (university of applied sciences).
- 2 The implementation of this integrated student survey, in which the previous social survey will also be integrated, was originally planned for mid-2020, but had to be postponed by one year due to the COVID-19 pandemic.
- 3 This is not least due to the fact that the mobility of master's students recorded here also includes visits abroad in the bachelor's programmes. This is therefore the cumulative international mobility in the bachelor's and master's programmes.
- 4 The DAAD/DZHW mobility study, which was carried out every two years between 2007 and 2017, has now been discontinued. The DAAD is currently working on a new edition with a revised methodological concept.
- 5 Incl. Bildungsinlaender

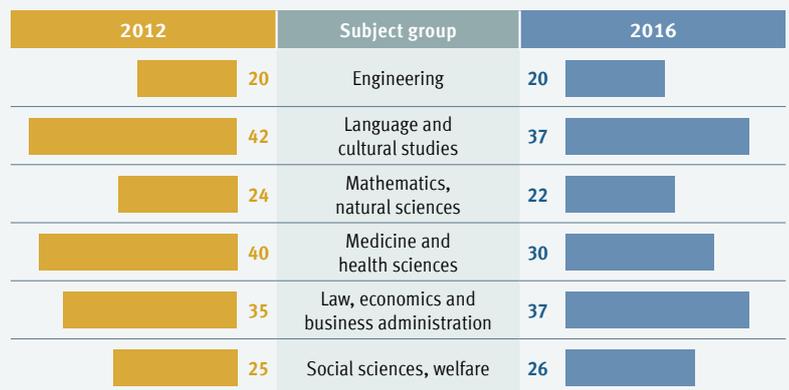
↓ C2.2 Proportion of German students in later semesters on study-related visits abroad by type of degree 2012 and 2016^{1, 5}



Proportion of all German students in later semesters in %

Sources: DSW Social Surveys 2012, 2016

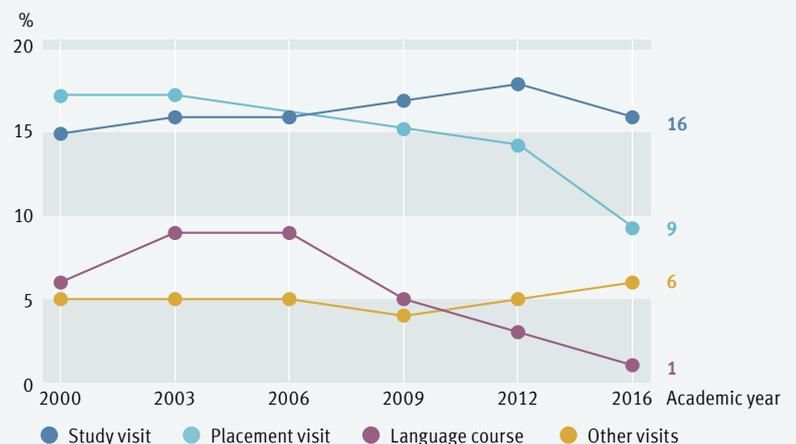
↓ C2.3 Proportion of German students in later semesters on study-related visits abroad by subject group 2012 and 2016^{1, 5}



Proportion of all German students in later semesters in %

Sources: DSW Social Surveys 2012, 2016

↓ C2.4 Proportion of German students in later semesters on study-related visits abroad by type of visit since 2000



Proportion of all German students in later semesters in %; multiple counting may occur

Sources: DSW Social Surveys 2000–2016

2.2 Status of goal achievement

Targets for international mobility exist both at European level and at the level of individual higher education systems. A concrete mobility target was set for all EU countries in 2011 in the “Council conclusions on a benchmark for learning mobility” and was also adopted one year later in the “Bucharest Communiqué” for all countries of the European Higher Education Area (EHEA) within the framework of the Bologna Process. According to the communiqué, by 2020, at least 20% of all graduates in any year at universities in the EU or EHEA countries should have acquired a degree abroad or have gained a certain amount of temporary study-related mobility experience. Temporary study-related mobility is defined as recognised study and placements abroad of at least three months’ duration or with at least 15 ECTS credits. In Germany, the Federal Government and the federal states defined two graded objectives in the Internationalisation Strategy of the Joint Science Conference of 2013. According to this strategy, by 2020, every second university graduate should have gained study-related experience abroad (50% target) and every third graduate should have completed a study-related visit abroad of at least three months and/or acquired 15 ECTS points (33% target).

However, German and European target rates are not directly comparable, as very different definitions of mobility are used in order to calculate them. For example, only study and placement periods credited

by the home institution are taken into account in the calculation of the European mobility benchmark. This definition means that a certain part of the study-related international mobility (more precisely: non-credited visits and visits of less than three months) is not taken into account when calculating the mobility rate. Moreover, only visits abroad in the current study cycle are taken into account when calculating the European benchmark. This means, for example, that a master’s graduate who only spent study-related periods abroad during

her bachelor’s programmes is classified in the calculation as a master’s graduate without experience abroad. The same principle applies to graduates with a successful doctorate.

In contrast, the German mobility targets assume a broader understanding of mobility. For example, when extrapolating to the German 50% target, the DAAD includes all study-

related visits abroad lasting one month or more in the calculation, regardless of whether or not they are credited at the home university. In addition, experience gained abroad in earlier study cycles is also taken into account, i.e. a master’s student with study-related international mobility only during her bachelor’s programmes, for example, is still counted as internationally mobile.

As a result, the different mobility definitions of the existing targets lead to different levels of mobility rates, which are not comparable in terms of content. This lack of comparability of the rates is

“ The differing mobility definitions of the present targets result in different levels of mobility rates, which are not comparable in terms of content.

↓ C2.5 European and German mobility targets

European mobility targets of EU and EHEA countries

“Council conclusions on a benchmark for learning mobility” of the EU (2011) and Bucharest communiqué of responsible ministers of all EHEA states (2012)

It is intended that by 2020, at least 20% of all graduates in the EU or the European Higher Education Area will have gathered experiences of degree-related or temporary mobility abroad. Study and placement visits of at least three months and/or acquiring 15 ECTS points are considered temporary mobility.

German mobility targets

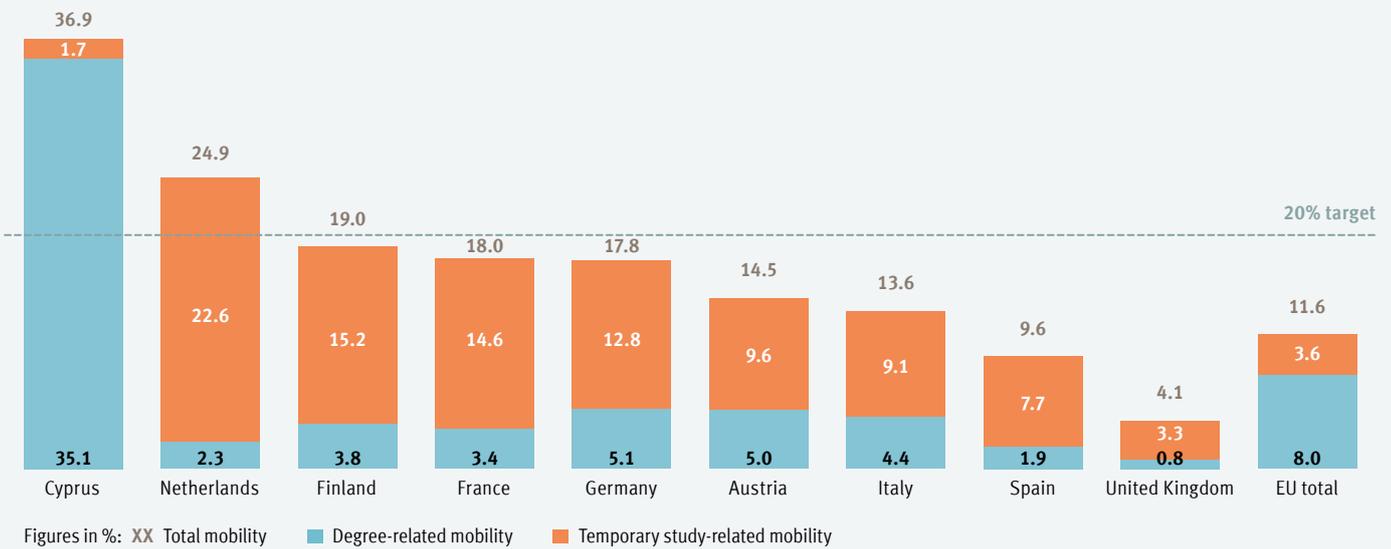
Internationalisation strategy of the Joint Science Conference [Gemeinsame Wissenschaftskonferenz] (from 2013)

Target A: By 2020, it is intended that one in two university graduates will have gathered study-related experience abroad.
Target B: 33% of university graduates will be able to demonstrate a visit abroad of at least three months and/or worth 15 ECTS points.

* Footnotes

- 1 The test results of the Federal Statistical Office Germany to date indicate that the switch by universities to central registration of visits abroad within the framework of the EU benchmark is proving more difficult than hoped. It is therefore to be expected that the first reliable mobility data from higher education statistics will not be available until the end of 2021 at the earliest.
- 2 The Social Survey of the DSW and DZHW has thus far been conducted every four years, with the most recent data currently coming from 2016. The most recent data from the survey “German students abroad”, conducted by the Federal Statistical Office Germany, refer to the year 2017.
- 3 In the Social Survey, only appropriate data on the length of visits are available for the calculation of the 33% target. This means that those students who have been abroad for less than three months, but who have nevertheless earned and been credited 15 ECTS points or more, are not included in this quota. However, this is likely to affect only a very small percentage of mobile students.

↓ C2.6 Mobility rates of university graduates in Germany and selected other countries in 2017 graduation year according to EU benchmarks

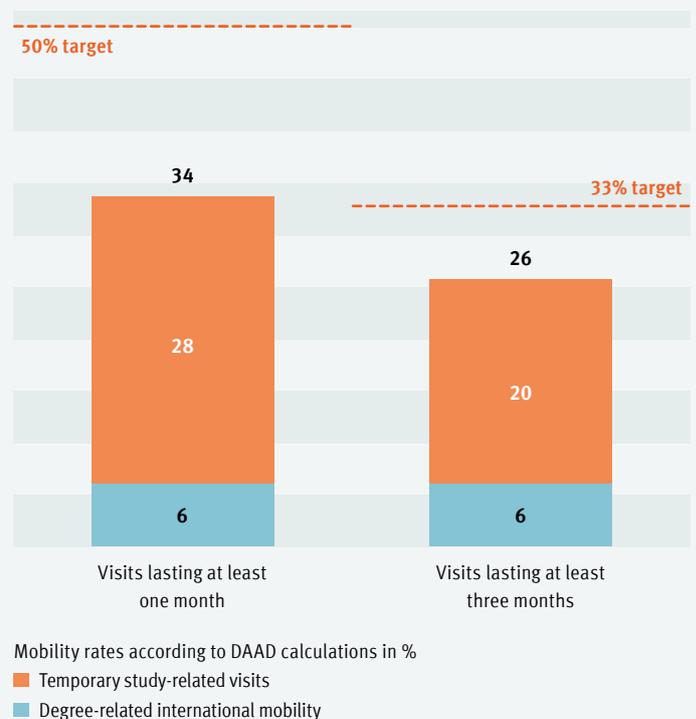


Source: European Commission, Education and Training Monitor 2019

exacerbated by the fact that different data sources are used for the calculation. In future, the European mobility benchmark will be calculated on the basis of higher education statistics, which is not yet possible in all countries. In Germany, too, such data have only been collected by universities since 2017 on the basis of the reformed Higher Education Statistics Act. For this reason, the results of graduate surveys are currently still being used to calculate the quotas.¹ To date, the DAAD has used the representative data (on students in later semesters) from the 21st Social Survey conducted by the German National Association for Student Affairs and the DZHW as a basis for extrapolating the German mobility rates (temporary study-related visits abroad) and the “German students abroad” survey conducted by the Federal Statistical Office Germany (degree-related international mobility).²

Looking at the mobility rates based on the mobility definitions described above, it becomes clear that Germany has not yet reached the 20% target of the EU benchmark in 2017, but at just under 18% is well above the EU average of around 12%. Only Cyprus and the Netherlands, which are much smaller countries, achieve higher mobility rates than Germany and are above the 20% target. France, at 18%, is on a par with Germany, while other large countries such as Italy (14%), Spain (10%) and especially the United Kingdom (4%) have significantly lower rates (cf also Figure A1.8 on p. 19). The German mobility targets for 2020 have also not yet been met with reference to 2017. The corresponding figures are 34% (50% target) and 28% (33% target).

↓ C2.7 Extrapolation of mobility rates of German university graduates 2016/17^{2,3}



Sources: DSW/DZHW, 21st Social Survey 2016; Federal Statistical Office, German students abroad 2007–2017; DAAD calculations

2.3 Host regions and host countries

The regional preferences of German students abroad are highly dependent on the type of international mobility in question. This becomes apparent in a direct comparison of students with and without the intention of completing their studies abroad (cf also pp. 66/67). It is true that Western Europe dominates as a host region, both in terms of temporary study-related visits abroad and degree-related international mobility. However, this dominance is much lower for temporary visits abroad (50%) than for degree-related international mobility (73%). A further difference is that in the case of temporary stays abroad, those host regions that account for less than 1% of students with respect to degree-related international mobility also play a certain role. These are North Africa and Middle East (2%), Eastern Europe and Central Asia (3%), Sub-Saharan Africa (4%) and, in particular, Latin America (6%). Clearly, students are more willing to leave their more familiar cultural environment during these shorter stays abroad. The most important reason for this is probably the different motives for the two types of visit. In particular, motives such as broadening horizons, improving language skills and intercultural experiences, which usually dominate temporary study-related visits abroad, induce students to spend time outside Western Europe.¹

The findings that were already evident at the level of the host regions are also confirmed at that of the host countries. While the USA and the United Kingdom are the most popular host countries for temporary study-related visits, the same applies to Austria

and the Netherlands for degree-related international mobility. Moreover, the (fully or partially) German-speaking host countries Austria and Switzerland account for only 4% of temporary stays, whereas in the case of degree-related international mobility, this figure is 31% (cf Figure C1.3 on p. 67). The geographical, cultural and also linguistic proximity of the host countries thus seems to

play a much more important role as a motive of choice in degree-related international mobility. The host countries France and Spain are also of far greater significance in temporary international mobility (8% each) than in degree-related mobility (5% and 1% respectively).

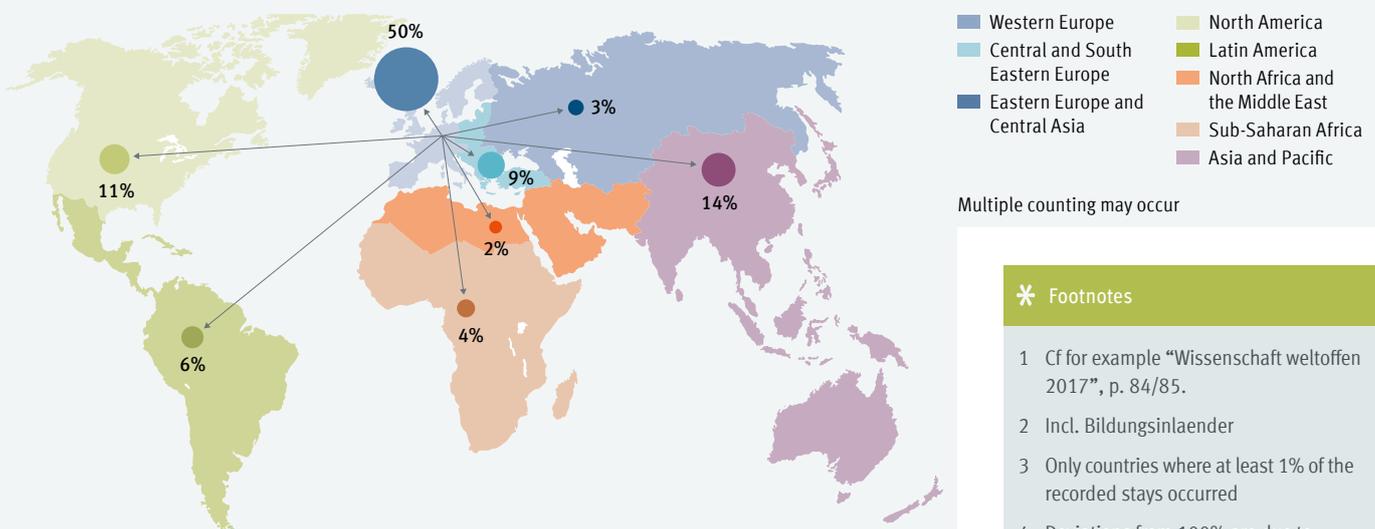
An obvious explanation for this is that

the choice of host country for temporary stays abroad is often also based on cultural interests, whereas in the case of degree-related international mobility, professional and career-related motives (such as the reputation of the respective foreign university and the suitability of the degrees for the German labour market) are much more important.

Different host country preferences can be observed even among temporary study-related visits abroad, depending on whether one considers study or placement stays. The two preferred host countries for placements are the United Kingdom (10%) and the USA (9%), while Spain (11%) and France (10%) are the top two countries for study-related stays. Other countries are also among the top ten most popular host countries for only one of the two types of visit. In the case of study visits, these are Sweden,

“Austria and Switzerland account for only 4% of temporary study-related visits, compared to 31% for degree-related mobility.”

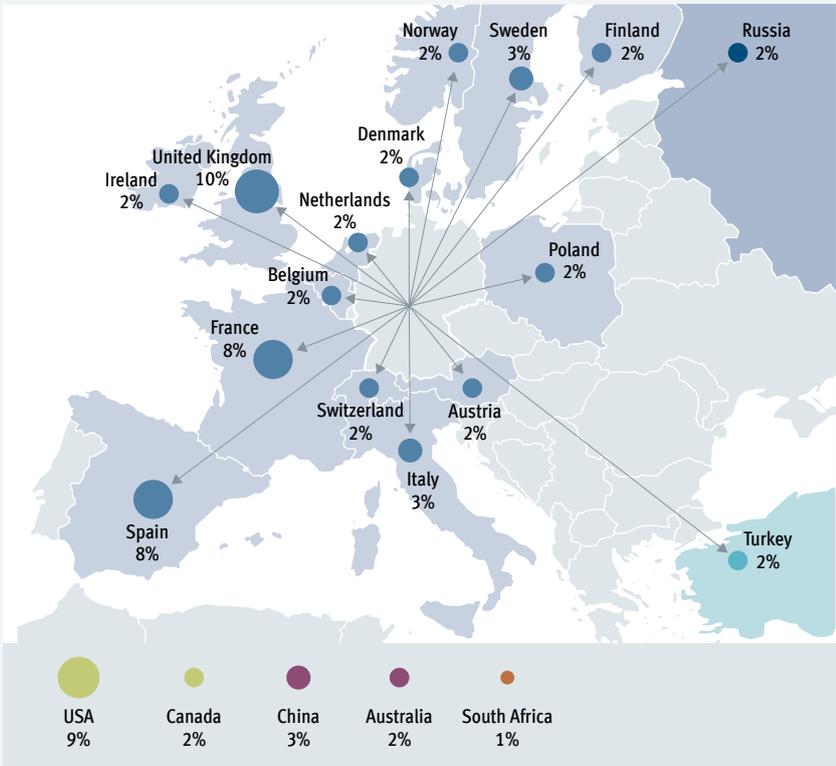
↓ C2.8 German students with study-related visits abroad by host region 2016^{2,4}



* Footnotes

- 1 Cf for example “Wissenschaft weltoffen 2017”, p. 84/85.
- 2 Incl. Bildungsinländer
- 3 Only countries where at least 1% of the recorded stays occurred
- 4 Deviations from 100% are due to rounding.

↓ C2.9 German students with study-related visits abroad by major host countries 2016^{2, 3}



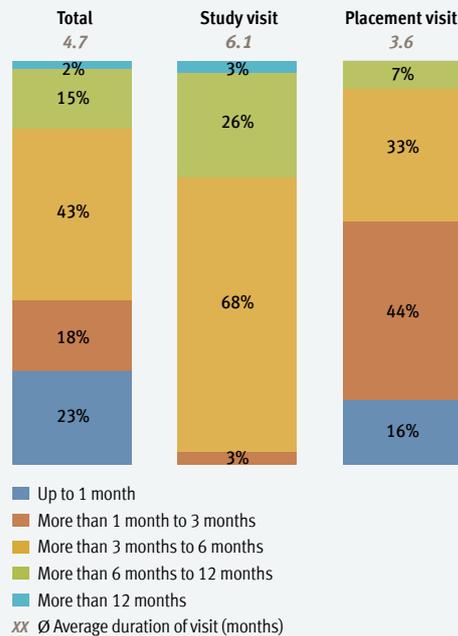
Multiple counting may occur
Source: DSW/DZHW Social Survey 2016

↓ C2.10 German students with study-related visits abroad by type of visit and key host countries 2016²

Study visits		Placement visits	
Top 10 host countries	Proportion in %	Top 10 host countries	Proportion in %
Spain	11	United Kingdom	10
France	10	USA	9
United Kingdom	9	France	6
USA	9	Switzerland	5
Sweden	5	Spain	4
China	3	China	4
Finland	3	Belgium	3
Italy	3	India	3
Turkey	3	South Africa	3
Australia	3	Austria	2
Other countries	50	Other countries	51

Multiple counting may occur
Source: DSW/DZHW Social Survey 2016

↓ C2.11 Duration of German students' study-related visits abroad by type of visit 2016^{2, 4}



Source: DSW/DZHW Social Survey 2016

Finland, Italy, Turkey and Australia, while in the case of placements, they are Switzerland, Belgium, India, South Africa and Austria.

Over 80% of temporary study-related visits do not last longer than six months, the average duration is 4.7 months. The most frequent stays are those lasting more than three to six months (43%), although short stays of up to one month also account for just under a quarter of all stays (23%). However, the length of stay varies considerably between the types of visit. On average, study-related visits last 2 ½ months longer (6.1 months) than placement stays (3.6 months). This is primarily due to the fact that the majority of placements last a maximum of three months (60%). By contrast, stays of more than three months are normal when studying abroad (97%).

2.4 Erasmus visits

Since the start of the Bologna Process in 1999, the number of annual Erasmus visits by students from German universities has almost trebled from around 14,700 to around 42,000 in the Erasmus year 2018¹. The total number of Erasmus participants from Germany has therefore increased much more strongly since 1999 (+186%) than the number of students in Germany over the same period (+62%). The number of Erasmus participants at universities of applied sciences has increased much more strongly over the last ten years (+91%) than at universities (+50%).^{2,3} However, the number of Erasmus participants at universities in 2018 will rise again compared to the previous year (+3%), at the same rate as at universities of applied sciences (+3%). Universities of applied sciences now account for 29% of all Erasmus participants.

“ The number of Erasmus participants is increasing compared to the previous year, particularly in the Netherlands, Finland, Italy and Austria.

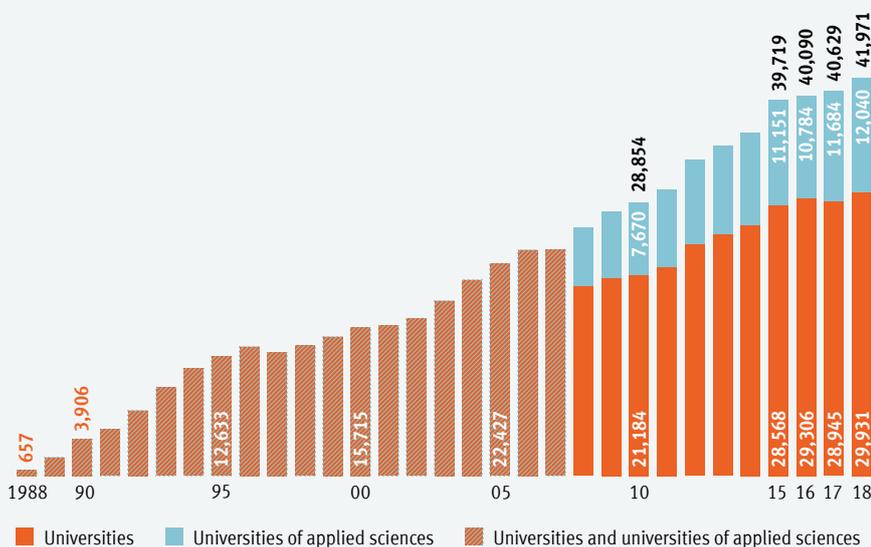
As in previous years, Spain was again the most popular destination for Erasmus participants from Germany in the 2018 Erasmus year, followed by France and the United Kingdom. However, the number of Erasmus stays in the United Kingdom decreased by 1% compared to the previous year, while France (+3%) and especially Spain (+6%) increased. Within the top ten key host countries for Erasmus participants from Germany, there are four countries that

Database

The data on temporary international mobility presented on pages 76/77 refer exclusively to stays undertaken under the EU's Erasmus+ mobility programme. The basis for this are the DAAD Erasmus statistics. According to the findings of the DAAD and DZHW mobility study, around 40% of all temporary study-related visits abroad by German students are made via Erasmus+. Both German and international students are eligible for funding if they wish to complete a study visit in one of the 34 participating programme countries, are regularly enrolled at a German university, have completed their first academic year, their university participates in Erasmus+ and the home university and the desired host university have concluded an Erasmus cooperation agreement. The present analyses therefore refer to all Erasmus participants from Germany or German universities and not only to German Erasmus participants.

have seen even higher increases than Spain compared to last year. These are the Netherlands (+7%), Finland (+7%), Italy (+8%) and especially Austria (+13%). Among the ten major host countries, Sweden is the only other country to have recorded a decrease, apart from the United Kingdom, which is also very low at -2%. As in the previous year, Turkey, which fell by 22% and is now ranked 15th with 985 Erasmus visits, stands out among the other major host countries. By comparison, Turkey was the sixth most important host country in the Erasmus year 2016.

↓ C2.12 Erasmus participants from Germany by type of university since 1988^{1, 2, 3}

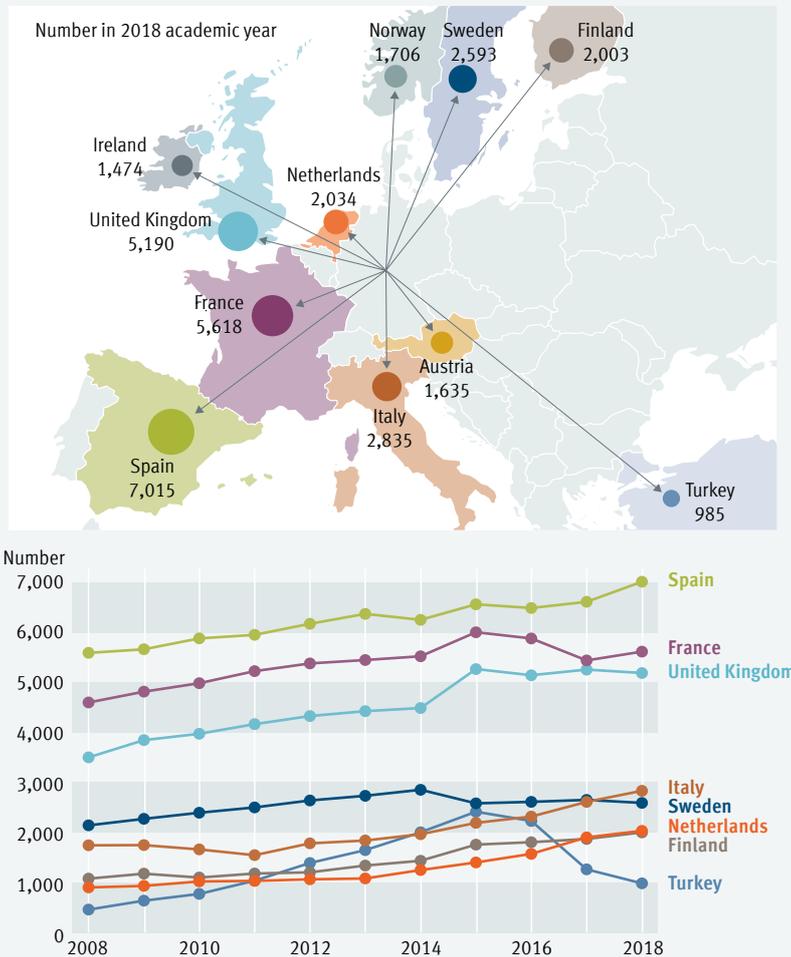


Source: DAAD, Erasmus statistics

* Footnotes

- Erasmus statistics until 2014: an Erasmus year starts in the winter semester and ends in the summer semester of the following year. 2014 = WS 2013/14 + SS 2014.
New Erasmus+ statistics since 2015: an Erasmus year starts on 1 June of the previous year and ends on 31 May of the following year. 2018 = 1/6/2017 to 31/5/2019.
- A breakdown of visits by type of university is only possible from the 2008 Erasmus year onwards.
- Colleges of art and music and other higher education institutions were added to the universities. These institutions account for less than 2% of all Erasmus visits.
- Subject group distribution among all students in Germany during the 2017 academic year according to Eurostat. In the Erasmus statistics, the subject groups are classified according to ISCED standards and therefore differ from the Federal Statistical Office's standard classification.
- The percentages of all students in Germany refer to the winter semester 2017/18.
- For reasons of clarity, Norway, Austria and Ireland are not included in the lower part of the graph.

↓ C2.13 Erasmus participants from Germany by major host countries since 2008^{1,6}



Source: DAAD, Erasmus statistics

A look at the distribution of Erasmus participants from Germany according to subject groups shows that students from the social sciences, journalism and information studies are particularly well represented.⁴ Their share of Erasmus participants is almost twice as high (14%) as their share of all students in Germany (8%).⁵ The arts and humanities, as well as business, administration and law, are also clearly over-represented. By contrast, education studies, engineering, manufacturing and construction, and information and communication technologies, are well below average. In the latter, their share of all Erasmus participants (3%) is less than half that of all students (7%).

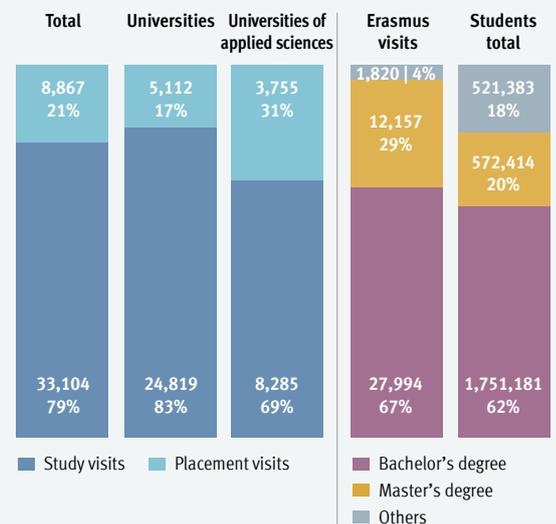
79% of all Erasmus visits by students from Germany in the Erasmus year 2018 were for study visits, while 21% were for placements. At universities of applied sciences, however, the proportion of placements is significantly higher (31%) than at universities (17%). Bachelor's students accounted for 67% of Erasmus placements, while the figure for master's students was 29%. Comparing this distribution with that of all students in Germany, both types of degree are disproportionately represented among Erasmus participants, while state examinations, doctorates and other types of degree are strongly under-represented.

↓ C2.14 Erasmus participants from Germany and all students in Germany by subject group 2018^{1,4,5}

Proportion of all students in Germany in %	Subject group	Proportion of all outgoing Erasmus participants in %
8.1	Education	5.0
13.4	Arts and humanities	18.7
7.9	Social sciences, journalism and information	14.2
22.1	Business, administration and law	28.5
10.3	Natural sciences, mathematics and statistics	8.3
6.8	Information and communication technologies	3.0
20.4	Engineering, manufacturing and construction	12.3
1.5	Agriculture, forestry, fisheries and veterinary	1.0
7.5	Health and welfare	6.8
2.0	Services	2.2

Sources: DAAD, Erasmus statistics; Federal Statistical Office, student statistics; DAAD calculations

↓ C2.15 Erasmus participants from Germany by type of university, visit and degree 2018^{1,3}



Number and in %

Source: DAAD, Erasmus statistics

1 International academics and researchers at German universities

1.1 Mobility trends, regions and countries of origin

In 2018², international academic staff³ at German universities amounted to around 49,600 academic and artistic staff of foreign nationalities, 12% of all academic staff. Since 2015, the number of international staff has increased by 15%. By comparison, the number of German academics and researchers has only increased by 3% over the same period.

However, this dynamic cannot be observed for all groups within international academic staff. In particular, development seems to be slower for international professors. In 2018, a total of around 3,400 professors of foreign nationality were appointed at German universities. Their number has increased by 10% since 2015. The lower rate of increase compared to other international staff is also explained by the fact that professors are appointed for life. Positions of this kind usually only become vacant when the age limit is reached.

International professors account for only 7% of all professors at German universities. This is a much lower proportion than that of international staff among all academic staff. Even among international academic staff, only 7% are professors. However, this proportion is 13% among German academic staff. This situation may be due both to “secret” appointment hurdles and to a lower number of international applicants. Above all, professorships at universities of applied sciences, which account for almost half of all professorships at German universities, may not be attractive enough for international applicants due to a lack of recognition and prestige. It is also probable that international applicants are also

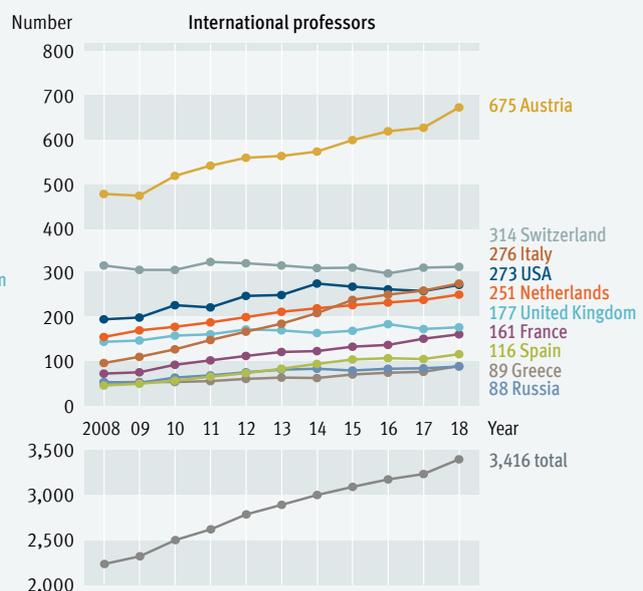
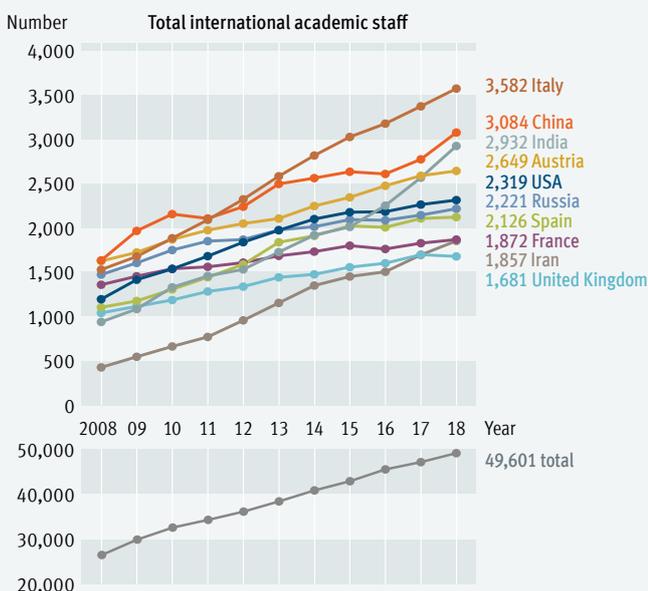
less likely to be considered due to a lack of German language skills or that they may even forego applying altogether.

These assumptions are confirmed when comparing the types of universities. While international staff at universities account for 14% of all academic staff and international professors for 9% of all professors, they make up 5% of male professors and 3% of female professors at universities of applied sciences. At universities of art and music, the share of international academic staff is 19% and the share of international professors is as high as 21%.

The key countries of origin for international academic staff at German universities are Italy, China, India, Austria, USA, Russia and Spain. While Italy, China and Austria have recorded an average increase in the number of academic staff since 2015, this rate is below average for the USA (+6%), Russia (+6%) and Spain (+5%) and well above average for India with +31%.³

Among international professors, Austria is by far the most important country of origin, followed by Switzerland, Italy and the USA. The two German-speaking countries of origin, Austria and Switzerland, account for almost one third of all international professors, at 20% and 9% respectively. However, while the number of Austrian professors has grown by 11% since 2015, the Swiss figures have not changed significantly for some time. The largest increases can be observed for Turkey (+41%) and India (+37%). The number of Japanese professors, on the other hand, has decreased significantly in recent years (-28%).⁴

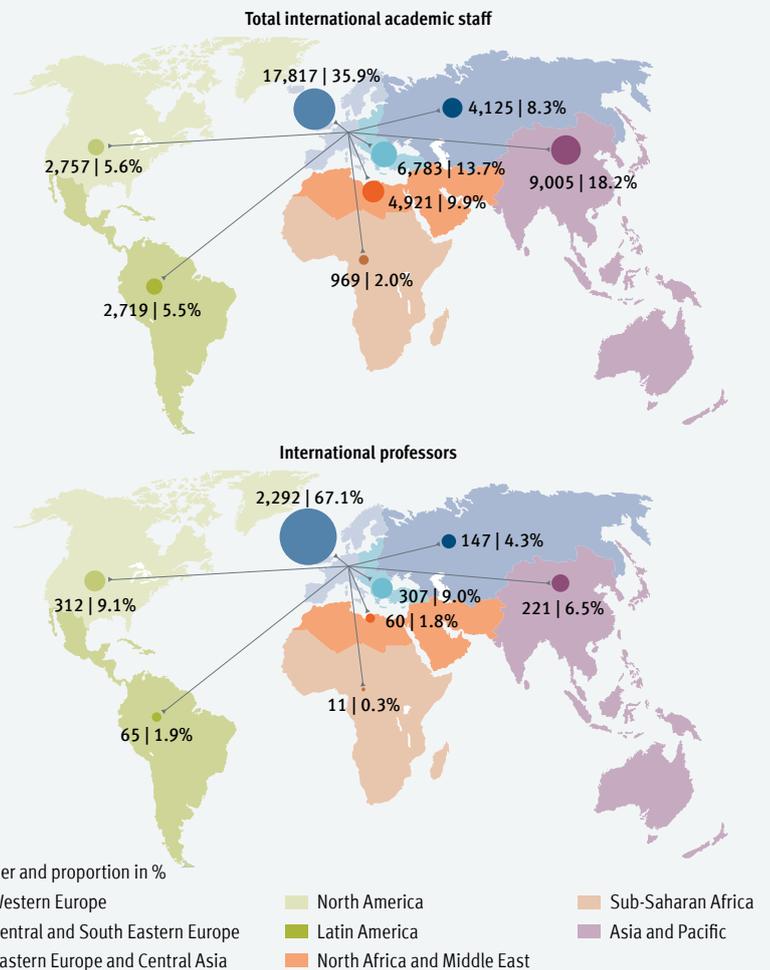
D1.1 Total international academic staff and international professors by key countries of origin since 2008²



Source: Federal Statistical Office, university staff statistics

A regional breakdown shows that the Western Europe region of origin dominates both for international academic staff as a whole and for international professors. Of all international staff, 36% come from Western European countries; for professors, the figure is as high as 67%. Other major regions of origin for academic staff are Asia and Pacific (18%), Central and South Eastern Europe (14%) and North Africa and Middle East (10%). In the case of international professors, they are Central and South Eastern Europe (9%) and North America (9%). The great importance of Western Europe is also reflected in the other groups of internationally mobile academics and researchers who come to Germany. This is partly attributable to the high level of the academic and higher education systems in those countries, but also to corresponding cooperative relationships between universities and historic, economic and political relationships such as those in the context of the EU.

D1.2 Total international academic staff and international professors by region of origin 2018⁵



Source: Federal Statistical Office, university staff statistics; DZHW calculations

* Footnotes

- International academic staff comprise all academic and artistic staff at German universities with foreign citizenship, including academic and artistic staff without details of citizenship. The following groups are included in academic and artistic staff: professors, lecturers and assistants; academic and artistic staff; teaching staff with specific duties; visiting professors and emeriti; assistant lecturers and honorary professors; private lecturers and research assistants (i.e. with a degree).
- Data from the German Federal Statistical Office on academic staff at universities refer to reporting years (January-December) and not to academic years.
- Only countries with at least 50 academic staff at German universities
- Only countries with at least 20 professors at German universities
- There are no concrete details on citizenship for 505 scientific and artistic staff members. They make up about 1% of the international academic staff.

D1.3 International academic staff as a proportion of all academic staff by type of university 2008, 2013 and 2018

Type of university	Personnel	Year	Proportion in %	
			2008	2013
Universities	International academic staff	2008	10.4	12.0
		2013	12.0	14.4
		2018	14.4	
	International professors	2008	7.0	8.3
Universities of applied sciences	International academic staff	2008	4.2	4.5
		2013	4.5	5.4
		2018	5.4	
	International professors	2008	2.0	2.1
Colleges of art and music	International academic staff	2008	13.7	15.3
		2013	15.3	18.6
		2018	18.6	
	International professors	2008	19.3	21.0
	2013	21.0	21.3	
	2018	21.3		

Source: Federal Statistical Office, university staff statistics; DZHW calculations

1 International academics and researchers at German universities

1.2 Federal states and subject groups

Most academic and artistic staff with foreign citizenship work at universities in North Rhine-Westphalia (19%), Baden-Wuerttemberg (19%) and Bavaria (16%). These three federal states alone account for more than half of international academic staff. The same also applies to international professors. The number of international staff depends not only on the number and size of the universities in a federal state, but also on structural aspects such as the proportion of different types of universities and the subjects offered. Proximity to other countries' borders and the attractiveness of certain locations are also factors. The universities in Saarland (17.7%), Berlin (15.1%) and Brandenburg (14.5%) therefore have particularly high shares of international staff. This figure is relatively low for Mecklenburg-Western Pomerania (9.1%). A similar picture emerges for the proportion of international professors as a percentage of the total professorial body. Here, Berlin's universities lead the field with 11.1%, while in Mecklenburg-Western Pomerania only 3.4% of professors come from abroad.

“ The universities in Saarland, Berlin and Brandenburg have particularly high shares of international staff.

were recorded for Rhineland-Palatinate (+50%) and Saxony-Anhalt (+48%), while Brandenburg (+6%) showed a very low rate of increase. It is important to note when interpreting these findings that the differences are also linked to state-level programmes to increase staffing levels at universities.¹

International academic staff are represented to varying degrees across the various subject groups. The highest share of foreign academic staff (21%) falls within the mathematics and natural sciences subject group. Engineering, medicine and health sciences are similarly important (19% each). 12% of international academic staff work in the humanities, 11% in law, economics and social sciences, and 10% in central institutions of the universities. A comparison with German academics and researchers reveals two key differences: while the share of foreign academic staff is only half as high as that of German staff in law, economics and social sciences, it is around twice as high in mathematics and natural sciences.

The quantitative increase in international academic staff has been relatively evenly distributed in all federal states over the last ten years, ranging between 42% and 55%. In contrast, a wider range can be observed in the development of the number of international professors. The highest growth rates between 2008 and 2018

When considering international professors, mathematics and natural sciences (22%) and engineering (16%) are of particular significance, as are the subject groups of law, economics and social sciences, and art and art history (18% each). In comparison to German professors, international professors are

↓ D1.4 Total international academic staff and international professors by federal state 2018 and development since 2008

Germany	International academic staff		International professors		Development 2008–2018 in %	
	Number	Proportion in %	Number	Proportion in %	Academic staff	Professors
Baden-Wuerttemberg	9,148	12.3	584	7.7	45	37
Bavaria	8,015	13.6	561	8.1	46	36
Berlin	3,906	15.0	401	11.1	46	40
Brandenburg	1,063	14.5	51	5.6	53	6
Bremen	593	13.3	59	8.7	53	36
Hamburg	1,547	10.3	120	7.1	52	33
Hesse	3,117	11.5	241	6.4	45	42
Mecklenburg-Western Pomerania	566	9.1	28	3.4	47	36
Lower Saxony	3,466	12.0	201	5.4	48	37
North Rhine-Westphalia	9,506	11.1	667	6.5	49	37
Rhineland-Palatinate	1,753	11.4	127	5.9	42	50
Saarland	775	17.7	35	6.9	48	31
Saxony	2,572	12.0	132	5.8	55	20
Saxony-Anhalt	964	11.1	66	6.5	56	48
Schleswig-Holstein	903	10.3	71	6.5	48	38
Thuringia	1,260	12.8	71	6.0	55	25
Total	49,154	12.2	3,415	7.1	48	37

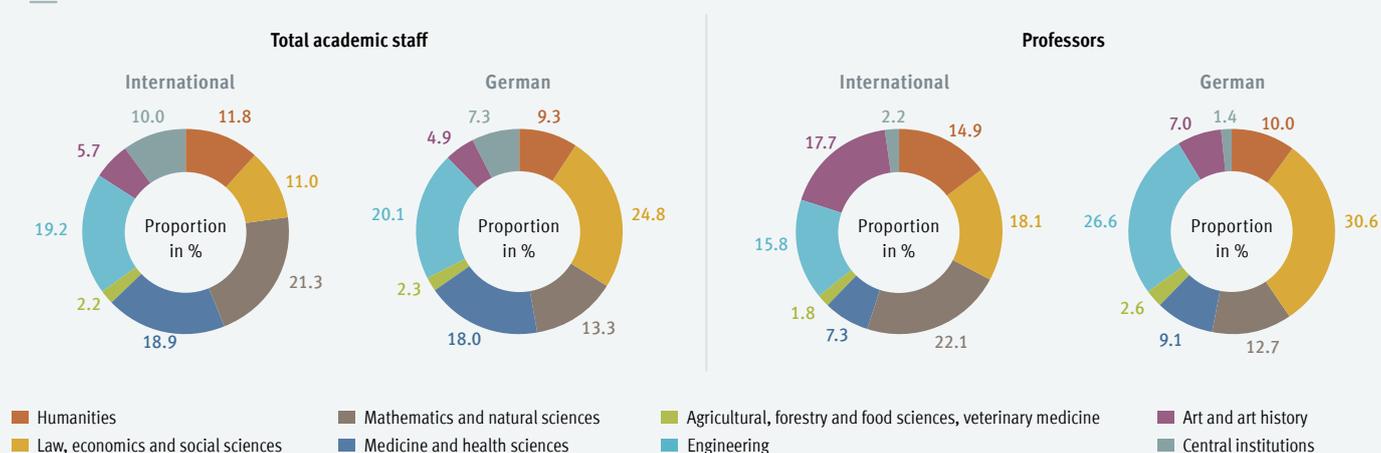
Source: Federal Statistical Office, university staff statistics; DZHW calculations

↓ D1.5 International academic staff as a percentage of total academic staff, and international professors as a percentage of all professors by type of university and subject group 2018

Subject groups	Universities		Universities of applied sciences	
	Academic staff total (proportion in %)		Professors (proportion in %)	
Humanities	15.5	22.7	10.6	7.8
Law, economics and social sciences	7.6	3.9	7.0	2.3
Mathematics and natural sciences	18.9	6.2	13.0	2.8
Medicine and health sciences	13.5	1.9	6.5	1.7
Agricultural, forestry and food sciences, veterinary medicine	14.7	3.4	8.5	1.4
Engineering	17.1	4.9	9.0	2.4
Art and art history	15.5	6.6	19.2	6.3
Central institutions	16.6	14.4	14.8	4.2
Total	14.6	5.4	10.5	2.6

Source: Federal Statistical Office, university staff statistics; DZHW calculations

↓ D1.6 Total international and German academic staff, and international and German professors by subject group 2018



Source: Federal Statistical Office, university staff statistics; DZHW calculations

* Footnote

1 While the number of professorships rose by 22% in Rhineland-Palatinate between 2008 and 2018, it increased by only 9% in Brandenburg.

found much more often in art and art history (German professors: 7%) and mathematics and natural sciences (German professors: 13%), but less frequently in law, economics and social sciences (German professors: 31%) and engineering (German professors: 27%).

The distribution of international academic staff among all academic

staff at universities follows the same pattern, especially in mathematics and natural sciences (19%), engineering (17%) and the humanities (16%) as well as in universities' central services (17%). At universities of applied sciences, the humanities account for a particularly high share (23%): they are a subject group with a strong focus on foreign languages, which are taught by native speakers. When it comes to international professors, above-average shares can be observed in art and art history (19%) at universities, and in the humanities (8%) at universities of applied sciences.

International doctoral candidates are of great importance to German universities. Their research contributes to new scientific discoveries and to the increased international networking of universities and the internationalisation of teaching.

In 2019, around 27,100 international doctoral candidates were enrolled at German universities, corresponding to a quarter of all doctoral candidates (25%). Compared to the previous year, the number of international doctoral candidates has increased by around 1,000 (3%) and has increased by as much as 52% within 10 years. The number of international doctoral candidates has grown faster than that of German doctoral candidates. In 2009, one in five doctoral candidates came from abroad; in 2019, it was one in four. However, it should be noted that the statistics underestimate the number of German doctoral candidates, as a significant percentage are not enrolled at universities. By contrast, the overwhelming majority of international doctoral candidates are probably enrolled for residence law purposes and are therefore included in the statistics. However, this statistical imprecision does not alter the finding that the number of international doctoral candidates in Germany has risen significantly. On the one hand, this reflects universities' increased efforts to attract doctoral candidates from other countries and, on the other, Germany's international attractiveness as a place to carry out research.

“ 42% of international doctoral candidates completed their master's degrees in Germany.

The annual number of international junior researchers beginning a doctorate has also increased by 32% over the last ten years. However, this increase occurred almost exclusively in the period from 2008 to 2010, with this number remaining between 5,400 and 5,800 doctoral candidates ever since. A situation of this kind, with rising numbers of doctoral candidates and unchanged numbers of new entrants, suggests that international doctoral candidates are spending longer on their doctoral research.¹ In the 2018 academic year, 5,715 international doctoral candidates started a doctorate, 42% of whom had previously obtained a degree at a German university entitling them to pursue a doctorate, usually a master's degree. 58% completed this degree abroad and their doctoral application was their first application to a university in Germany. This share is above average among doctoral candidates from Western Europe and Latin America, and in the natural sciences, but below average among doctoral candidates from the regions of origin Eastern Europe, North Africa and Middle East, and in the subject groups of art and art history, engineering and the humanities.

According to OECD data for 2017, Germany is one of the countries with the most international doctoral candidates worldwide. Although the OECD does not have data for the USA, it is possible to obtain the number of international doctoral candidates in the USA from the American Student and Exchange Visitor Information System (SEVIS). According to this, around 150,000 international

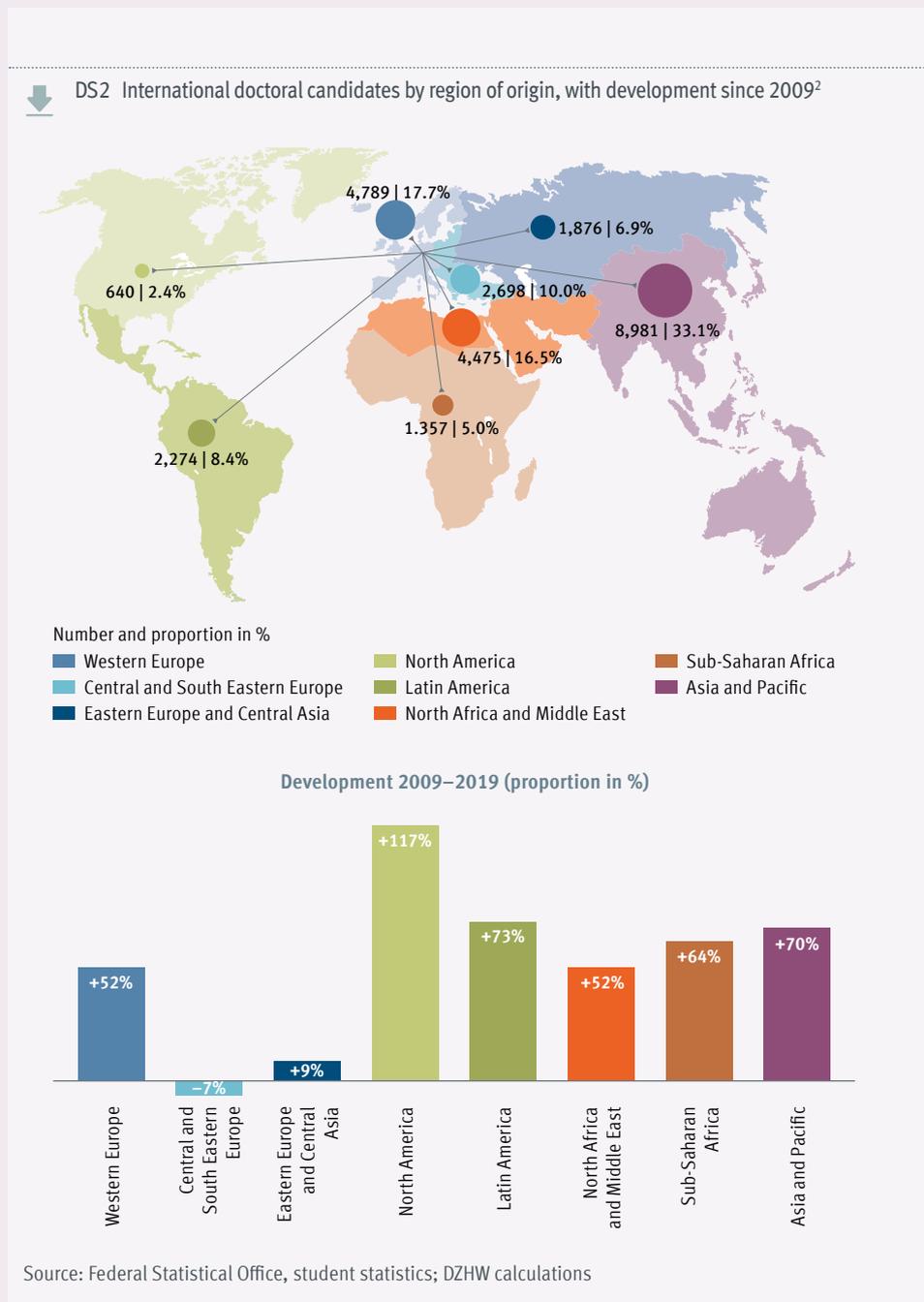
DS1 International doctoral candidates at German universities since 2009



Source: Federal Statistical Office, student statistics; DZHW calculations

junior researchers were aiming to gain a doctorate in the USA in 2017 (cf. also p. 20/21). Second place is occupied by the United Kingdom with 47,200 international doctoral candidates, followed by France (26,500) and Germany (26,200)². Australia (18,100) and Canada (17,700) are also notable for their high numbers of international doctoral candidates. A different ranking emerges when working on the basis of international candidates as a share of all doctoral candidates. Luxembourg then takes first place with international doctoral candidates making up 85%, while Switzerland (55%), New Zealand (49%), the Netherlands (43%), the United Kingdom (42%) and France (40%) also have high figures. In this analysis, Germany occupies a mid-table place with international doctoral candidates making up 24% in 2017. Relatively small percentages are recorded by Brazil (2%), Mexico, Russia (7% each), Turkey (8%) and South Korea (10%). These figures are based on different growth dynamics. While the number of international doctoral candidates rose by 13% in Germany and 5% in the United Kingdom between 2013 and 2017, it remained almost unchanged in Australia and fell by 5% in France. Countries such as Spain (+236%), Turkey (+111%), Hungary (+98%) and Portugal (+83%) recorded very strong growth.

Students from the Asia and Pacific region represent by far the largest group of international doctoral candidates in Germany. Their share alone amounts to 33%. Other important regions of origin include Western Europe (18%), North Africa and Middle East (17%), Central and South Eastern Europe (10%), Latin America (8%) and Eastern Europe and Central Asia (7%). The lowest proportions of doctoral candidates are from Sub-Saharan Africa (5%) and North America (2%). This largely corresponds to the regional distribution of all international students intending to gain a degree at German universities. Particularly lively growth can be seen among doc-



toral candidates from North America, whose number has grown by 117% since 2009. By contrast, a slight decline has been recorded for Central and South Eastern Europe (-7%) and only a slight increase for Eastern Europe and Central Asia (+9%).

In the ranking of the most important countries of origin for international doctoral candidates, China takes first place with around 4,700. 17% of all international doctoral candidates in Germany come from China. Other major countries of origin are India (7%), Iran (6%) and Italy (5%). Russia, Turkey and Egypt (3% each) also occupy top positions. With regard to major countries of origin, there has been a strong increase in the number of doctoral candidates in Germany over the last ten years, especially from Iran (+180%), Italy (+161%) and China (+133%).

* Footnotes

- 1 At present, it is not possible to comment on how long doctoral candidates stay in Germany or how long their doctorates take to complete.
- 2 Specific citizenship information is missing for 17 international doctoral candidates.

Depending on the country of origin, the share of doctoral candidates among all students and doctoral candidates from a given country varies. A particularly high proportion of doctoral candidates is found among students from Ethiopia (31%), Chile (25%), Iraq (23%), Kenya (21%) and Iran (21%). In contrast, comparatively low percentages of doctoral candidates are found among students from Tunisia, Cameroon, Luxembourg (2% each), Bulgaria and Syria (3% each).

In the 2019 academic year, most international doctoral candidates were enrolled in the subject group mathematics and natural sciences. Over a third of all international doctoral candidates belong to this subject group (36%), with the majority enrolled in biology (11%), chemistry (8%) and physics, astronomy (8%). Engineering (21%) follows some way behind, where the most popular fields of study are computer science (5%), mechanical/process engineering (5%) and electrical engineering (4%). Other important subject groups for international doctoral candidates are the humanities (16%), law, economics and social sciences (12%) and medicine (10%).

“ China is by far the most important country of origin for international doctoral candidates, accounting for 17% of the total.

The strongest increase in the number of international doctoral candidates is recorded in the subject groups of medicine and health sciences and engineering. Since 2009, the number of international doctoral candidates in these fields has increased by 172% and 126% respectively. Hardly any change has taken place in the humanities, however, where the number has only risen by 6%.

The various subject groups and study areas at German universities are not equally attractive to international doctoral candidates. Compared to German doctoral candidates, a smaller share of international doctoral candidates are enrolled in the subject group of law, economics and social sciences (21% vs. 12%) but with larger percentages in mathematics and natural sciences (36% vs. 29%) and engineering (21% vs. 17%). Subject-related interests of this kind are also reflected in the respective shares of international doctoral candidates among all doctoral candidates.

This proportion is above average in agricultural, forestry and food sciences (30%), mathematics and natural sciences and engineering (29% each), but below average in law, economics and social sciences (17%). In terms of fields of study, however,

DS3 International doctoral candidates by key countries of origin 2019, with development since 2009

Country of origin	Proportion in %	Number	Development 2009–2019 in %
China	17	4,695	133
India	7	1,829	77
Iran	6	1,731	180
Italy	5	1,425	161
Russia	3	919	17
Turkey	3	797	43
Egypt	3	693	21
Brazil	2	619	71
Pakistan	2	596	40
Spain	2	562	110
Greece	2	553	41
Austria	2	538	95
USA	2	494	134
South Korea	2	494	-26
Syria	2	455	-23
Poland	2	432	-42
Ukraine	2	416	1
Vietnam	1	401	85
Mexico	1	392	82
France	1	387	20

Source: Federal Statistical Office, student statistics; DZHW calculations

DS4 Countries of origin where doctoral candidates make up the highest proportions of all international students 2019

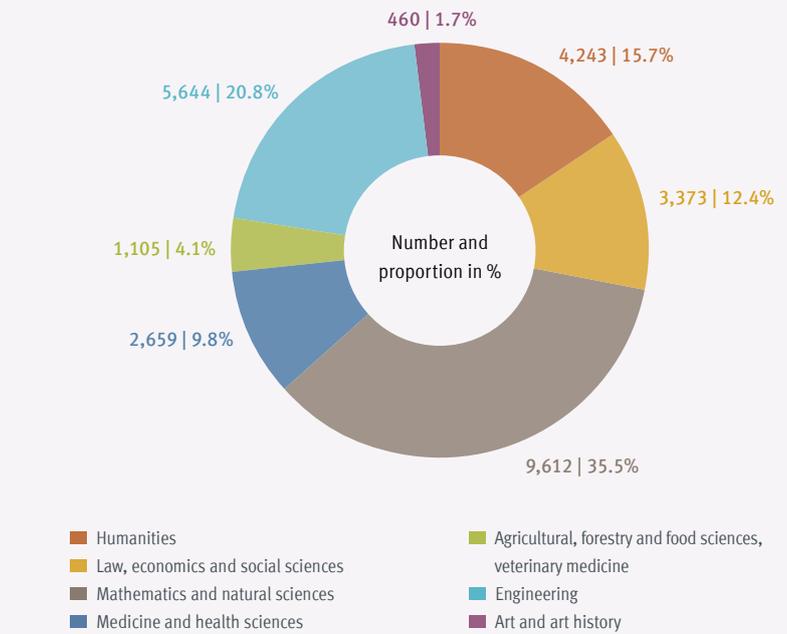
Country of origin	Number	Proportions of all international students in %
Ethiopia	152	31
Chile	262	25
Iraq	157	23
Kenya	140	21
Iran	1,731	21
Serbia	192	18
Thailand	163	17
Ghana	205	17
Portugal	186	17
Brazil	619	16
Italy	1,425	15
Greece	553	15
Netherlands	249	15
Egypt	693	15
Canada	146	14
Croatia	142	13
Mexico	392	12
China	4,695	12
Colombia	383	11
Taiwan	286	11
Total	27,107	9

Source of calculations: Federal Statistical Office, student statistics; DZHW calculations

the highest degree of internationalisation is found among doctoral candidates in regional sciences (71%), surveying (50%), non-European languages and cultural studies (49%), and architecture and interior design (48%). Very low percentages are found in industrial engineering with an engineering focus (4%), social sciences (9%), dentistry (11%) and education (12%).

Depending on the region and country of origin, differing preferences for certain subjects become apparent. Doctoral candidates from Western Europe, for example, enrol particularly frequently in mathematical and scientific subjects (41%). This can be attributed in particular to doctoral candidates from Italy and Spain: half of all doctoral candidates from these countries (48% in each case) achieve a doctorate in this subject group. The same preference is also found among doctoral candidates from the Asia and Pacific region (39%). 54% of all doctoral candidates from India alone have enrolled in mathematics and natural sciences. Doctoral candidates from North Africa and Middle East are striking for their strong preference for engineering

DS5 International doctoral candidates by subject group 2019



Source: Federal Statistical Office, student statistics; DZHW calculations

DS6 International doctoral candidates as a proportion of all doctoral candidates by subject group and field of study 2019

Subject group	Proportion of all doctoral candidates in %	
Agricultural, forestry and food sciences, veterinary medicine	30.1	<div style="width: 30.1%;"></div>
Mathematics and natural sciences	29.0	<div style="width: 29.0%;"></div>
Engineering	28.7	<div style="width: 28.7%;"></div>
Humanities	27.0	<div style="width: 27.0%;"></div>
Medicine and health sciences	21.0	<div style="width: 21.0%;"></div>
Art and art history	17.7	<div style="width: 17.7%;"></div>
Law, economics and social sciences	16.6	<div style="width: 16.6%;"></div>
Total	25.0	<div style="width: 25.0%;"></div>
Field of study	Proportion of all doctoral candidates in %	
Regional science	70.8	<div style="width: 70.8%;"></div>
Spatial planning	51.7	<div style="width: 51.7%;"></div>
Non-European languages and cultural studies	48.7	<div style="width: 48.7%;"></div>
Architecture, interior design	47.6	<div style="width: 47.6%;"></div>
Agricultural sciences, food and beverage technology	45.6	<div style="width: 45.6%;"></div>
Slavonic, Baltic and Finno-Ugric studies	44.7	<div style="width: 44.7%;"></div>
Forestry, wood management	44.1	<div style="width: 44.1%;"></div>
Mining, metallurgy	40.5	<div style="width: 40.5%;"></div>
Materials science and engineering technology	39.1	<div style="width: 39.1%;"></div>
Civil engineering	37.7	<div style="width: 37.7%;"></div>
General and comparative literature and linguistics	37.6	<div style="width: 37.6%;"></div>
Earth science	36.9	<div style="width: 36.9%;"></div>
Islamic studies	34.6	<div style="width: 34.6%;"></div>
Biology	33.7	<div style="width: 33.7%;"></div>
Philosophy	32.9	<div style="width: 32.9%;"></div>

Source: Federal Statistical Office, student statistics; DZHW calculations

subjects (36%). A comparatively high share of doctoral candidates from Sub-Saharan Africa take doctorates in agricultural, forestry and food sciences (16%), with particularly high percentages among doctoral candidates from Ethiopia (26%) and Ghana (20%). Doctoral candidates from North America, on the other hand, come to Germany to study for a doctorate in a humanities subject (28%) relatively frequently.

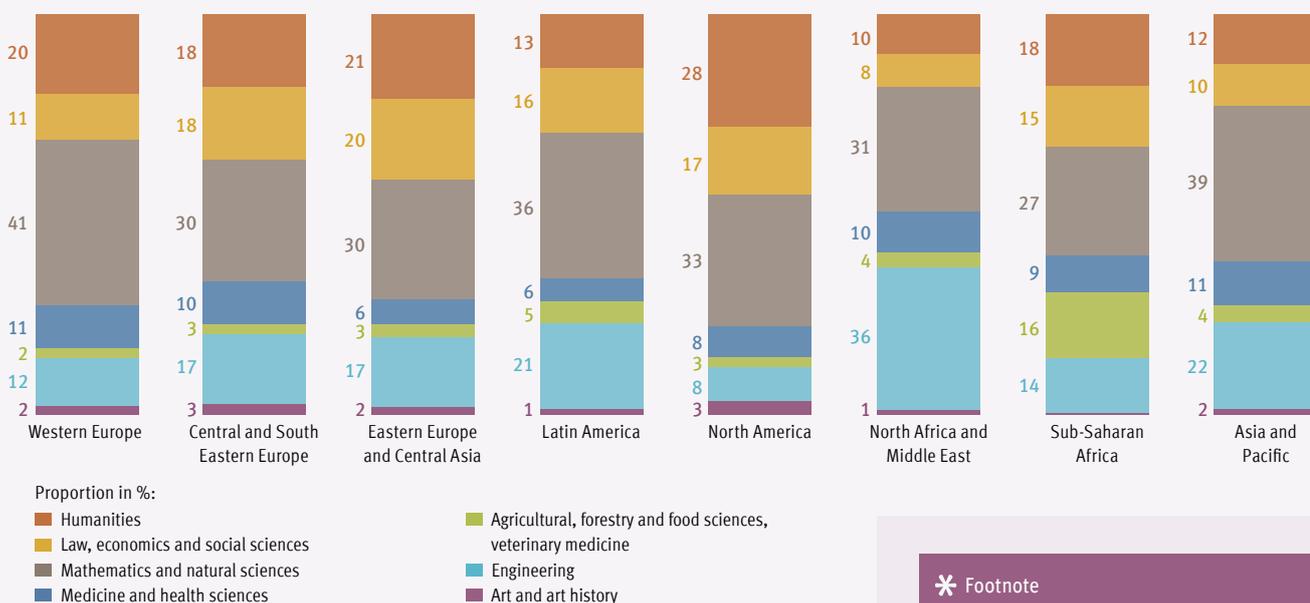
International doctoral candidates who prepare their dissertations in Germany not only prefer selected subject areas, but also certain universities. The reasons for this are likely to be related to the programmes offered by the various universities. The choice of university is certainly also influenced by the reputation of a university or a certain subject area, a university's location, and how international the university is. The universities with the most international doctoral candidates are the FU Berlin (1,346 doctoral candidates), the LMU Munich (1,178 candidates) and the HU Berlin (1,111 candidates). Other German universities with more than 1,000 international doctoral candidates are the universities of Göttingen (1,070 candidates), Hamburg (1,045 candidates) and Heidelberg (1,023 candidates). Around one fifth of all international doctoral candidates are enrolled at these six universities. As is the case with international students, metropolitan areas and internationally renowned traditional universities prove to be particularly attractive to doctoral candidates.

“ In the fields of regional science and spatial planning, more than half of doctoral candidates come from abroad.

However, if one looks at international doctoral candidates as a percentage of all doctoral candidates at a university, a different order emerges. The private Jacobs University Bremen then leads the field with a proportion of 59%. Jacobs University has set itself the goal of a majority international student body and therefore teaches exclusively in English. Other universities with a high proportion of international doctoral candidates are the Karlsruhe Institute of Technology (52%), the Bauhaus University Weimar (47%) and the University of Cottbus-Senftenberg (41%).

In the 2018 academic year, around 4,900 international junior researchers successfully completed a doctorate at a German university. This means that almost one in five graduates with a successful doctorate (18%) comes from abroad. Compared to the previous year, the number of successful international doctoral candidates has declined slightly by 3% for the first time, but has increased by a total of 37% since 2008. In line with the subject preferences of the international doctoral candidates, 43% of the doctoral degrees were awarded in a mathematics or natural sciences subject, with a large share being in biology (15%), chemistry (10%) and physics (9%). A further 20% of doctoral degrees are in engineering subjects, especially in mechanical/process engineering (5%), electrical engineering and computer science (4% each). The other doctorates are mainly in the subject groups of medicine and health sciences (12%), law, economics and social sciences (10%) and the humanities (10%).

DS7 International doctoral candidates by region of origin and subject group 2019¹



* Footnote

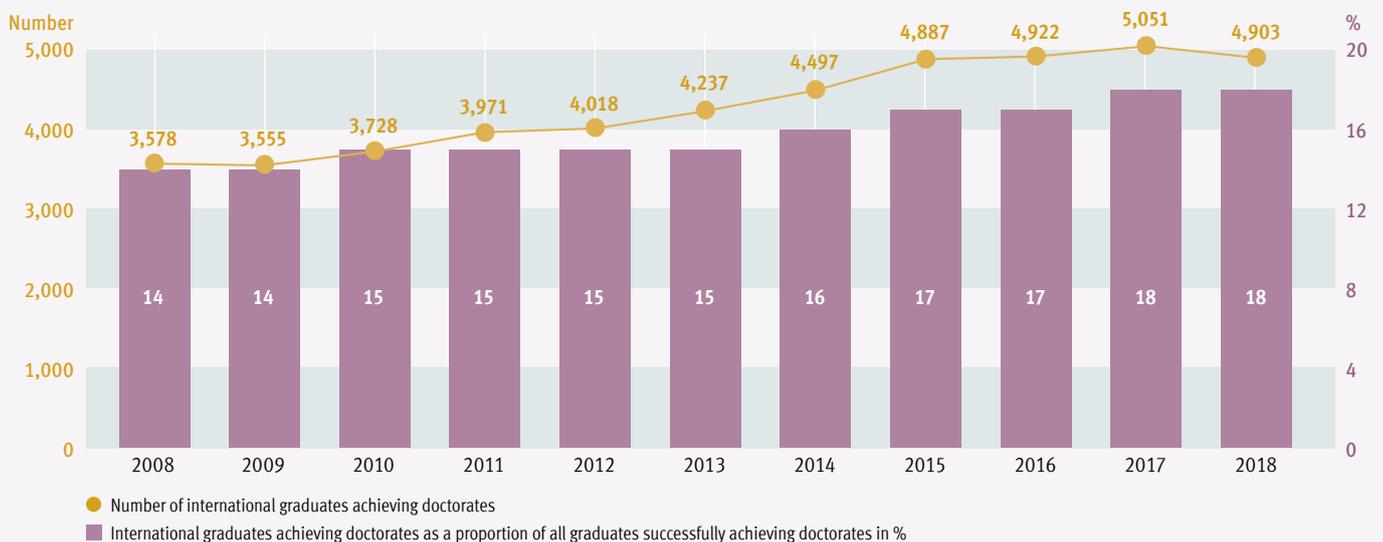
1 Deviations from 100% are due to rounding.

DS8 Universities with the highest numbers and proportions of doctoral candidates 2019

University	Number of international doctoral candidates	University	International doctoral candidates as a proportion of all doctoral candidates in %
FU Berlin	1,346	Jacobs University Bremen	59
U München	1,178	Karlsruhe Institute of Technology	52
HU Berlin	1,111	U Weimar	47
U Göttingen	1,070	TU Cottbus-Senftenberg	41
U Hamburg	1,045	U Heidelberg	38
U Heidelberg	1,023	Medizinische H Hannover	37
U Bonn	892	U Jena	36
TU Berlin	882	U Gießen	36
TU München	856	U Hohenheim	35
TH Aachen	841	U Bayreuth	35
TU Dresden	753	U Magdeburg	35
U Tübingen	664	FU Berlin	34
U Köln	624	U Freiburg	34
U Bochum	598	HU Berlin	34
U Münster	583	U Saarbrücken	33
U Potsdam	548	TU Berlin	33
U Frankfurt am Main	452	U Tübingen	33
U Freiburg	452	U Potsdam	33
U Duisburg-Essen	435	U München	32
U Leipzig	430	TU Freiberg	32

Source: Federal Statistical Office, student statistics

DS9 International graduates achieving doctorates since 2008



Source: Federal Statistical Office, graduation statistics; DZHW calculations

2 International academics and researchers at non-university research institutes

2.1 Mobility trends, regions and countries of origin

In 2018², the four largest non-university research institutes (NURIs) employed around 13,000 salaried academics and researchers of foreign nationalities.¹ Since 2010, their number has almost doubled (+91%), indicating more dynamic development at NURIs in terms of international academic staff than at universities. While the number of international academics and researchers at universities has risen by 15% since 2015, the increase at NURIs over the same period is 38%, up 10% on 2017 alone.

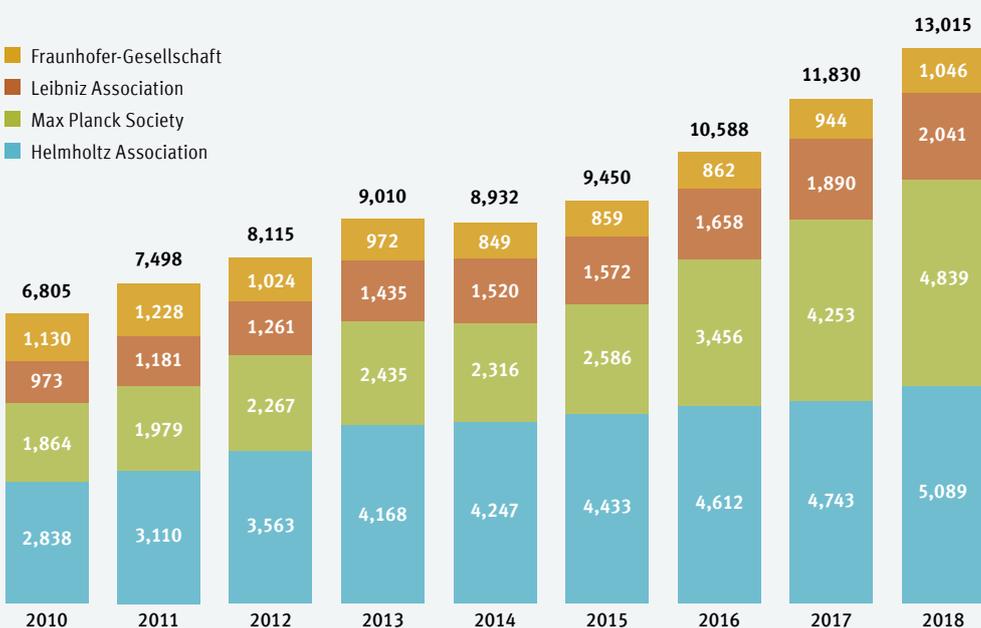
The Max Planck Society presents the largest increase, where the number of international academics and researchers has increased by 160% within eight years. This is partly due to the decision taken in 2015 to no longer finance doctoral candidates with scholarships but with fixed-term contracts, the number of which increased by 14% from 2017 to 2018 alone. At the Helmholtz and Leibniz associations, there has also been a significant increase in international academic staff since 2010, growing by 79% and 110% respectively. The Fraunhofer-Gesellschaft is the only exception. In 2018, it did not quite reach the 2011 level (-15%), when it recorded its highest number of international academics and researchers to date. However, after a significant decline, this number has been growing continuously again since 2015, rising by 11% from 2017 to 2018 alone.

“ While the number of international academics and researchers and scholars at universities has risen by 15% since 2015, it has increased by 38% at non-university research institutes.

The steady growth of the international academic staff at NURIs has led to the fact that in 2018 about 27% of all academics and researchers came from abroad. In 2010, this proportion was still 15%. Compared to the universities, the current share of international academics and researchers at NURIs is more than twice as high (cf. p. 78/79). This is partly a result of the different subject profiles. The majority of NURIs – with the exception of the Fraunhofer-Gesellschaft – focus strongly on the highly internationalised field of natural sciences. In these subject areas, the share of international academic staff among all those working in science and research, including universities, is above average at 19% (cf. pp. 80/81). In addition, the very good research conditions and lower language barriers – there are no teaching obligations and English is generally spoken in natural sciences laboratories – also contribute to the international attractiveness of NURIs.

By far the highest share of international academics and researchers among all employed academics and researchers is to be found at the institutes of the Max Planck Society, at around 49%. Approximately half of academics and researchers are therefore foreign nationals. As already described, this

D2.1 International academic staff at the four largest non-university research institutes since 2010²



Source: Federal Statistical Office, statistics on non-university research institutes

* Footnotes

- 1 Data and comments relate exclusively to the four largest non-university German research institutes: Helmholtz Association, Max Planck Society, Leibniz Association and Fraunhofer-Gesellschaft.
- 2 The Federal Statistical Office's data on staff at non-university research institutes refer to reporting years (January-December) and not to academic years.
- 3 In the official statistics on non-university research institutes, the origin of international staff is not given by more differentiated regions, but by continents.

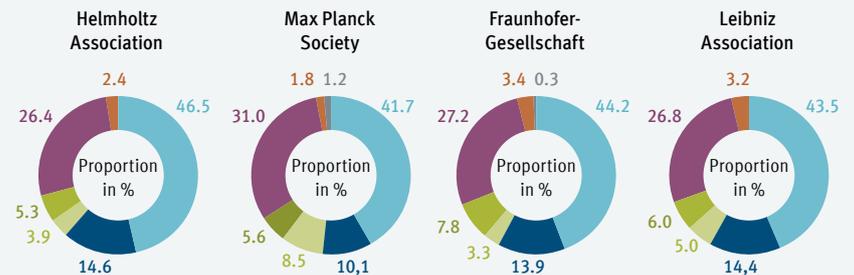
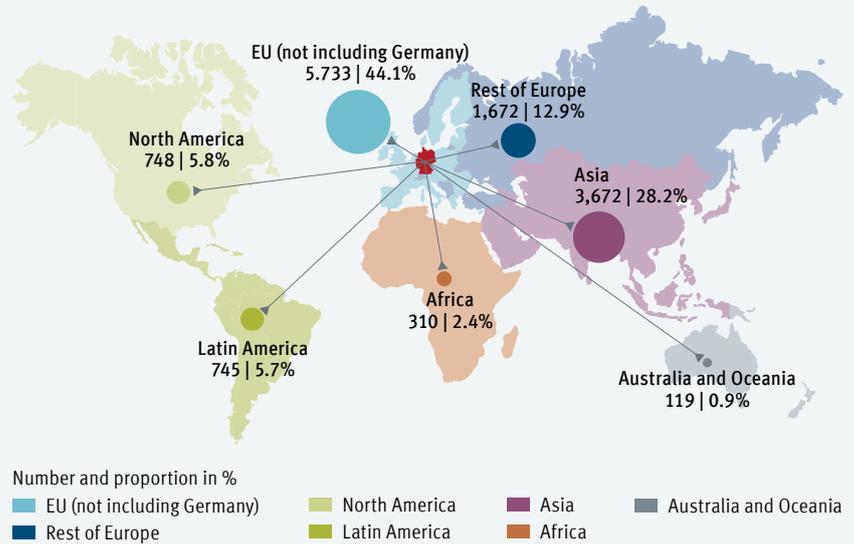
high figure is also the result of the temporary employment of all doctoral candidates. By contrast, only one in ten academics and researchers at the mostly engineering science-oriented Fraunhofer-Gesellschaft comes from abroad (10%). For the Helmholtz and Leibniz associations, this figure is around a quarter (26% and 22% respectively).

“ 44% of international academic staff at non-university research institutes come from EU countries.”

International academic staff at NURIs mainly come from European countries. EU countries account for 44% of the foreign academics and researchers and the remaining European countries 13%. Asia also accounts for a high percentage at 28%. The dominance of academics and researchers from European countries at NURIs corresponds to the origin of the international academic staff at the universities, with more than half of academics and researchers coming from Europe. There are only minor differences between the various NURIs. The highest share of academics and researchers from European countries can be found at the institutes of the Helmholtz Association (61%), while most scientists from North America (9%) and Asia (31%) are at the Max Planck Society.

The key countries of origin are China, Italy and India, with around 1,200 academics and researchers from each of these countries working at NURIs in 2018. Other important countries are Russia (around 700), France, Spain and the USA (around 600 each).

D2.2 International academic staff at the four largest non-university research institutes by region of origin 2018³



Source: Federal Statistical Office, statistics on non-university research institutes; DZHW-calculations

D2.3 International academic staff as a proportion of all academic staff at the four largest non-university research institutes since 2010



Source: Federal Statistical Office, statistics on non-university research institutes; DZHW-calculations

2 International academics and researchers at non-university research institutes

2.2 Subject groups and qualifications

With a share of 70%, the majority of international academic staff at non-university research institutes (NURIs) belong to the mathematics and natural sciences subject group. These are mainly physicists and biologists. 14% of the international academics and researchers are employed in engineering and 7% each in medicine, social sciences or the humanities. The preponderance of international academic staff working in the natural sciences is in line with the general focus of the NURIs. Only the institutes of the Fraunhofer-Gesellschaft are primarily oriented towards engineering.

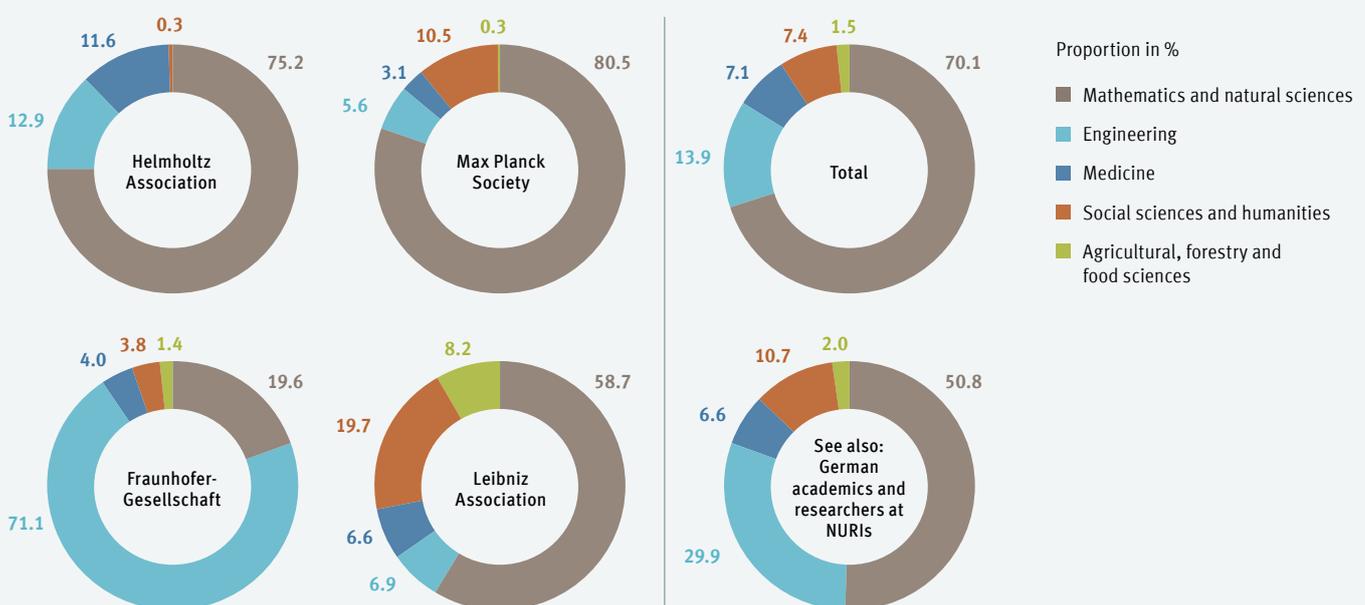
The proportion of international academics and researchers working in mathematics and natural sciences is much higher than in Germany (70% vs. 51%), whereas it is much lower in engineering (14% vs. 30%). At the level of the individual research institutes, however, these differences even out as they are mainly due to the lower proportion of foreign academics and researchers employed at the Fraunhofer-Gesellschaft (see pp. 88/89). It is only at the Helmholtz and Leibniz associations that there is a slightly higher percentage of international academics and researchers than German academics and researchers working in the field of mathematics and the natural sciences.

“ At the institutes of the Max Planck Society, 38% of research group leaders and heads of department are foreign nationals.

The strong interest of international academics and researchers in scientific research at NURIs is not only shown by the large number of people working in this field, but also by the fact that these disciplines account for the highest share of the total staff (33%) compared to other subjects. Only medicine presents a similarly high figure of 28%. The relatively low proportion of foreign academics and researchers in engineering (14%) is quite surprising in view of the high number of international bachelor's, master's and doctoral candidates on engineering programmes at German universities.

International academic staff at NURIs are highly qualified, with an average of around 50% holding doctorates. At the institutes of the Fraunhofer-Gesellschaft, however, the share is much lower at 26%, although only 23% of German academics and researchers there hold a doctorate. At the other three NURIs, the shares of international and German academics and researchers with doctorates follow a similar pattern. However, there is a higher proportion of doctoral graduates among international academics and researchers at the Max Planck Society (54% vs. 44%). There are hardly any differences in this respect at the Helmholtz and Leibniz associations.

↓ D2.4 International academic staff at the four largest non-university research institutes by subject group 2018



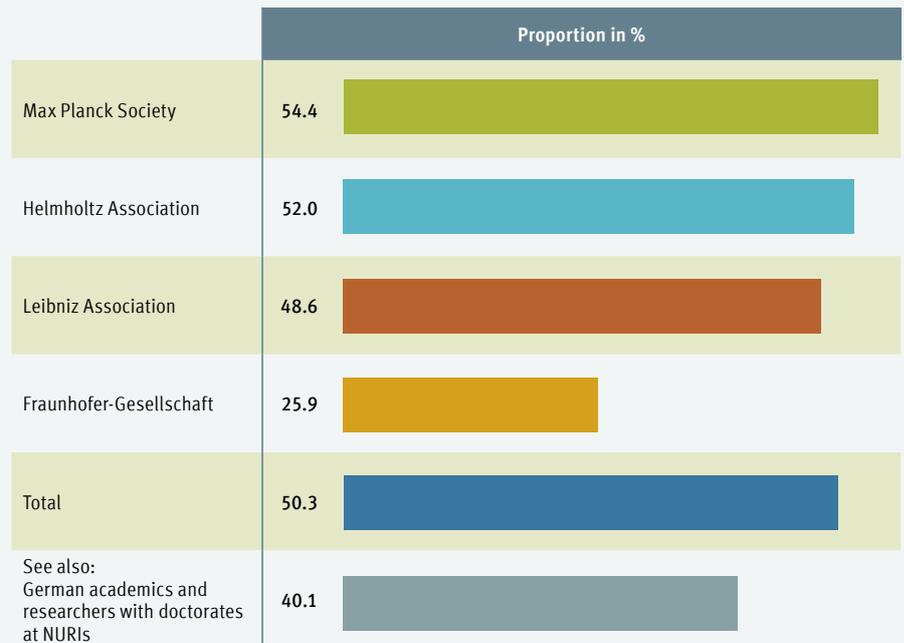
Source: Federal Statistical Office, statistics on non-university research institutes; DZHW-calculations

At NURIs, 4% of international academic staff are employed as heads of research groups or heads of departments. 27% are employees with a doctorate and 69% are other academics and researchers. In comparison, the proportion of German academic staff is higher both for research group leaders and heads of departments (7%) and for other academics and researchers (77%), while the percentage of employees in posts requiring a doctorate is lower (16%). This situation is similar at all research institutes. It is notable that the Leibniz Association has an above-average proportion of international research group leaders and heads of department (9%), whereas the share is particularly low for the Fraunhofer-Gesellschaft (1%). In both cases, however, these figures are in line with the corresponding percentages of German academics and researchers (14% and 3% respectively).

“ 50% of international academic staff at NURIs hold a doctorate.

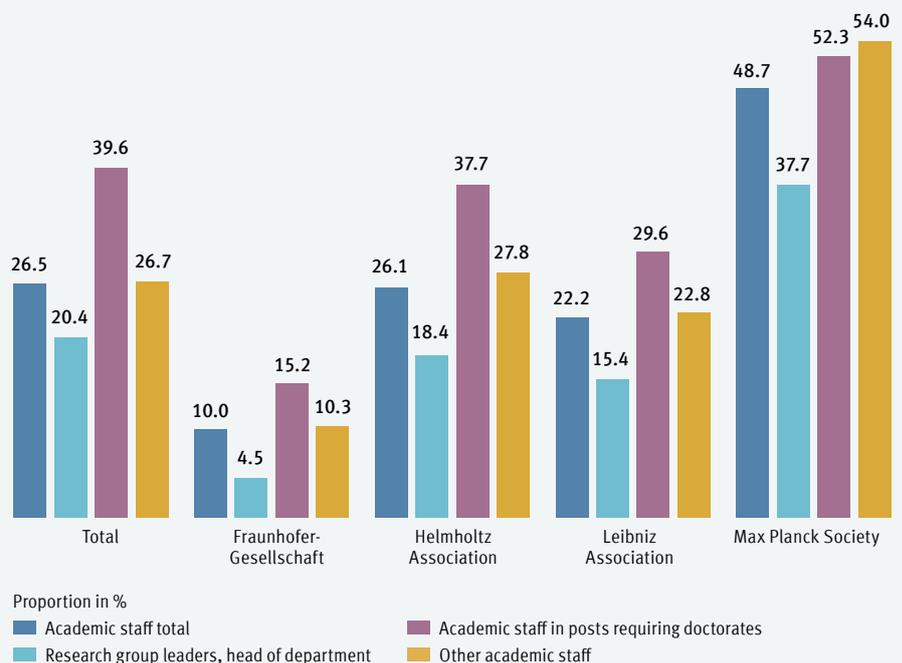
Looking at the respective shares of international academic staff in all staff groups, it becomes clear that one in five research group leaders or heads of department comes from abroad. Moreover, 40% of the staff in posts requiring a doctorate and 27% of the other academics and researchers are foreign nationals. At the institutions of the Max Planck Society, these figures are higher for all staff groups: 38% of research group leaders and heads of department, 52% of employees in posts requiring doctorates and 54% of the other academics and researchers come from abroad. In the institutes of the Fraunhofer-Gesellschaft, by contrast, only 5% of the research group leaders and heads of department, 15% of the employees in posts requiring a doctorate and 10% of the other academics and researchers are foreign nationals.

↓ D2.5 International academic staff with doctorates as a proportion of all academic staff at the four largest non-university research institutes 2018



Source: Federal Statistical Office, statistics on non-university research institutes; DZHW-calculations

↓ D2.6 International academic staff as a proportion of all academic staff at the four largest non-university research institutes by employment status 2018



Source: Federal Statistical Office, statistics on non-university research institutes; DZHW-calculations

3 International guest researchers in Germany

3.1 Mobility trends, funding organisations and scholarship groups

In 2018, domestic and foreign organisations funded around 32,700 visits by international guest researchers to Germany.^{1, 2} Guest researchers are foreign nationals who are visiting Germany for a limited period without being employed and who are active in teaching and research at universities or other research institutes. Although the data collected on mobility funding is not a complete analysis for German funding organisations, it covers the main part of funded visits by international guest researchers.³ With regard to funding provided by foreign organisations, however, the data have only ever been able to represent a section of the funding activities limited to a few countries and the Marie Skłodowska-Curie actions of the EU.

Compared to the previous year, the number of funded visits by international guest researchers fell slightly by 1%. Since 2016, no major change in the number of funded visits has been discernible, ranging between 32,000 and 33,000 funded visits over the past three years. As before, three large funding organisations are the primary source of support for the vast majority of guest researchers' visits to Germany: DFG, DAAD and the Alexander von Humboldt Foundation. The DFG alone funds 46% of all guest research visits, the DAAD 40% and the Alexander von Humboldt Foundation 7%. Together they contribute to the funding of 93% of all visits.⁴ However, while the DFG expanded its funding activities by around 500 visits (3%) compared to 2017, the DAAD funded 1,000 (7%) fewer.

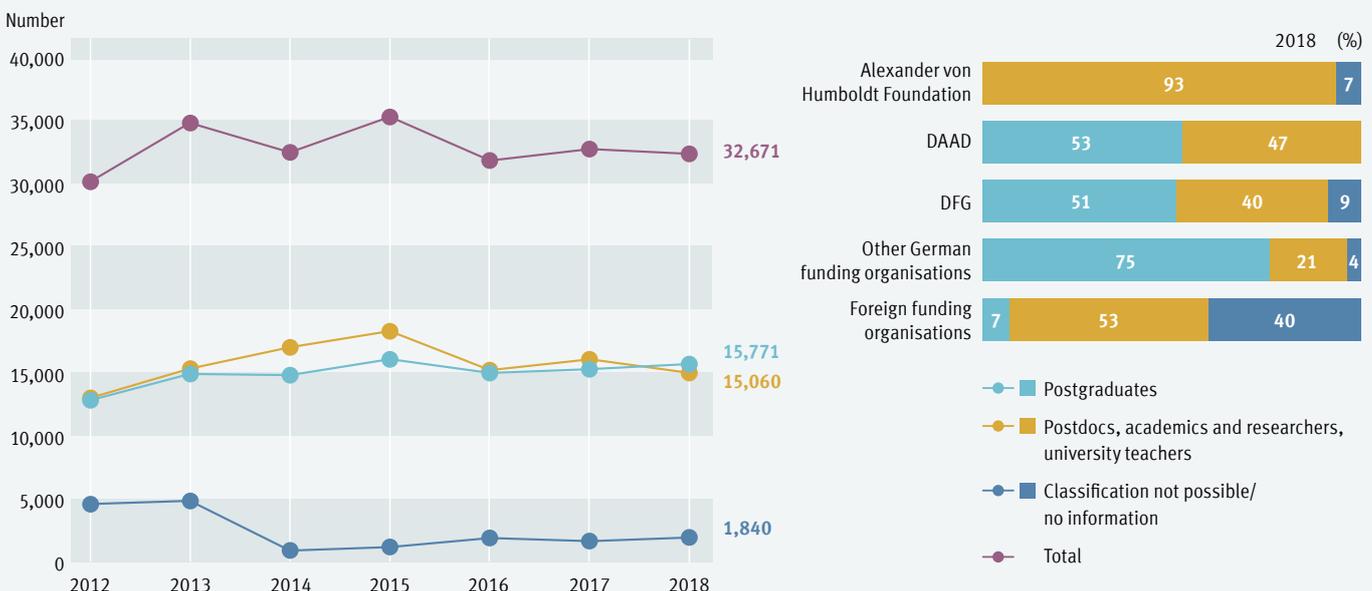
A large number of other smaller German funding organisations supported around 4% of the visits of international guest researchers in 2018. Even if the scope of the funding activities of these organisations does not appear large, their contribution to international mobility should not be underestimated. On the one hand, their activities make it clear that many institutes support promoting researchers' international mobility. On the other hand, these smaller institutions also often focus on specific areas of teaching and research,

which in turn creates a strong incentive for internationalisation. The number of visits by international guest researchers funded by these organisations has increased by 5% from 2017 to 2018. A number of organisations have expanded their funding activities, such as the Boehringer Ingelheim Fonds, Friedrich Naumann Foundation, Fritz Thyssen Foundation and Baden-Württemberg Foundation. Other institutions have reduced their funding somewhat, including the Konrad Adenauer Foundation, the Catholic Academic Exchange Service and the Hanns Seidel Foundation.

Foreign institutions' funding activities included in the survey cover only 2% of the visits of international guest researchers presented here. Compared to the previous year, their funding has increased by around 100 visits (14%). It is particularly striking that the number of visits supported by Marie Skłodowska-Curie actions increased from 81 to 285 within one year.

“Between 32,000 and 33,000 visits by international guest researchers in Germany have been funded every year since 2016.”

D3.1 International guest researchers in Germany by type of university and by scholarship holder group since 2012^{1, 2}



Source: Responses from funding organisations, DZHW survey; DZHW calculations

48% of all funded international visits are academics and researchers with doctorates, including professors and experienced researchers, such as research group leaders. A further 46% of the funded visits were carried out by doctoral candidates and other postgraduates. This distribution of the funding activities among the different status groups of academics and researchers and scholars has remained essentially unchanged for over five years, making it clear that the funding activities of the various organisations are based on a longer-term strategy.

Sponsorship provided by the Alexander von Humboldt Foundation goes almost exclusively (93%) to experienced academics and researchers with doctorates at German universities and research institutes. In contrast, the DFG and the DAAD each support, in similar proportions, visits by guest researchers with doctorates (DFG: 40%, DAAD: 47%) and postgraduates (DFG: 51%, DAAD: 53%). The smaller German organisations fund a high proportion of visits by international postgraduates (76%).

* Footnotes

- 1 The figures on foreign guest researchers in Germany on pp. 92–95 do not contain any information on the major non-university research institutes: Helmholtz Association, Max Planck Society, Leibniz Association and Fraunhofer-Gesellschaft. See pp. 96/97.
- 2 Not including Erasmus visits to Germany by international academics and researchers
- 3 Missing information includes university funding of visits by international guest researchers.
- 4 It should be noted here that a large share of DAAD funding is short-term funding for just a few days (e.g. attending conferences), while visits funded by the DFG and AvH generally last considerably longer.
- 5 Data for 2017
- 6 Estimated number
- 7 Information on applicants for a residence grant in Germany only



D3.2 International guest researchers in Germany by funding organisations 2018²

Funding organisation	Number
Key German funding organisation	
German Research Foundation	15,011
German Academic Exchange Service	13,140
Alexander von Humboldt Foundation	2,276
Further German funding organisations	
Konrad Adenauer Foundation	274
Catholic Academic Exchange Service	229
Gerda Henkel Foundation ⁶	152
Hanns Seidel Foundation	91
Boehringer Ingelheim Fonds	65
Friedrich Ebert Foundation	57
Herzog August Bibliothek Wolfenbüttel	57
Minerva Foundation ⁵	57
Akademie Schloss Solitude ⁶	53
Friedrich Naumann Foundation	52
German Federal Environmental Foundation	46
Heinrich Böll Foundation	37
Schneider-Sasakawa-Fonds – WWU Münster	34
Baden-Württemberg Foundation gGmbH	32
Fritz Thyssen Foundation	26
Cusanuswerk (episcopal scholarship foundation) ⁵	23
Rosa Luxemburg Foundation ⁵	22
German National Committee of the Lutheran World Federation ⁵	20
The Martin Buber Society of Fellows	18
Study Foundation of the Berlin House of Representatives ⁵	17
Hans Böckler Foundation ⁵	14
Einstein Foundation Berlin	10
Karl Winnacker Institute of DECHEMA	10
Heinrich Hertz Foundation	9
Stiftung Charité	9
Zeit-Stiftung Ebelin und Gerd Bucerius	8
Klassik Stiftung Weimar	4
Alfred Toepfer Stiftung F.V.S.	3
Foreign funding organisations	
Japan Society for the Promotion of Science	370
Marie Skłodowska-Curie actions	285
Swiss National Science Foundation ^{5,7}	106
Fulbright Commission	29
Natural Sciences and Engineering Research Council of Canada ⁵	15
FWF Austrian Science Fund	10
Total	32,671

Source: Funding organisations

3 International guest researchers in Germany

3.2 Regions and countries of origin and subject groups

Western Europe and Asia and Pacific are the key regions of origin for international guest researchers, whose visits to Germany were supported by domestic and foreign funding organisations. 22% of male researchers and 21% of female researchers receiving funding came from these regions. Other major regions of origin are Central and South Eastern Europe (13%), North Africa and Middle East (12%) and Eastern Europe and Central Europe (11%). The percentages for Latin America (9%), North America and Sub-Saharan Africa (6% each) are lower. The frequency of visits by academics and researchers from Western Europe and Asia-Pacific for research and teaching purposes in Germany corresponds to the preponderance of these regions of origin among international academics and researchers employed at German universities or non-university research institutes (cf. pp. 78/79 and 88/89). The mobility flows of Western European and Asian guest researchers to Germany are not only a result of demographics – i.e. the high number of academically trained academics and researchers in these regions – but also a result of many years of economic and academic cooperation, including cooperative relationships between German universities and research institutes. The continued importance of the Western Europe and Asia and Pacific regions of origin in terms of funded visits is also reflected in the fact that their proportion continued

“ 45% of international guest researchers work in mathematics and natural sciences, the largest group by a wide margin.

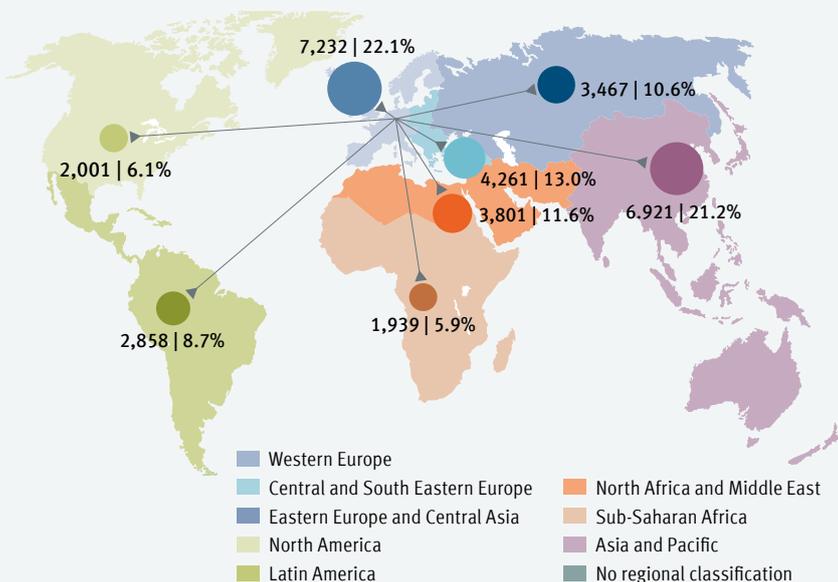
to grow from 2017 to 2018. By contrast, the percentage of visits by guest academics and researchers, especially from Central and South Eastern Europe and Latin America, declined during this period.

The various funding organisations are distinguished by their different regional emphases.¹ At the DFG, the share of funded guest researchers from Western Europe (35%) and Asia and the Pacific (24%) is particularly high. The Alexander von Humboldt Foundation also sponsors an above-average share of researchers from North America (17%). In contrast, funding from the DAAD and the smaller German funding organisations is more evenly spread across the various regions of origin.

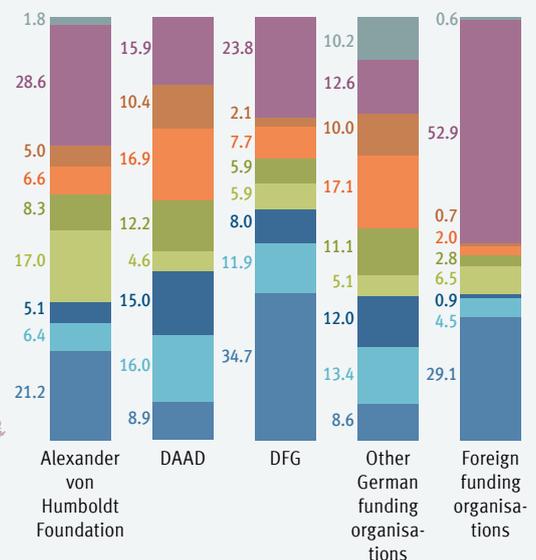
The three key countries of origin for international guest researchers in Germany are China, India and Russia. They each provide around 2,000 of the funded researchers. In comparison to 2017, the number of guest researchers from all three countries again rose significantly after declines in the previous year, most strongly for India (+52%) and China (+40%). Other major countries of origin are Italy, the USA, Poland, Iran and Spain. Almost without exception, these countries also show a positive trend; only Poland shows a significant decline.

D3.3 International guest researchers in Germany by region of origin and funding organisations 2018¹

Number and proportion in %



Proportion in %



Source: Responses from funding organisations, DZHW survey; DZHW calculations

45% of international guest researchers are found in the mathematics and natural sciences subject group, making them the largest single group. The humanities (16%), engineering (14%) and law, economics and social sciences (11%) follow some way behind. Human medicine (6%), agricultural, forestry and food sciences (3%), and art and art history (1%) are even less important. The dominance of the natural sciences among international guest researchers corresponds to the importance of this subject area among salaried foreign academics and researchers, both at German universities and at non-university research institutes. The only unusual feature is the comparatively high proportion of guest researchers representing humanities subjects, which is above average.

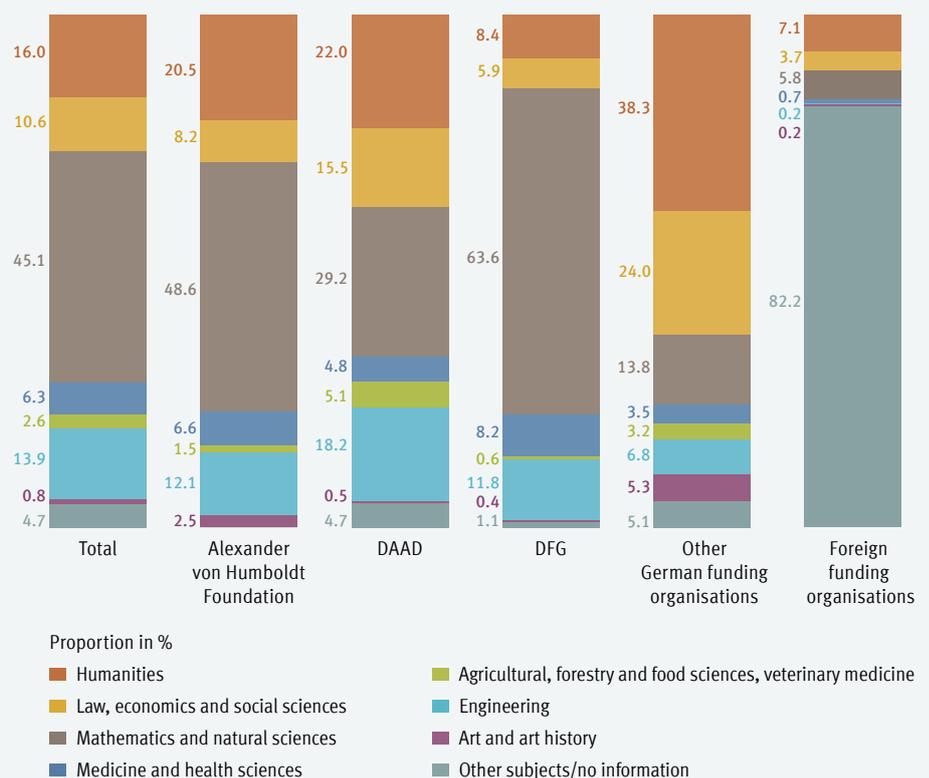
There are clear differences between the various funding organisations with regard to the specialist areas of the funded scientists. At the DFG and the Alexander von Humboldt Foundation, the share of academics and researchers in the natural sciences is particularly high at 64% (male) and 49% (female). By contrast, the smaller German funding organisations are more likely to support humanities scholars (39%) and legal, economic and social researchers (24%). At 18%, the DAAD funds the highest proportion of engineering academics and researchers.

D3.4 International guest researchers in Germany by key countries of origin since 2012



Source: Responses from funding organisations, DZHW survey; DZHW calculations

D3.5 International guest researchers in Germany by funding organisations and subject group 2018



Source: Responses from funding organisations, DZHW survey; DZHW calculations

* Footnote

1 With the exception of EU funding under the Marie Skłodowska-Curie actions, foreign funding organisations usually support visits to Germany by guest researchers from their respective countries of location.

3 International guest researchers in Germany

3.3 International guest researchers at non-university research institutes

Internationalisation processes at the non-university research institutes (NURIs) are not limited to the employment of foreign researchers and scholars, but also include temporary research visits by guest researchers from other countries. Some of these visits are funded by other institutions outside NURIs, but another significant proportion of these temporary visits is made possible by NURIs themselves who award fellowships or other funding. Data on international guest researchers whose visits are financed by NURIs have improved considerably in recent years. The Helmholtz Association, the Max Planck Society and the Leibniz Association now have robust data on visits by international guest researchers to their institutes or on the projects they undertake. Only the Fraunhofer-Gesellschaft has not yet provided information of this kind.

In 2018, the Max Planck Society and the Helmholtz and Leibniz associations together funded around 10,400 international guest researchers' visits to Germany. The Helmholtz and Leibniz associations each account for around 4,300 guest researchers and the Max Planck Society for around 1,900.¹ In terms of salaried academic staff, this means that in 2018 the Helmholtz Association and the Max Planck Society both had one guest researcher for every five salaried researchers.² The ratio at the Leibniz Association is as high as two to one.

In terms of the regional origins of their international guest researchers, each of the three research institutes displays different

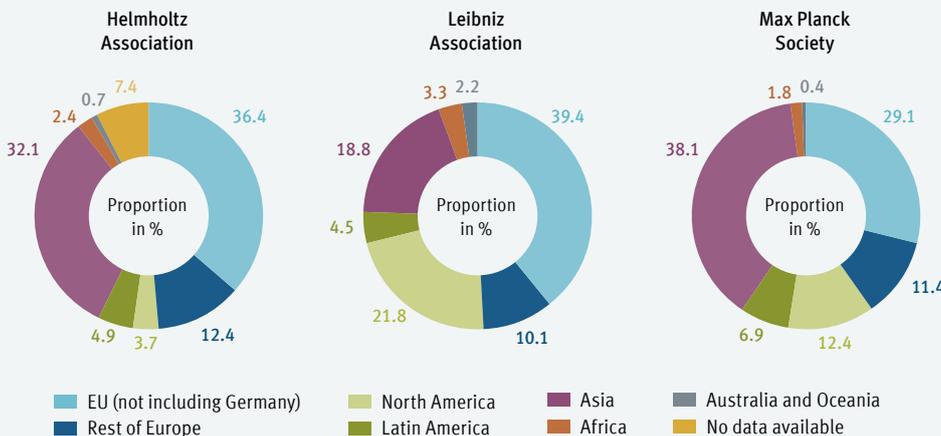
characteristics. The Helmholtz Association particularly sponsors researchers from European countries. In 2018, a total of 36% of the guest researchers at the Helmholtz Association came from EU countries and 12% from other European countries. Academics and researchers from Asia also play a major role, accounting for 32% of all Helmholtz Association funding. Academics and researchers from Europe and Asia together account for 80% of all guests. At the head of the list of countries for the Helmholtz Association is China, whose academics and researchers accounted for no less than 16% of all visits. India comes in second with 6%, closely followed by Russia (6%), Italy (5%) and Sweden (4%).

In the case of the Leibniz Association, most guest researchers it sponsors come from European countries, with 39% from EU countries and 10% from other European countries. However, it also funds North American researchers more often than the other NURIs, who account for 22%. In contrast, the number of researchers from Asia receiving funding is only 19%. In terms of the countries of origin of the academics and researchers funded by the Leibniz Association, the USA leads by a large margin (20%), followed by France (9%), United Kingdom (8%), China (6%) and Italy (5%).

The Max Planck Society also frequently sponsors temporary visits by guest researchers from European countries. 29% come from EU countries and 11% from other European countries. Funding

“ In 2018, non-university research institutes funded 10,400 international guest researchers' visits to Germany.

3.6 International guest researchers whose visits were funded by the Max Planck Society, Helmholtz or Leibniz Associations, by region of origin 2018¹



* Footnotes

- 1 No data on guest researchers funded by non-university research institutes in previous years are shown, as the way in which the data are recorded has changed.
- 2 When evaluating these data, it should be noted that, since 2015, the Max Planck Society has given doctoral candidates (including international doctoral candidates) temporary contracts, so they are no longer financed by scholarships.

↓ D3.7 International guest researchers whose visits were funded by the Max Planck Society, Helmholtz or Leibniz Associations, by country of origin 2018¹

Helmholtz Association			Leibniz Association			Max Planck Society		
Country of origin	Number	Proportion in %	Country of origin	Number	Proportion in %	Country of origin	Number	Proportion in %
China	699	16.4	USA	854	19.9	China	273	14.6
India	264	6.2	France	371	8.6	India	208	11.1
Russia	252	5.9	United Kingdom	335	7.8	USA	198	10.6
Italy	202	4.7	China	251	5.8	Italy	127	6.8
Sweden	162	3.8	Italy	212	4.9	Russia	96	5.1
Total	4,265	100.0	Total	4,302	100.0	Total	1,876	100.0

Source: Responses from non-university research institutes, DZHW survey; DZHW calculations

for academics and researchers from Asia, who account for a proportion of 38%, is no less. 12% of guest researchers come from North America and 7% from Latin America. China is the leading country of origin with 15% of all guest academics and researchers, followed by India and the USA with 11% each. Italy (7%) and Russia (5%) are other important countries of origin.

Information on visit duration is also available for the Max Planck Society and the Helmholtz Association, where shorter visits of up to six months play an important role. Their share is 51% for the Max Planck Society and 53% for the Helmholtz Association, where short visits of one month or less already account for one third of all funding. Visits of more than two years are completed by 16% of the guest researchers at the Max Planck Society and 26% at the Helmholtz Association.

↓ D3.8 International guest researchers whose visits were funded by the Max Planck Society or the Helmholtz Association, by duration of visit 2018



Source: Responses from non-university research institutes, DZHW survey; DZHW calculations

3 International guest researchers in Germany

3.4 Erasmus guest lecturers

Visits by guest lecturers from abroad receive funding under the European Union's Erasmus+ Programme. These guest lectureships in Europe can be between 2 and 60 days in length. The funding includes teaching visits by academic staff, professors and participants from business. Participants in this programme do not necessarily have to be nationals of the sending country and foreign academic staff at universities in the sending country can also participate in the programme. It is therefore possible that some Erasmus guest lecturers in Germany may be German citizens, though this percentage is likely to be very small.

In the 2018 Erasmus year¹, a total of around 2,700 Erasmus guest lecturers came to Germany on teaching visits. This is roughly the same number as in the previous year. Over the last five years, the number of guest lecturers in Germany has remained relatively constant, ranging between 2,600 and 2,800.

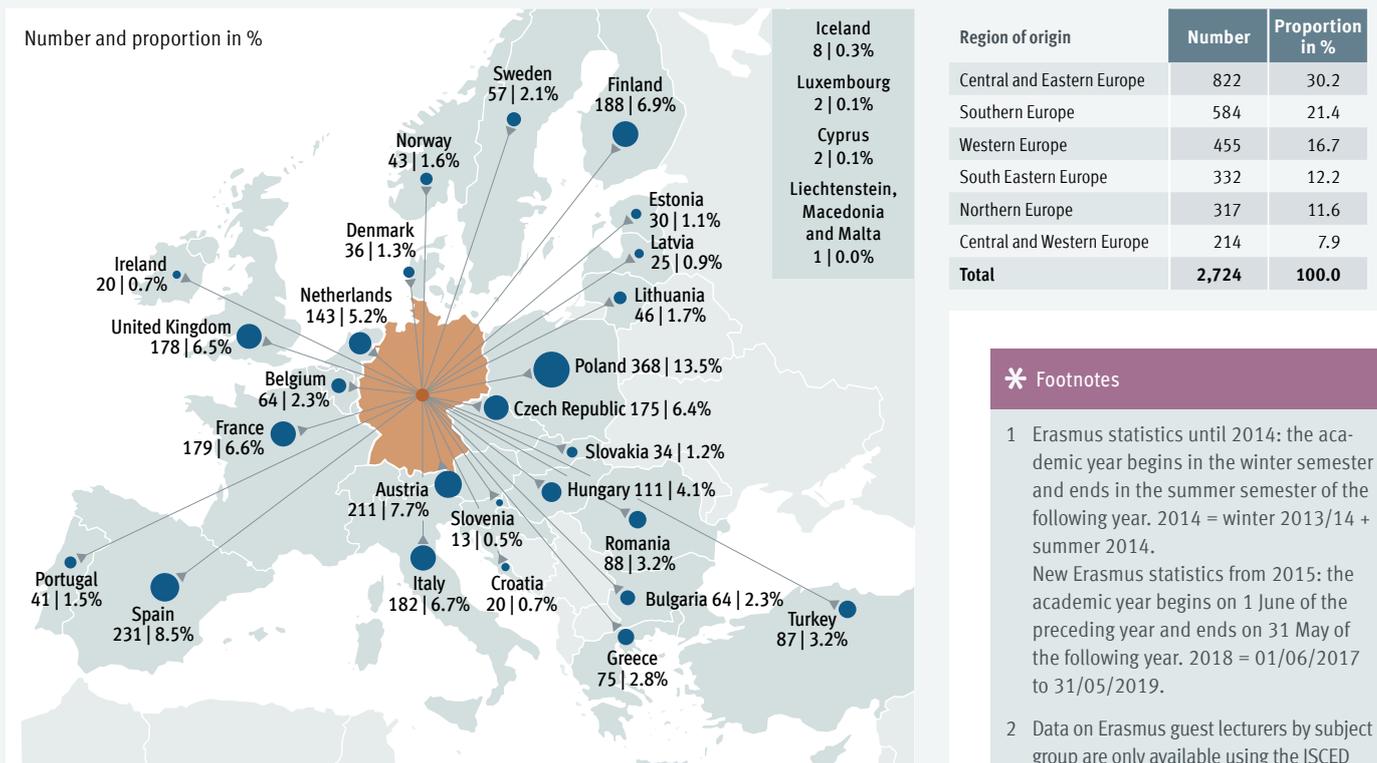
30% of Erasmus guest lecturers – the largest group – come from countries in Central and Eastern Europe. 21% come from Western

“Poland is by far the most important country of origin for Erasmus guest lecturers in Germany.”

European countries and 17% from Southern European countries. The share of guest lecturers from Northern Europe is 12%, as is the share of guest lecturers from South Eastern Europe. 8% come from Central Western Europe. There has been no significant change in the size or respective proportions of the groups from these regions over the past five years. Poland is the key country of origin for Erasmus guest lecturers in Germany, alone accounting for 14%. Spain (9%) and Austria (8%) come in second and third, some way behind. Finland, Italy, France, United Kingdom (7% each) and the Czech Republic (6%) also play important roles. While the number of participants from Poland, France and the United Kingdom has been subject to significant fluctuations over the last five years, the figures for the other major countries have remained essentially constant or have shown slightly positive developments.

The largest group of foreign Erasmus guest lecturers in Germany are in the arts and humanities, accounting for 31%.² 17% belong to the engineering, manufacturing and construction subject group, while a further 16% represent economics, administration

D3.9 Erasmus guest lecturers in Germany by region of origin and country of origin 2018¹



Source: DAAD, Erasmus statistics

* Footnotes

- Erasmus statistics until 2014: the academic year begins in the winter semester and ends in the summer semester of the following year. 2014 = winter 2013/14 + summer 2014. New Erasmus statistics from 2015: the academic year begins on 1 June of the preceding year and ends on 31 May of the following year. 2018 = 01/06/2017 to 31/05/2019.
- Data on Erasmus guest lecturers by subject group are only available using the ISCED system.

and law. Social sciences, journalism and information science account for 10% of the total, and health and social services and education for 7% each. Natural sciences, mathematics and statistics (6%), information and communication technologies (4%), services (3%) and agriculture, forestry, fisheries and veterinary science (2%) are of minor importance. In comparison with German Erasmus guest lecturers who go abroad for a temporary visit, there are no significant differences in the distribution of subject groups (cf. pp. 110/111).

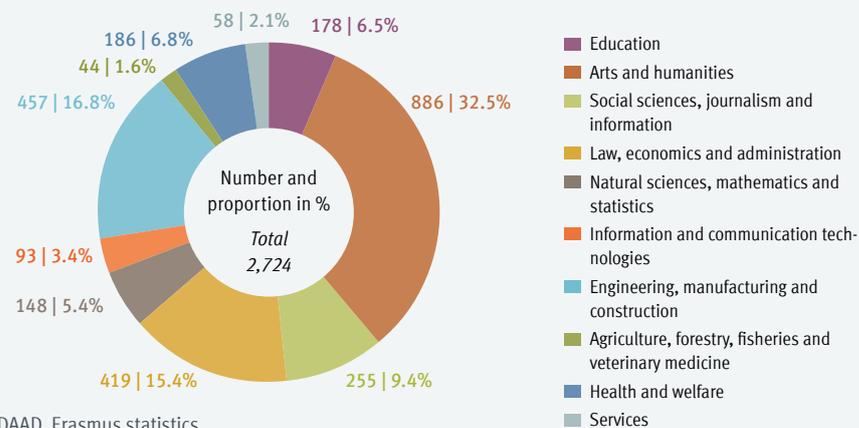
Although Erasmus guest lectureships can last up to two months, lecturers in Germany only stay for an average of 4.9 days. This figure is the same as last year. There are differences between the individual countries of origin. Erasmus guest lecturers from Croatia, Norway, Romania and Sweden spent on average between six and seven days in Germany. By contrast, guest lecturers from Luxembourg, Estonia, Latvia and the Netherlands spent on average only three to four days in Germany.

↓ D3.10 Erasmus guest lecturers in Germany by key countries of origin since 2014



Source: DAAD, Erasmus statistics

↓ D3.11 Erasmus guest lecturers in Germany by subject group 2018²



Source: DAAD, Erasmus statistics

↓ D3.12 Erasmus guest lecturers in Germany by countries of origin and average duration of visit 2018

Country of origin	Average duration in days	Country of origin	Average duration in days	Country of origin	Average duration in days
Liechtenstein	14.0	Italy	5.1	Ireland	4.5
Croatia	6.6	Bulgaria	5.1	Slovakia	4.4
Romania	6.1	Macedonia	5.0	Belgium	4.3
Sweden	6.1	Malta	5.0	Denmark	4.1
Norway	6.0	Poland	4.8	Austria	4.0
Slovenia	5.7	Lithuania	4.8	Cyprus	4.0
Hungary	5.6	France	4.8	Netherlands	3.9
Greece	5.6	Finland	4.7	Latvia	3.8
Czech Republic	5.5	United Kingdom	4.7	Estonia	3.8
Spain	5.2	Iceland	4.6	Luxembourg	3.5
Turkey	5.2	Portugal	4.6	Total	4.9

Source: DAAD, Erasmus statistics

1 German academics and researchers at foreign universities

1.1 Salaried academic staff

Only very few countries currently record the number, origin and status of international academics employed at their universities. Data of this kind are presently available for Belgium (Flanders), the United Kingdom, the Netherlands, Austria and Switzerland. Data are missing for countries such as Sweden, France, Australia or even Spain and Canada, where it can be assumed there are large numbers of German academics and researchers (cf. pp. 102/103). Moreover, there are also considerable differences in how the countries listed above collect data.¹

Many factors affect whether the number of international academics and researchers working in a country is large or small. These factors include: the size, attractiveness and structure of the academic and higher education systems; access and employment opportunities, including the development of academic labour markets; and cultural and linguistic concerns. In the countries covered here, most German academics and researchers are employed at universities in neighbouring Switzerland. In 2018 they numbered around 8,600, the vast majority of 88% employed at universities in the German-speaking cantons. The United Kingdom comes second, with 5,800 German academics and researchers. The figure for universities in Austria is not much lower, at around 5,400 German academics and re-

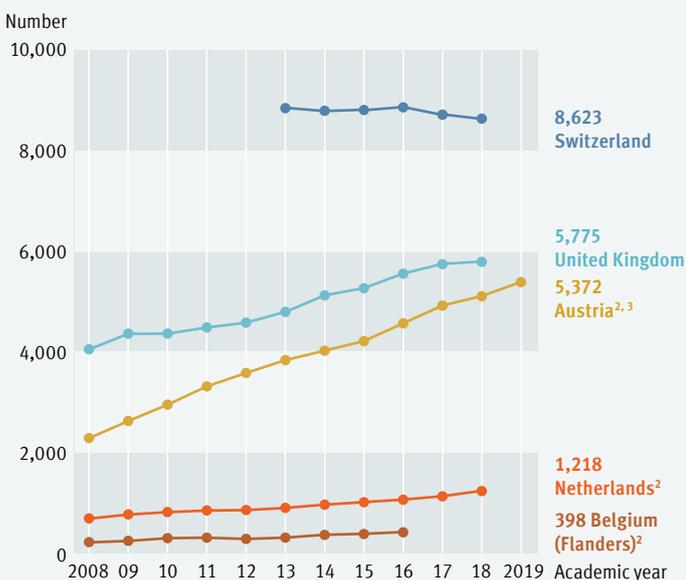
“ 13% of academics and researchers at Swiss and Austrian universities come from Germany.

searchers (2019). Direct proximity and a common language are likely to be important factors in Austria's attractiveness. In 2018, around 1,200 German academics were working at universities in the Netherlands and around 400 in Belgium (Flanders) in 2016.

While the number of German academics and researchers at Swiss universities fluctuated slightly between 2013 and 2018, albeit with a slight decline from 2016 onwards, there were significant increases in the United Kingdom (+21%), Austria (+41%) and the Netherlands (+38%) during this period.

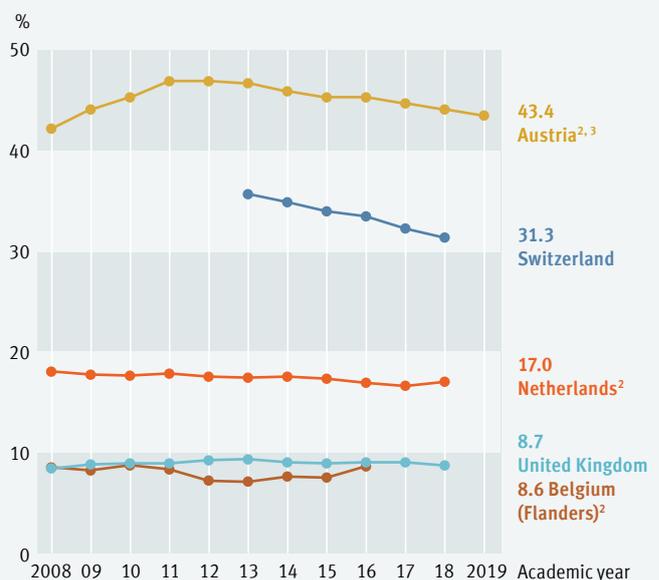
In addition to the number of German academics and researchers at universities in other countries, their share of all international academics and researchers is also an informative criterion for their success in academic labour markets. The highest proportion of German academics and researchers (43%) is found at Austrian universities, where they account for 13% of all academics and researchers. However, they have dropped back 3 percentage points as a proportion of international academics and researchers. In Switzerland, too, they account for a substantial share (31%), though this has also declined since 2013, dropping 4 percentage points. As in Austria, they thus account for 13% of all academics and researchers at Swiss universities. At Dutch uni-

E1.1 German academic staff in universities of selected host countries since 2008



Sources: Data from respective statistical offices

E1.2 German international academic staff as a proportion of all international academic staff at universities in selected host countries since 2008



Sources: Data from respective statistical offices

versities, 17% of international academics and researchers are of German origin. In the United Kingdom, that figure is 9%.

The number of German professors abroad aligns with the numbers for German academics and researchers. In 2018, Switzerland was top with 1,291, followed by Austria with 827 (2019) and the United Kingdom with 820 German professors. 188 German professors teach and research at Dutch universities and 110 at Flemish universities (2016). In all the countries considered here, the number of professors has increased since 2013. The number of German professors has risen particularly strongly in Austria (+51%) and the United Kingdom (+36%). In the Netherlands the increase is +29% and in Switzerland +15%.

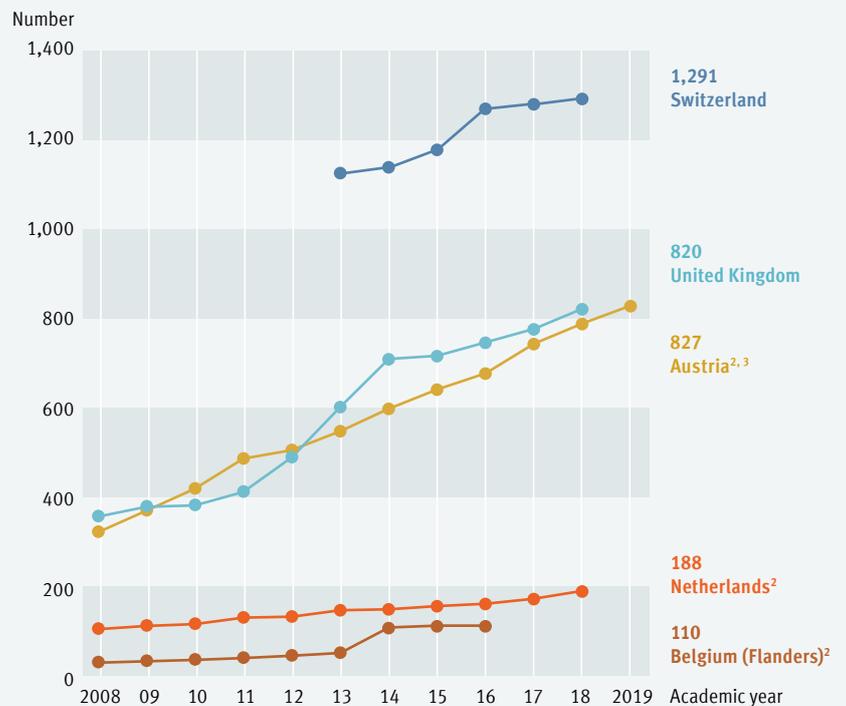
“ Around 1,300 German professors teach at Swiss universities.

The share of German professors also exceeds the share of German academics and researchers in the countries named above. Professorships advertised there are evidently very attractive to German academics and researchers, who can hold their own against international competition. German professors make up the highest share of all international professors in Austria, at 71%. In Switzerland, they account for 46% of all international professors. The Netherlands (29%), Belgium (Flanders, 24%) and the United Kingdom (15%) have lower figures. These figures have not changed much over the last five years.

* Footnotes

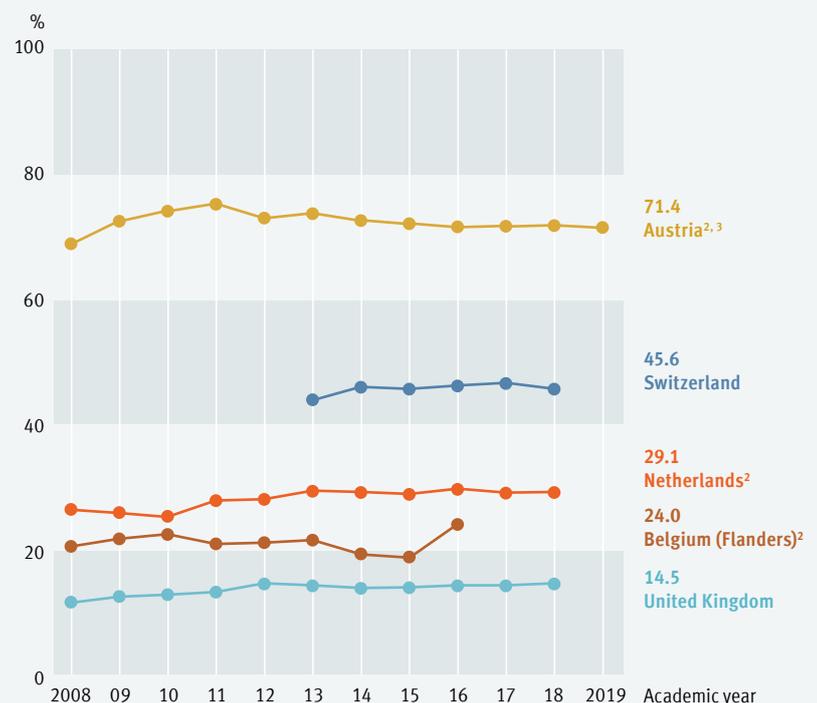
- 1 Some of the values are only available for universities but not for other types of universities; there are also differences in how academics and researchers are defined.
- 2 Data from Belgium, the Netherlands and Austria refer to universities only.
- 3 Provisional data

E1.3 German professors in universities of selected host countries since 2008



Sources: Data from respective statistical offices

E1.4 German professors as a proportion of all international professors in universities in selected host countries since 2008



Sources: Data from respective statistical offices

1 German academics and researchers at foreign universities

1.2 Doctoral candidates

It was possible to record a total of around 13,000 German doctoral candidates at foreign universities in 2017¹. This does not cover all German doctoral students, though it does include the majority. Of the countries where a significant number of German candidates are enrolled at university, data are missing only for China and Russia. In 2017, most German doctoral students were enrolled at universities in Switzerland (2018: around 3,400), the United Kingdom (around 2,200), Austria (around 2,100) and the USA (2019: around 1,200). German doctoral students in Switzerland alone account for 25% of all German doctoral students abroad. The regional and linguistic proximity to Germany, excellent conditions for research at renowned universities and attractive remuneration are likely to be the most important factors in Switzerland's popularity as a host country for German academics and researchers. The four countries at the top of the doctoral ranking together account for around two thirds (65%) of all German doctoral students abroad. The Netherlands and France, with around 600 German doctoral

“ German doctoral students in Switzerland alone account for 25% of all German doctoral students abroad.

students each, as well as Sweden and Australia, with around 500 German doctoral students each, are also of significance. 80% of all German doctoral students work abroad in these eight countries, with the remaining 20% spread across a further 26 countries.

Broken down by region, the overwhelming majority (78%) of doctoral students from Germany conduct research in Western Europe, with 11% in North America, 6% in Central and South Eastern Europe and 4% in Australia and Oceania. The regional distribution of German doctoral students abroad is thus very similar to the distribution of all German students abroad. Switzerland, the United Kingdom, Austria and the USA are also among the most popular countries (cf. pp. 66/67). It can therefore be assumed that a fair number of German students who gain a master's degree abroad remain at the same university, or at least in the same country, for their doctorate. One exception is the Netherlands, where a large

↓ E1.5 German doctoral candidates at universities in selected host countries 2017/2018¹

Host countries	Reporting year	Number	Proportion of all doctoral candidates in %	Proportion of all German students in the country in %	Host countries	Reporting year	Number	Proportion of all doctoral candidates in %	Proportion of all German students in the country in %
Switzerland	2018	3,416	24.6	29.8	Turkey	2018	90	0.6	2.3
United Kingdom	2017	2,180	15.7	13.8	Japan	2017	89	0.6	11.3
Austria	2017	2,144	15.5	7.5	Romania	2018	83	0.6	5.9
USA	2019	1,240	8.9	15.7	Portugal	2017	70	0.5	4.9
Netherlands	2017	563	4.1	2.5	Liechtenstein	2017	59	0.4	31.7
France	2017	550	4.0	8.6	Hungary	2018	54	0.4	1.6
Sweden	2016	478	3.4	28.3	Poland	2017	48	0.3	4.1
Australia	2017	458	3.3	37.9	Latvia	2018	40	0.3	4.0
Denmark	2017	396	2.9	11.1	Bulgaria	2018	39	0.3	2.8
Spain	2017	332	2.4	18.8	Iceland	2018	28	0.2	19.4
Canada	2016	287	2.1	24.4	Belgium (Flanders)	2017	27	0.2	7.2
Slovakia	2017	196	1.4	30.9	Brazil	2017	20	0.1	6.8
Norway	2017	187	1.3	30.4	Estonia	2017	20	0.1	36.4
Czech Republic	2018	184	1.3	22.2	Israel	2017	19	0.1	8.9
Ireland	2017	147	1.1	23.9	Greece	2017	15	0.1	1.0
Finland	2017	146	1.1	23.7	Lithuania	2018	7	0.1	1.9
Italy	2017	134	1.0	9.1	Total		13,871	100.0	11.1%
New Zealand	2018	125	0.9	27.9					

Sources: Federal Statistical Office, German students abroad; OECD; Department of Homeland Security (USA) Student and Exchange Visitor Information System (SEVIS)

↓ E1.6 German doctoral candidates abroad by selected host countries since 2009¹



Sources: Federal Statistical Office, German students abroad; Department of Homeland Security (USA) Student and Exchange Visitor Information System (SEVIS)

number of German students enrol at their universities, but not for a doctorate. One reason for this is probably that these are mainly students on bachelor's programmes, while Germans make up only a comparatively small percentage of master's students there (cf. pp. 68/69).

In addition to the numbers of German doctoral candidates in other countries, considering German doctoral candidates as shares of all German students in a given country also sheds light on their geographical distribution, with other countries coming to the fore. Australia (38%) is in first place, followed by Estonia (36%), Liechtenstein (32%), Slovakia (31%), Norway and Switzerland

(30% each). By contrast, although the number of German doctoral students in Austria is high, they account for only 8% of all German students and doctoral candidates in the country.

Compared to the previous year, the number of German doctoral students abroad has fallen by around 1,100 (7%). This is mainly due to a decline in the numbers in Switzerland (-6%), the United Kingdom (-12%), Norway (-36%) and Belgium (Flanders -85%). The number of German doctoral students also fell in the Netherlands, Spain, Canada, Finland, Hungary and Brazil. In contrast, only Denmark (+38%), the Czech Republic (+36%) and France (+9%) recorded significant increases in the number of doctoral students from Germany. Looking at long-term trends in numbers of German doctoral students in major host countries, it is striking that, although there was a larger decline in the number of German doctoral students in the United Kingdom in 2017 and, for the first time, in Switzerland in 2018, this does not mean the numbers have dropped. For all countries for which data have been available since 2009, it can be said that the number of German doctoral students has remained relatively high throughout this period and all fluctuations remain within narrow limits. This means that no significant changes can be observed in the essential regional distribution of German doctoral students abroad over the years.

* Footnote

1 The survey of German students abroad was based primarily on the current "Deutsche Studierende im Ausland" survey conducted by the Federal Statistical Office. This was supplemented by data from the OECD statistics and the Student and Exchange Visitor Information System of the U. S. Department of Homeland Security in order to take into account current data from other host countries (including USA, Denmark, Czech Republic, Slovakia, Brazil and Israel). In some cases, the data for the various host countries refer to different years.

1.3 Doctoral students on temporary doctoral-related visits abroad

Just as for students at bachelor's and master's levels, there are two types of international mobility for doctoral students: firstly, spending the whole duration of the doctorate abroad, including the period spent writing the thesis and the examination process; and secondly, doctoral-related temporary visits abroad while working on a doctorate in Germany.¹ The Federal Statistical

“ Separation from friends and family as well as financial difficulties are the main obstacles to temporary visits abroad during a doctorate.

Office regularly reports current data on the degree-related international mobility of German doctoral students (cf. p. 68/69), but representative surveys are currently still needed to provide information on temporary mobility. According to a study by the German Centre for Research on Higher Education and Science Studies (DZHW), 28% of all doctoral students working on their doctorate at a German university in 2019 have so far completed at least one doctoral-related temporary visit abroad. There are clear differences across the various subject groups. Above-average proportions of doctoral students with doctoral-related experience abroad are to be found in the humanities and in art and art history (38% each). This is due to the fact that many doctoral topics in the humanities, especially in the subjects of linguistics and literature, refer to other cultures. Doctorates in art history

Methodology

Data on temporary international mobility of doctoral students at German universities were collected in 2019 within the framework of the DZHW's National Academics Panel Study (Nacaps). Around 20,000 doctoral students from 57 German universities that award doctorates took part in the nationwide survey. The data do not permit any comments on the overall scope of doctorate-related international mobility by the end of the doctoral phase, but refer to all doctoral students at the time of the survey in 2019.

are also often distinctive for engaging with issues of this kind. In contrast, a relatively small proportion of doctoral students with experience abroad are found in the medicine and health sciences subject group (12%). A characteristic feature of the medical field is that the doctorate is often undertaken in parallel with specialist training, which limits the opportunities for doctoral visits abroad.

More than half of temporary visits abroad are spent in Western Europe (55%). Other major host regions are North America (17%), the Asia and Pacific region (10%) and Central and South Eastern Europe (9%). The other world regions of Latin America (3%), North Africa and Middle East (3%), Sub-Saharan Africa (2%) and Australia and Oceania (1%) play only a minor role. The key host country for doctoral students is the USA; 13% of all doctoral-related temporary visits are spent there. Other major host countries are the United Kingdom (9%), France (8%), Italy and Austria (6% each) as well as Switzerland and China (5% each).

72% of the doctoral students surveyed have so far not taken the opportunity to spend time abroad during their doctorate. The reasons for this are mainly personal, though they can also be of a structural nature. For example, 46% of the doctoral

* Footnotes

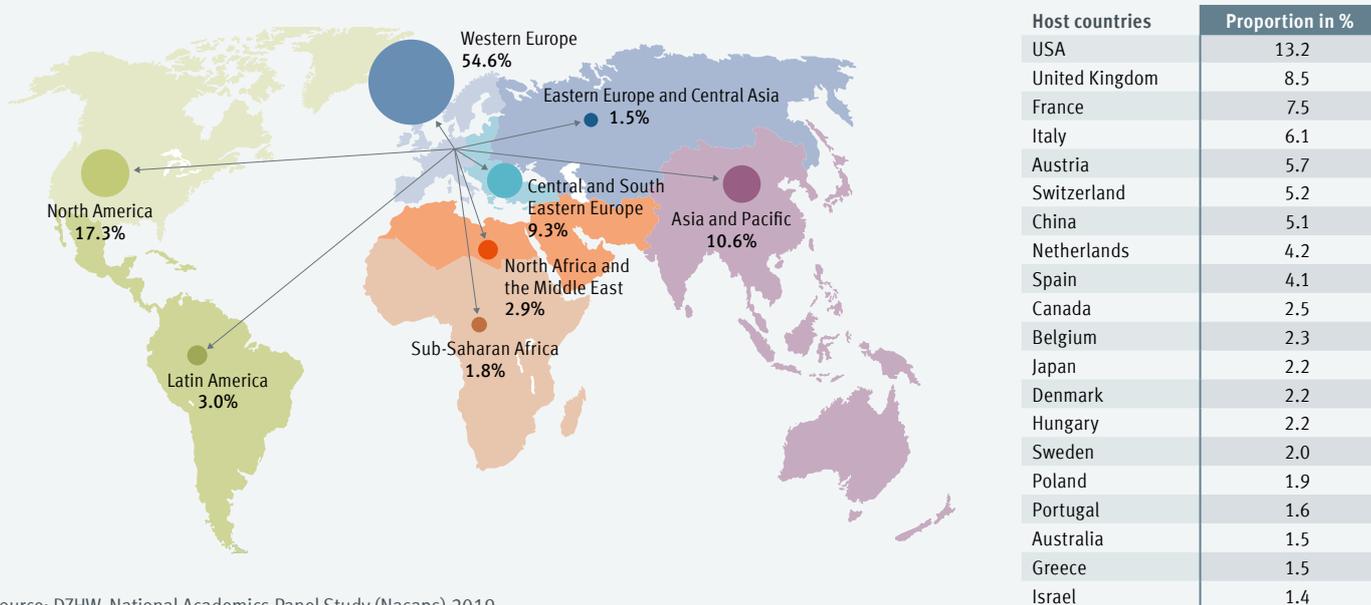
- 1 See also: Netz, N./Hampel, p. (2019).
- 2 Deviations from 100% are due to rounding.
- 3 4 and 5 on a scale from 1 = not limiting at all to 5 = very limiting

↓ E1.7 Doctoral candidates at German universities with temporary doctorate-related visits abroad by subject group 2019¹

Subject group	Doctoral candidates with temporary doctorate-related visits abroad (Proportion in %)
Humanities	38
Art and art history	38
Mathematics and natural sciences	31
Law, economics and social sciences	29
Engineering	29
Total	28
Agricultural, forestry and food sciences, veterinary medicine	25
Medicine and health sciences	12

Source: DZHW, National Academics Panel Study (Nacaps) 2019

↓ E1.8 Temporary doctorate-related visits abroad by doctoral candidates at German universities by host region and key host countries 2019²

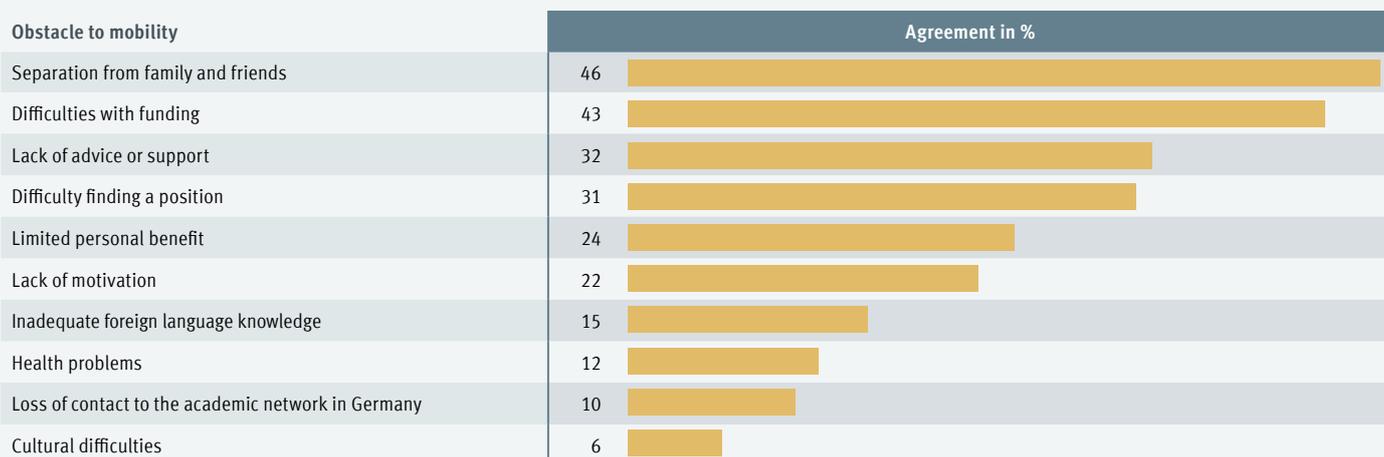


Source: DZHW, National Academics Panel Study (Nacaps) 2019

students who have not completed a visit abroad point to difficulties associated with being separated from family and friends. Financial difficulties (43%) are cited similarly often. 24% see no personal benefit from a stay abroad and 22% speak of a lack of motivation. In addition to these personal obstacles, 31% of these doctoral candidates did not go abroad because they would have experienced difficulties with their job, and for 32% there was a lack of advice and support. A lack of foreign language skills (15%) and worries about losing contact with the academic network in Germany (10%) play lesser roles.

Structured doctoral programmes are particularly effective at promoting temporary visits abroad. While the share of doctoral students with doctorate-related experience abroad is 26% among those who are not part of structured doctoral programmes of this kind, the figure rises to 31% among those working on doctorates within structured programmes, and as high as 33% among associate members of structured programmes. Alongside doctorates within structured programmes and being a part of certain disciplines, other factors that promote mobility while studying include an international working environment and concrete support for research visits.

↓ E1.9 Doctoral candidates at German universities with no temporary doctorate-related visits abroad by obstacle to mobility 2019³



Source: DZHW, National Academics Panel Study (Nacaps) 2019

2.1 Mobility trends, funding organisations and funding groups

In 2018, a total of around 14,700 visits by German guest researchers abroad were funded by domestic and foreign organisations.¹ “German guest researchers” refers to persons who work in Germany as academics and researchers and who receive financial support in order to teach and research at a foreign university or research institute and remain abroad for a limited period without occupying a specific post. Though the data do not include all of the visits abroad by German guest researchers funded by German funding organisations, they capture the vast majority.² With regard to international funding organisations, however, the data can so far only represent a section limited to a few countries and to the Marie Skłodowska-Curie actions of the EU.

The number of funded visits abroad by German guest researchers is significantly lower than the corresponding number of foreign guest researchers in Germany (cf. p. 92/93). This is due firstly to incomplete recording by German and foreign funding organisations; secondly, only funded visits abroad by German guest researchers who received research grants can be reported to the German Research Foundation (DFG). Furthermore, several German funding organisations only support visits by international academics and researchers.

“ The Studienstiftung des deutschen Volkes (German National Academic Foundation) increases the number of funded guest visits by German academics by 168%.

Compared to the preceding year, the number of grants for German guest researchers abroad has remained unchanged, ending the decline in grant numbers that has been going on since 2016. The

DAAD continues to support the vast majority of visits by German guest researchers (76%). The German Research Foundation (DFG) funds 6% of visits. A further 13% of visits abroad are supported by smaller German funding organisations and 5% by the foreign organisations included here.

Smaller organisations provide a wider range of funding to German academics and researchers than to foreign academics and researchers, though the overall levels still remain low. Nevertheless, their contribution should not be underestimated. Their activities make it clear that many institutions in Germany support international mobility for scientists and scholars. Furthermore, smaller funding institutions often focus their support activities on specific teaching and research areas or host countries or regions that would otherwise be paid less attention.

While the number of DAAD-funded visits by German guest researchers fell by 5% compared to the previous year, funding by other German institutions rose by 27%, and by foreign institutions by as much as 40%. A key reason for this was the strong increase in the number of grants awarded by the Studienstiftung des

E2.1 German guest researchers abroad by scholarship holder group since 2012^{1, 3}



Source: Responses from funding organisations, DZHW survey

deutschen Volkes (+168%) and the increased number of visits to Japan by German guest researchers supported by the Japan Society for the Promotion of Science (+56%).

54% of all funded German guest researchers are academics and researchers with doctorates, including professors and experienced researchers, such as research group leaders. A further 37% of the funded visits were undertaken by doctoral students and other postgraduates. This distribution of funding activities among the different status groups of researchers and scholars has remained essentially the same for over five years and shows that the funding activities of the various organisations are based on longer-term strategies.

“ The DAAD primarily funds visits by academics and researchers with doctorates, with smaller funding organisations supporting visits by doctoral students.

The DAAD funds the majority (63%) of visits by experienced German academics and researchers with doctorates to foreign universities and research institutes. In contrast, the smaller German organisations mainly support a high percentage of visits by German doctoral students and other postgraduates (68%).

* Footnotes

- 1 Excluding Erasmus visits abroad by German academics
- 2 Missing data include information on the funding of German guest researchers' visits provided by universities.
- 3 The DFG only records funded visits abroad by German guest researchers who have received funding through research scholarships.
- 4 Data for 2017
- 5 Estimated number
- 6 Data for applicants for a residence grant in Switzerland only



E2.2 German guest researchers abroad by funding organisation 2018^{1, 3}

Funding organisation	Number
Key German funding organisation	
German Academic Exchange Service	11,146
German Research Foundation	951
Further German funding organisations	
Max Weber Foundation - German humanities institute abroad	262
Alexander von Humboldt Foundation	228
Studienstiftung des deutschen Volkes	509
Gerda Henkel Foundation ⁵	138
Friedrich Ebert Foundation	99
CERN fellowships	86
Evangelisches Studienwerk	86
Cusanuswerk (episcopal scholarship foundation) ⁴	76
Heinrich Böll Foundation	79
Boehringer Ingelheim Fonds	41
German National Academy of Sciences Leopoldina	43
Friedrich Naumann Foundation	75
Rosa Luxemburg Foundation ⁴	35
Minerva Foundation ⁴	35
Fritz Thyssen Foundation	26
Hans Böckler Foundation ⁴	12
The Martin Buber Society of Fellows	18
Heinrich Hertz Foundation	11
Avicenna Studienwerk	10
Deutsche Herzstiftung	3
Baden-Württemberg Foundation	3
Zeit-Stiftung Ebelin und Gerd Bucerius	2
Foreign funding organisations	
Japan Society for the Promotion of Science	425
Swiss National Science Foundation ^{4, 6}	146
Marie Skłodowska-Curie actions	152
Fulbright Commission	31
Natural Sciences and Engineering Research Council of Canada ⁴	3
FWF Austrian Science Fund	11
Total	14,742

Source: Responses from funding organisations, DZHW survey

2.2 Regions and countries of origin and subject groups

Western Europe is the key host region for German guest researchers whose visits abroad were supported by the domestic and foreign funding organisations included in this report. 27% of these funded visits are to Western European countries. Other major host regions are North America (20%) and Asia and Pacific (19%). These three host regions alone thus account for around two thirds (66%) of all visits by German guest researchers. By contrast, the shares of Central and South Eastern Europe (11%), Latin America, Eastern Europe and Central Asia, North Africa and Middle East (6% each) and Sub-Saharan Africa (4%) are significantly lower. In comparison to the regions of origin of foreign guest researchers in Germany (cf. pp. 94/95), there are clear differences. Only Asia and Pacific are of similar importance, both as host regions and as regions of origin. Otherwise, German academics and researchers tend to prefer Western Europe and, above all, North America as host regions, while a higher proportion of foreign academics and researchers come to Germany from Central, Eastern and South Eastern European countries, Latin America, North Africa and Middle East. This focus on Western Europe and North America is probably a consequence of the high level of development of academia and research in these countries and many years of academic cooperation.

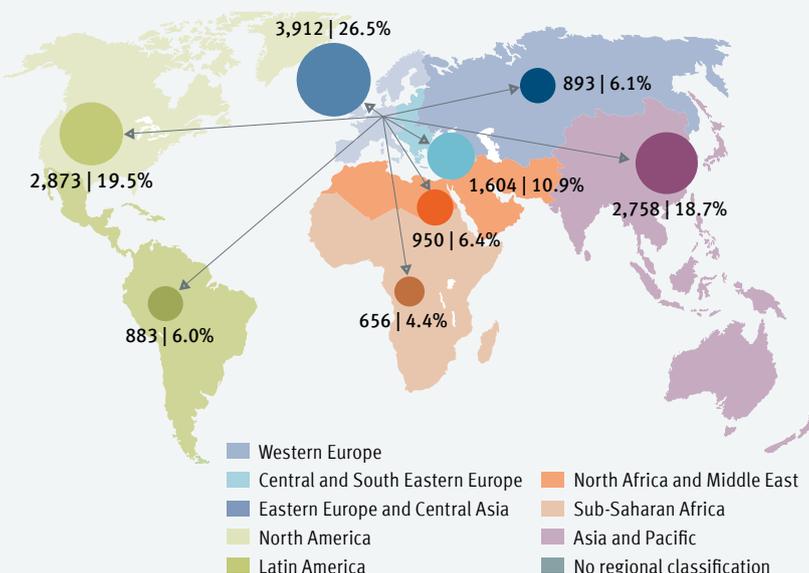
“ While the number of visits by German guest researchers to Japan has risen by 35%, visits to Russia and China have fallen by 22% and 15% respectively.

The various funding organisations are distinguished by their different regional emphases. In the cases of the German Research Foundation (DFG) and the Alexander von Humboldt Foundation (AvH), the shares of sponsored guest visits to North America (57% and 54% respectively) are particularly high. The smaller German funding organisations support visits to Western European countries (46%) in particular. In contrast, DAAD funding is more evenly balanced across the various host regions.

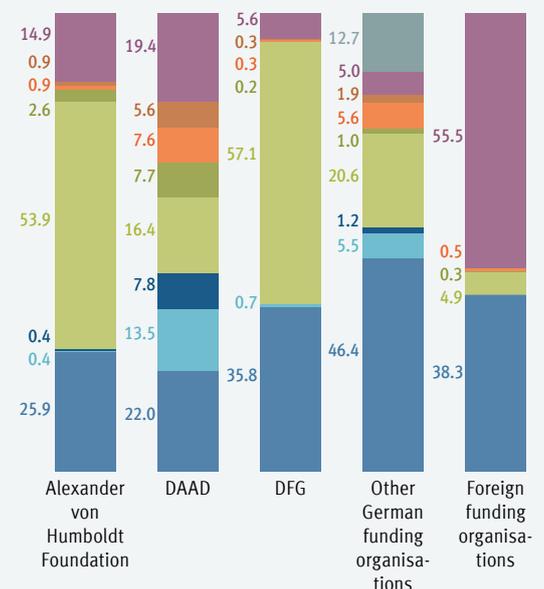
The key host country for German guest researchers abroad is the USA, followed by Japan and the United Kingdom. The USA alone accounts for 16% of all funded guest visits, the other two countries each account for 6%. While the figures for the USA and the United Kingdom have remained relatively constant in recent years, there has been a +35% increase for Japan compared to the previous year. This is mainly due to the Japan Society for the Promotion of Science increasing funding for German guest researchers. Other major host countries are France, Italy, Russia and China. While the number of stays in Italy has increased by 23% in the last three years, the number of visits to Russia and China has decreased by 22% and 15% respectively compared to the previous year.

E2.3 German guest researchers abroad by host region and funding organisation 2018^{1, 2, 3}

Number and proportion in %



Proportion in %



Source: Responses from funding organisations, DZHW survey

The two largest groups of German guest researchers abroad, each accounting for 23% of the total, are in the mathematics and natural sciences, and the humanities and natural sciences, followed by law, economics and social sciences at 19%. Engineering (11%), medicine (4%), agricultural, forestry and food sciences (2%), and art and art history (1%) are less significant. In comparison to international guest researchers in Germany, where half are categorised as working in mathematical and natural sciences subjects, German guest researchers are more evenly distributed across the various areas of teaching and research.

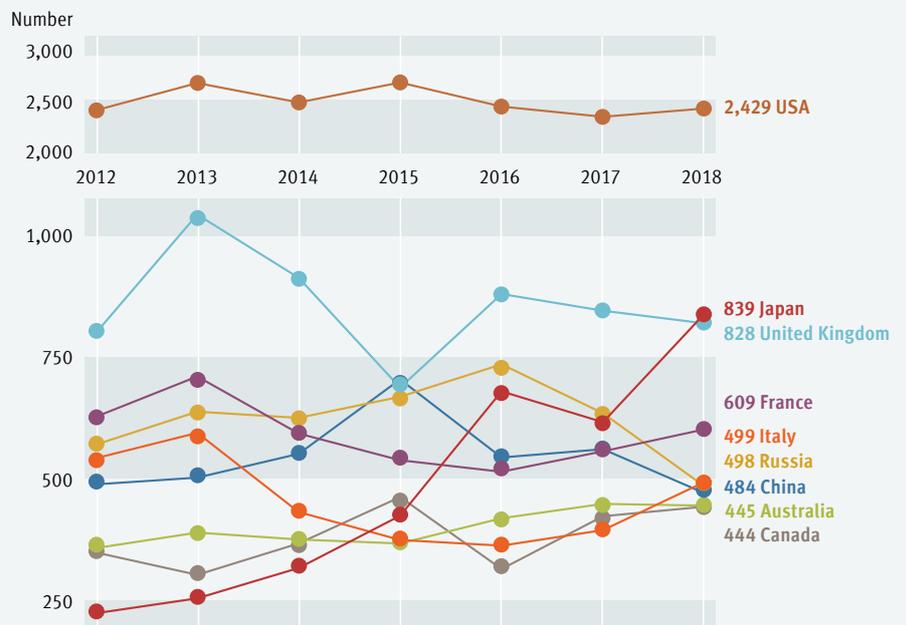
“ By far the most important host country for German guest researchers abroad is the USA, accounting alone for 16% of all visits recorded in these figures.

There are clear differences between the various funding organisations with regard to the specialist areas of the academics and researchers they fund. At the AvH, the natural sciences make up a particularly high share, at 65%. By contrast, the DAAD funded similarly high proportions of researchers across the humanities (25%), law, economics and social sciences (22.9%), and natural sciences (26%).

* Footnote

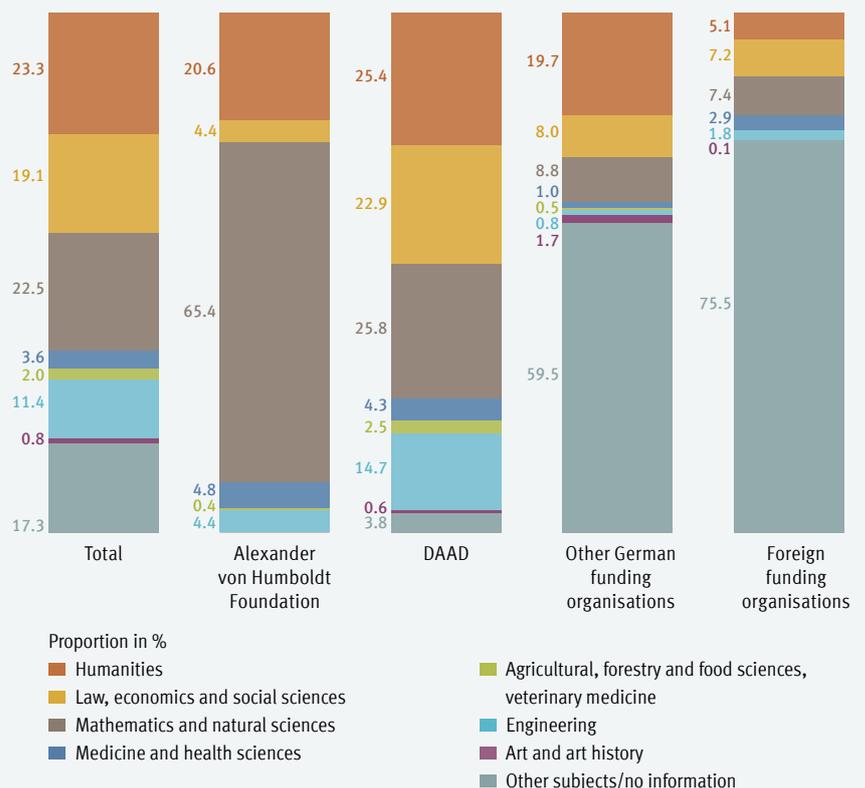
- 1 With the exception of EU funding under the Marie Skłodowska-Curie measures, foreign funding organisations usually support visits to Germany by guest researchers from their respective countries of location.
- 2 Total German guest researchers abroad with support from funding organisations: 14,742 (including 213 guest researchers who cannot be assigned to a region of origin)
- 3 Deviations from 100% are due to rounding.

E2.4 German guest researchers abroad by key host countries since 2012



Source: Responses from funding organisations, DZHW survey

E2.5 German guest researchers abroad by funding organisations and subject group 2018



Source: Responses from funding organisations, DZHW survey

2.3 Erasmus guest lecturers

The Erasmus+ programme of the European Union also supports temporary visits abroad for guest lecturers. These guest lectureships within Europe can last between two and sixty days. The funding covers teaching visits by academic staff and professors from universities and research institutes as well as by representatives from businesses. Participants in this programme do not necessarily have to be nationals of the country of assignment. Foreign staff at universities in the sending country can also participate in the programme. It is therefore possible that some Erasmus guest lecturers from Germany may not be German citizens, though this proportion is likely to be very small.

In the 2018 academic year, a total of around 3,100 Erasmus guest lecturers from Germany spent a period teaching abroad with Erasmus funding. Compared to the previous year, the number of these guest lecturers decreased by 5%. In the last five years, however, the number of guest lecturers from Germany has remained relatively constant at between 3,000 and 3,200.

The largest group of Erasmus guest lecturers (26%) went to countries in Southern Europe in 2018. A similarly high proportion of 25% spent the Erasmus period in Central and Eastern Europe.

20% stayed in Western European countries and 12% in Northern European countries. 10% of visits are to South Eastern Europe and 7% to Central and Western Europe. Over the past five years, there have been no significant changes to the size or respective proportions of the groups in the various European countries.

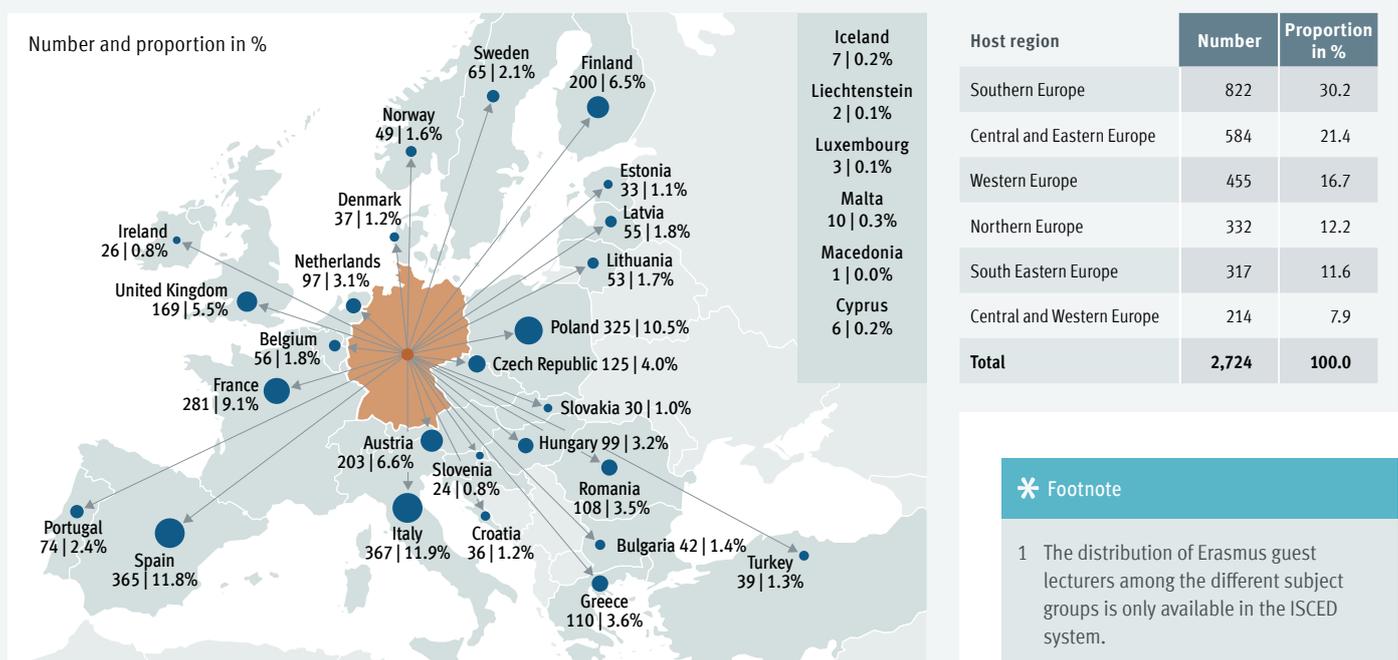
“ Italy and Spain are the key host countries for Erasmus guest lecturers from Germany.

The key host countries for Erasmus guest lecturers from Germany are Italy and Spain, accounting for 12% each. Poland (11%) and France (9%)

rank third and fourth. Austria, Finland (7% each), the United Kingdom (6%), the Czech Republic, Greece and Romania (4% each) also play an important role. These countries have also been the preferred host countries for lecturers from Germany in recent years.

With a share of 33%, most German Erasmus guest lecturers abroad work in the arts and the humanities.¹ 19% of them are in the business, administration and law subject group, and a further 15% represent the engineering, manufacturing and construction subject group. 8% work in the social sciences, journalism and information subject group, and 7% each in the subject groups of education and natural sciences, mathematics and statistics. Health and welfare (5%), information and communication

E2.6 Erasmus guest lecturers in Germany by host region and host country 2018



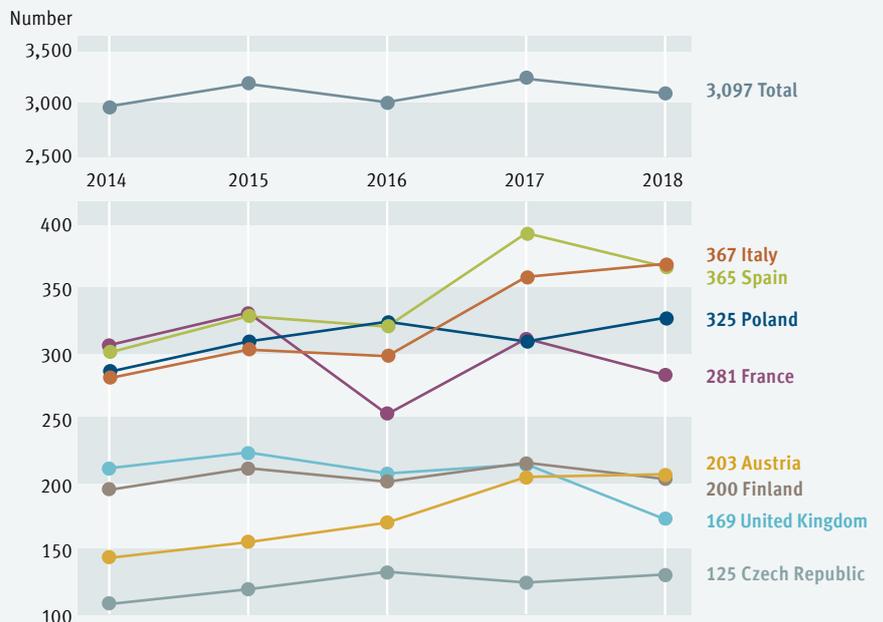
Source: DAAD, Erasmus statistics

technologies (4%), services (2%) agriculture, forestry, fisheries and veterinary medicine (1%) play a lesser role. In comparison with the foreign Erasmus guest lecturers temporarily in Germany, there are no significant differences in the distribution of subject groups (cf. p. 98/99). This is due chiefly to the fact that Erasmus+ is designed as a reciprocal exchange programme, with a similar number of funded places at the partner institutions on both sides.

“ At 33%, the arts and the humanities account for the vast majority of Erasmus guest lecturers from Germany.

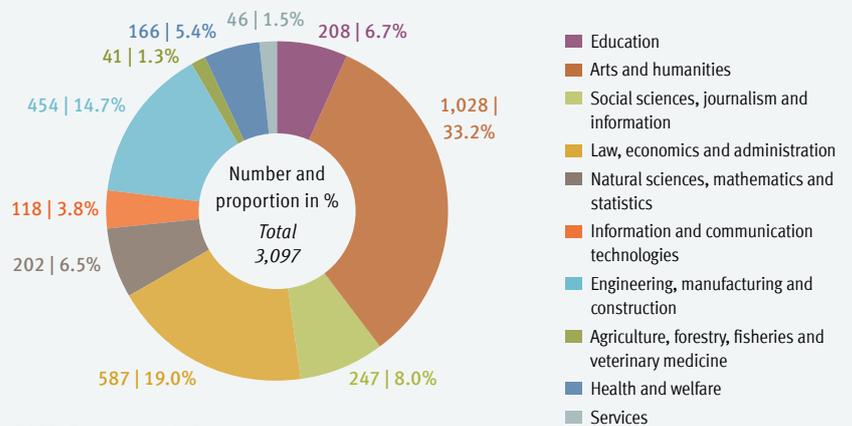
Although Erasmus guest lectureships may last up to two months, lecturers from Germany spend an average of only 5.3 days abroad. This figure is roughly the same as last year. There are sometimes significant differences between individual host countries. Erasmus guest lecturers spent an average of between seven and eight days in Iceland, Liechtenstein, Luxembourg, Romania and Denmark, but an average of only four days in the Netherlands, Belgium, France and Latvia.

E2.7 Erasmus guest lecturers from Germany by host countries since 2014



Source: DAAD, Erasmus statistics

E2.8 Erasmus guest lecturers from Germany by subject group 2018¹



Source: DAAD, Erasmus statistics

E2.9 Erasmus guest lecturers from Germany by host country and average visit duration 2018

Host country	Average duration in days	Host country	Average duration in days	Host country	Average duration in days
Iceland	8.9	Finland	5.7	Slovakia	5.1
Liechtenstein	8.0	Hungary	5.6	United Kingdom	5.0
Luxembourg	8.0	Bulgaria	5.6	Czech Republic	4.9
Romania	6.9	Greece	5.5	Austria	4.9
Denmark	6.6	Norway	5.4	Poland	4.8
Portugal	6.3	Italy	5.4	Croatia	4.8
Ireland	6.2	Slovenia	5.3	France	4.4
Turkey	6.2	Lithuania	5.3	Latvia	4.4
Macedonia	6.0	Malta	5.2	Belgium	4.2
Spain	6.0	Estonia	5.2	Netherlands	3.9
Sweden	5.8	Cyprus	5.2	Total	5.3

Source: DAAD, Erasmus statistics

Mapping mobility: data basis and analysis concepts regarding the international mobility of students and academics and researchers

In “Wissenschaft weltoffen”, various data sources on the international mobility of students, academics and researchers are used. When interpreting these data, it should be borne in mind that there are different types of student and scientist mobility, the data collection of which is tied to different preconditions. For example, it is much easier to record the inbound mobility of international students in Germany than the outgoing mobility of German students, since valid official data on study-related visits abroad are not yet available in higher education statistics. By comparison, it is even more difficult to record the international mobility of academics and researchers. In Germany and many other countries, this form of mobility is only inadequately recorded or not officially recorded at all. To provide readers of “Wissenschaft weltoffen” with an orientation, the following section therefore offers a brief overview of the relevant types of student and academic mobility and explains the data sources available for this purpose.

A. Student mobility

Types of mobility

The two terms “degree mobility” and “credit mobility” are used in connection with the international mobility of students. According to the European Mobility Strategy (“Mobility for Better Learning”), degree mobility covers all study-related visits during which a degree is acquired abroad. Credit mobility, on the other hand, refers to study-related visits abroad as part of a degree programme in Germany. In addition to temporary studies abroad, this also includes visits abroad that were completed as placements, language courses, study trips, project work or summer schools.

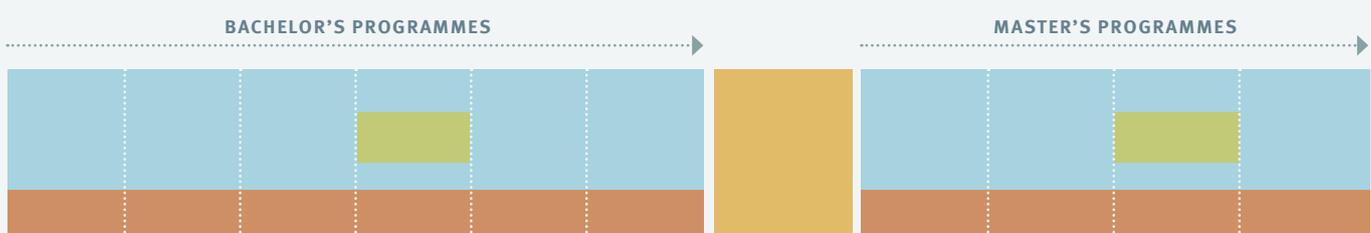
In line with the distinction between credit and degree mobility, “Wissenschaft weltoffen” distinguishes between temporary visits abroad as part of a degree programme with a degree in Germany and visits abroad with the aim of obtaining a degree abroad (degree-related international mobility). It should be noted that due to the data situation regarding outgoing mobility, a distinction between

these two forms of mobility is only possible to a limited extent. In the case of inbound mobility, on the other hand, such a differentiation does not present any difficulties (cf also the comments in the section below).

Available data sources and data quality

In order to record the **degree-related international mobility (DRIM)** of German students, it is necessary to refer to the available higher education statistics of the respective host countries, since these students have only enrolled at the universities there. The Federal Statistical Office Germany therefore conducts an annual survey of the institutions responsible for education statistics in around 40 major host countries of German students. The registered students are predominantly, but not exclusively, students who are studying abroad with the intention of obtaining a degree. For some countries, Erasmus students and other students with temporary study periods are also included in the data. A helpful supplement is therefore the data on German first-year students and graduates abroad collected by the Federal Statistical Office Germany from the 2008 academic year onwards. However, these data are available for fewer countries than the number of students. In addition to the official statistics, the statistics on international student mobility from UNESCO, OECD and the Statistical Office of the EU (Eurostat) can also be used to assess the DRIM. These are based on joint data collection, the “UOE data collection on education systems”. Despite the common data basis, the three organisations have published different statistics on international student mobility since the basic data have been processed in different ways. For the reporting year 2013, all three organisations agreed to apply the procedure previously used by UNESCO as a uniform procedure. Compared with the survey conducted by the Federal Statistical Office Germany, the UOE survey has the advantage of providing data for significantly more host countries and countries of origin. On the other hand, the data documentation within the framework of the UOE data collection hardly allows any conclusions to be drawn

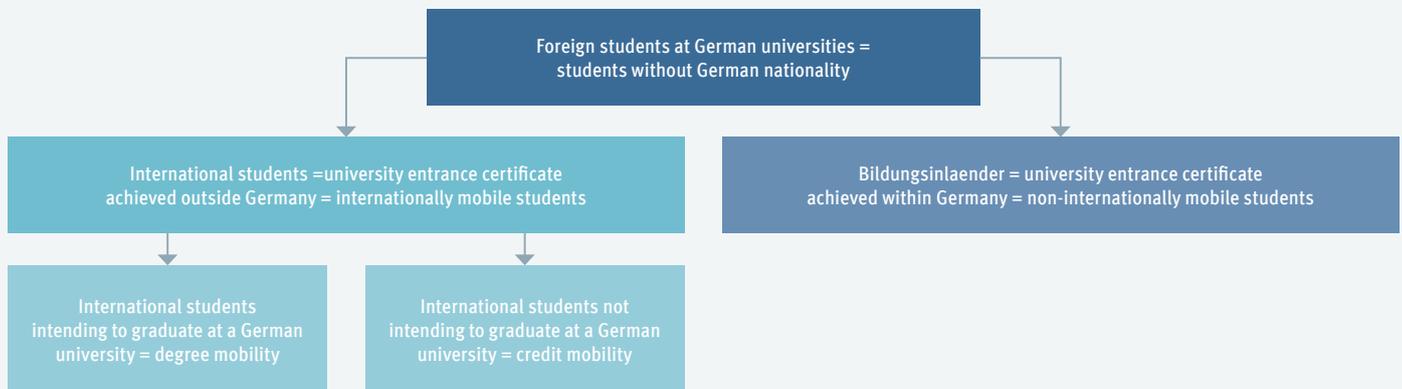
1 Types of study-related international mobility during a degree



- Temporary study-related visits ...
- in the course of a degree at a German university (such as a semester abroad, placement visit abroad, study trip)
 - as bridge mobility between bachelor's and master's programmes (e.g. placement visit abroad, summer school, language course)
 - degree-related international mobility (study and degree entirely abroad)

Source: Own presentation

2 Foreign students at German universities



Source: Own presentation

about the data quality (which varies greatly from host country to host country). In addition, fewer differentiating characteristics (such as subject groups) are collected.

Foreign students in Germany are covered by the regular student statistics of the Federal Statistical Office Germany. According to these statistics, all students without German citizenship are referred to as foreign students. These include both “Bildungsauslaender” and “Bildungsinlaender”. Bildungsauslaender are international students who have acquired their university entrance certificate abroad or have supplemented their school qualifications acquired abroad by successfully completing a preparatory course for higher education admission in Germany. They are thus internationally mobile students. In “Wissenschaft weltoffen”, they are referred to exclusively as “international students” in accordance with the term commonly used in other countries and in international organisations. Bildungsinlaender, on the other hand, are students with foreign citizenship who have obtained their university entrance certificate at a school in Germany or taken an aptitude or gifted students test here and are therefore not internationally mobile – at least at the beginning of their studies. In “Wissenschaft weltoffen”, international students are divided into students who are aiming to obtain a degree from a German university and those who, as visiting students, are only staying in Germany temporarily for study-related purposes.

To date, no official statistics are available on the **total temporary study-related international mobility (SRIM)** of German students. Official data are only available for the partial area of temporary study or placement visits within the framework of the EU Erasmus programme. According to the findings of corresponding surveys, these Erasmus stays represent about one-third of the SRIMs of German students. However, the introduction of the new Higher Education Statistics Act means that valid official data on study-related visits outside the Erasmus programme will also be available in the foreseeable future. Until then, the SRIM of German students will have to be estimated by means of student and graduate surveys.

For **international students in Germany**, the figures on SRIM are included in the student statistics of the Federal Statistical Office Germany. The official statistics make it possible to identify international students who do not intend to graduate in Germany or intend to graduate abroad (referred to as visiting students). In addition, the Erasmus statistics are also available as a data source, although it should be noted that the (enrolled) students recorded here are also included in the student data of the Federal Statistical Office Germany. It is also important to point out that the recording of SRIMs of international students in Germany only covers study visits at universities. Other study-related visits (e.g. placements, language courses, excursions) are not included in the official statistics prepared here. The Erasmus data, on the other hand, include study-related visits and placements, depending on the possibilities offered by this exchange programme.

Data sources used

The central database for the findings on the **degree-related international mobility of German students** presented here is the “German students abroad” statistics of the Federal Statistical Office Germany. For individual host countries, these data are supplemented by figures from the UNESCO statistics. To describe temporary study-related international mobility, “Wissenschaft weltoffen” uses not only the Erasmus statistics but also results from the Social Surveys conducted by the German National Association for Student Affairs and the German Centre for Research on Higher Education and Science Studies (DZHW) (especially when considering longer-term developments).

In order to present the development of the **study programmes of international students** in Germany, reference is made in particular to the student statistics of the Federal Statistical Office Germany. In addition, the data on Erasmus participants from abroad who spend temporary study periods at German universities are also analysed.

UNESCO student statistics are used to illustrate student mobility worldwide.

B. Mobility among academics and researchers

Types of mobility

There are three basic types of mobility among academics and researchers, based on the particular reason for mobility, between which there are close links and overlaps: project- and event-related international mobility (e.g. conference trips, research projects abroad), qualification-related international mobility (e.g. doctoral studies abroad, postdoctoral projects abroad) and job-related international mobility (temporary or permanent research and teaching positions abroad). Many cases of academics' and researchers' mobility can be classed as several of these types, depending on one's perspective. For example, many doctoral or postdoctoral projects abroad can be both project-related and qualification-related international mobility. In addition to the overlaps between the three types of mobility of academics and

researchers, they are also linked by causal relationships. This also applies to the specific types of mobility within the three types of mobility. Study-related international mobility of students often leads to doctoral mobility, which in turn leads to postdoctoral mobility. Project-related mobility of academics and researchers often leads to event-related mobility and vice versa. Contacts are often established at international academic conferences, which in turn lead to project-related mobility among academics and researchers.

Available data sources and data quality

Research on international mobility among academics and researchers has so far relied mainly on three data sources: official or other publicly available statistics, publication databases (bibliometric data) and survey data. All three sources have strengths and weaknesses, some of which mirror each other, i.e. the strength of one source turns out to be a weakness of the other.

3 Major sources of information on student mobility

Author	Statistic/study title	Data collection cycle	Types of mobility recorded ¹	Special characteristics
German students abroad				
Federal Statistical Office	German students abroad	Annual	mainly DIM	Data from 40 major host countries for German students (at least 125 German students registered)
DAAD	Erasmus statistics	Annual	TSIM	Comprehensive data
German National Association for Student Affairs/DZHW	Social Survey	Every four years	TSIM	Representative nationwide sample
DZHW	Graduate panel	Every fourth year group	TSIM	A total of three survey waves after graduation, representative nationwide sample
Institut für angewandte Statistik (ISTAT)	Graduate survey partnership project	Every year group	TSIM	Universities participate on rotation
International students in Germany				
Federal Statistical Office	Students at universities	Annual	DIM and TSIM	Comprehensive data
Federal Statistical Office	Graduations from universities	Annual	DIM	Comprehensive data
DAAD	Erasmus statistics	Annual	TSIM	Comprehensive data
German National Association for Student Affairs/DZHW	Social Survey	Every four years	DIM and TSIM	Representative nationwide sample
International student mobility				
UNESCO	UIS database (online)	Annual	mainly DIM	Comprehensive country data, differentiated by gender; no differentiation by type of degree
OECD	Education at a Glance, OECD database (online)	Annual	mainly DIM	Only OECD countries; differentiation by gender and type of degree and ISCED level ²
Eurostat	Eurostat database (online)	Annual	mainly DIM	Only European countries; differentiation by gender and type of degree and ISCED level and ISCED subject group ²

1 DIM = degree-related international mobility; TSIM = temporary study-related international mobility

2 The collection and processing of the data is based on the "International Standard Classification of Education" (2011) and ISCE-F 2013 (fields of education and training), which ensures international comparability of national data. ISCED 2011 differentiates between eight levels, with levels 5-8 encompassing tertiary education. ISCED-F 2013 distinguishes between 10 subject groups.

4 Advantages and disadvantages of official statistics, bibliometric data and surveys on academic and researcher mobility

Official and other public statistics	Bibliometric data	Surveys
Advantages		
<ul style="list-style-type: none"> • Easy to collect: comprehensive or even complete surveys are possible • Developments over time can be analysed • Access to databases or registers is free or low cost 	<ul style="list-style-type: none"> • Easy to collect: comprehensive or even complete surveys are possible • Developments over time can be analysed 	<ul style="list-style-type: none"> • Target populations can be defined precisely • Wide range of variables can be investigated • Samples are not contingent on having been published or included in public statistics • High degree of international comparability can be achieved
Disadvantages		
<ul style="list-style-type: none"> • Pre-defined samples • Samples are contingent on academics and researchers including them in public statistics • Number of variables is pre-defined and severely limited • Severely restricted degree of international comparability 	<ul style="list-style-type: none"> • Pre-defined, severely limited samples • Samples are contingent on publication activity of academics and researchers • Number of variables is pre-defined and severely limited • Severely restricted degree of international comparability • Costs of access to publication databases are high 	<ul style="list-style-type: none"> • Access to respondents is difficult • Data collection is demanding for researchers and respondents • Number of respondents must often be limited, making obtaining representative data problematic • Surveys are often only cross-sections, making investigating developments over time impossible

Source: Own presentation

When using publicly available statistics, independent data are not collected but existing data sets used instead. The work involved in collecting data is thus eliminated, which can be described as the central strength of these sources. Moreover, official data often involve very large samples or even full surveys, which is also one of their advantages. In addition, publicly available data have the advantage that the findings can often be easily compared with other analyses that use the same data basis. The main limitation of publicly accessible statistics is that they are limited to the mostly descriptive variables available in the respective databases and cannot be supplemented by additional variables that allow for in-depth analysis (e.g. of the causes and effects of academics' and researchers' mobility). Moreover, they usually only cover academics and researchers at public institutions. A further weakness of this source, which still exists at present, is the lack of comparability of the data across national borders, since different definitions of academics and researchers are often used, and the quality and completeness of official data collections also vary greatly from country to country.

For bibliometric analyses on academics' and researchers' mobility, international publication and citation databases are used as a data basis. Usually, one of the two predominant databases around the world, "Scopus" (Elsevier) or "Web of Science" (Thomson Reuters), is used. These databases contain a certain number of the articles published worldwide in (English-language) academic journals and their citations in other articles. In addition, the respective country of location of the author's institution is documented for each article.

In this way, such databases can also be used for the analysis of international academics' and researchers' mobility, since the comparison of the country of location of different contributions submitted by an author allows conclusions to be drawn about his or her mobility biography. The strengths of this source largely correspond to those of publicly available statistics, i.e. no data collection effort, large samples or full surveys and comparability with other analyses that use the same publication database as a data basis.

Despite the comprehensive data sets on which bibliometric analyses can be based, they are subject to some significant limitations. First, access to existing international publication databases entails high costs. Moreover, only those researchers who have (already) published in academic journals are included, which in turn are covered by the publication databases used. These are primarily English-language journals from the natural sciences and economics. This means that academics and researchers from disciplines where monographs and anthologies still play an important role as publication media (i.e. primarily the humanities and social sciences) are strongly under-represented. Since there are also strong differences between countries with regard to these publication cultures and non-English language publications are also systematically under-represented in most international publication databases, country comparisons based on bibliometric analyses can only be of limited value. Moreover, a complete survey of mobility biographies in bibliometric studies is not possible, since mobility is only recorded if a publication (in publication databases) has

5 Major data sources on academic and researcher mobility

Author	Statistic/study title	Publication cycle	Special characteristics
Foreign academics and researchers in Germany			
Federal Statistical Office	University staff	Annual	Comprehensive data
Federal Statistical Office	Financial statistics from the public research institutes (staff at non-university research institutes)	Annual	Comprehensive data
Federal Statistical Office	Students at universities (doctoral candidates)	Annual	Includes doctoral candidates only
DAAD	Erasmus statistics (guest lecturers)	Annual	Comprehensive data
DAAD/DZHW	Guest researchers with funding	Annual	Surveys of relevant funding organisations
German academics and researchers abroad			
DAAD/DZHW	Guest researchers with funding	Annual	Surveys of relevant funding organisations
DAAD	Erasmus statistics (guest lecturers)	Annual	Comprehensive data
National statistics offices in other major host countries	University staff statistics	Annual	Varying definitions of academics, researchers and universities recorded; scope of data collection varies
International academic and researcher mobility and partnerships			
EU office of the Federal Ministry of Education and Research (BMBF)	EU Framework Programmes contract database	Annual	Comprehensive data
OECD	Student statistics (international doctoral candidates)	Annual	Does not contain information on international doctoral candidates in the USA
National statistics offices in other major host countries	University staff statistics	Annual	Varying definitions of academics, researchers and universities recorded; scope of data collection varies
DZHW	Scopus database	Continuous	Contains bibliometric data on publications around the world
European Commission	Mobility Patterns and Career Paths of EU Researchers (MORE)	Every three years since 2010	Only regular international survey of academics and researchers in the world

Source: Own presentation

been published before and after the mobility from the respective country of location. Furthermore, academics and researchers are only included in the sample from the time of their first publication. (Possible) mobility before this first publication is therefore excluded, which can lead to a false determination of the mobility status and the respective country of origin. Thus, all academics and researchers who have published in different countries within the period under review are usually considered mobile, whereby the first country of location within the period under review is considered the country of origin. It cannot be ruled out that previous mobility is excluded and that the alleged country of origin is already a host country. After all, at least two publications during the period under review are required to determine mobility. Accordingly, young researchers who have no or only one academic journal article to show for the period under review are excluded from the analysis.

In contrast to the two methods described above, surveys are characterised in particular by the collection of new data on academics' and researchers' mobility. This has the advantage that the re-

searchers themselves can determine who is to be interviewed and which questions are to be asked or which characteristics surveyed. The number of variables available for the analysis of the mobility of academics and researchers is therefore generally much higher than in public statistics and publication databases, thus allowing more in-depth or explanatory analyses (e.g. on the mobility motives or obstacles of academics and researchers). Furthermore, researchers who are not covered by publication databases or public statistics (e.g. researchers in companies) can also be included in the analysis. Finally, in the case of internationally designed surveys of academics and researchers, a high degree of international comparability of the data from the different countries can be guaranteed. However, surveys involve a considerable amount of time and effort, and therefore also high costs. These limitations mean that regular surveys are relatively infrequent and therefore not suitable as a basis for ongoing statistics on academics' and researchers' mobility. The only exception in this respect is the EU-funded study "Mobility Patterns and Career Paths of EU Researchers" (MORE), which has been conducted every three years since 2010, with the last one completed in 2019 (MORE4).

Data sources used

In “Wissenschaft weltoffen”, different data sources are used to draw as comprehensive a picture as possible of the mobility of academics and researchers in Germany and other countries. The official statistics of the Federal Statistical Office Germany relating to foreign academic staff at state-recognised universities and non-university research institutes and to registered international doctoral students are used to record foreign academics and researchers in Germany. In addition, data on short-term visits from the Erasmus statistics (Erasmus guest lecturers) and from a query by the DAAD and DZHW on funded foreign guest researchers in Germany at relevant funding organisations are analysed. With regard to the official statistics relating to academic staff, it should be noted that the international academics and researchers recorded are not necessarily actually mobile in all cases, since only information on citizenship is collected here, but not on the country of highest educational attainment. A differentiation between international students and Bildungsinländer, as in the case of foreign students, is therefore not possible at this point.

The data basis for recording German academics and researchers abroad has so far been very patchy, particularly with regard to longer-term stays (qualification- or job-related international mobility). Short-term visits abroad are covered by the Erasmus statistics on Erasmus guest lecturers and by the above-mentioned queries to relevant funding organisations. These data are supplemented by a further query by the DAAD and DZHW at the respective responsible statistical offices on German university staff in major host countries of German academics and researchers. The job-related international mobility recorded here is subject to country-specific definitions and restrictions.

Finally, this issue of “Wissenschaft weltoffen” uses OECD data on international doctoral students worldwide, national official data on international academics and researchers at universities and public research institutes in major host countries, as well as funding data from the contract database for the EU’s Research Framework Programmes.

Academic and artistic university staff

According to higher education statistics, academic and artistic staff at universities include professors (including guest, honorary and non-scheduled professorships), lecturers and assistants, academic and artistic staff, specialised teaching staff, emeriti, lecturers, assistant lecturers, student research assistants (with degree) and tutors.

Academics and researchers

In the context of “Wissenschaft weltoffen”, academics and researchers are defined as persons who are professionally involved in the conception and publication of new findings and who develop or improve concepts, theories, models, instruments, computer programmes or methods within the framework of their publicly financed or funded research.

Academic year

Used here as a reference value for determining the number of students or first-year students. For students, the number of students in a winter semester is taken as the year number. In “Wissenschaft weltoffen”, students in the winter semester 2018/19 are defined as students in the academic year 2019. For first-year students, it is specified that the total number of first-year students of a summer semester and the following winter semester is the year number. The first-year students of the academic year 2018 are the first-year students of the summer semester 2018 and the winter semester 2018/19.

Bildungsausländer

Students with foreign citizenship (or stateless persons) who have obtained their university entrance certificate at a foreign school, referred to as “international students” in “Wissenschaft weltoffen”.

Bildungsinländer

Students with foreign citizenship (or stateless persons) who have obtained their university entrance certificate at a German school.

Bridge mobility

Study-related visits abroad between completing a domestic bachelor's programme and commencing a master's programme.

Credit mobility

→ Temporary study-related visits abroad

Degree mobility

→ Degree-related international mobility

Degree-related international mobility

Study at a foreign university with the intention of gaining a degree there.

First-year students

Foreign students in Germany are first-year students at a German university in the first semester of higher education or in the first semester of a subject. In most countries, first-year students abroad are students who appear in the student statistics for the first time at the time of the survey, regardless of the semester in which they are enrolled. Some of these students are therefore also students in later semesters.

Foreign students

All students with foreign citizenship, including stateless students and students with dual citizenship, i.e. both international students and foreign students who have obtained their university entrance certificate at a German school (referred to as “Bildungsinländer”).

Funded groups

Here, the funded groups include:

- Postgraduates | persons with a university degree who are funded to work on a dissertation as foreigners in Germany or as Germans abroad, as well as persons who receive a mobility grant after completing their studies, even if they do not intend to study for a doctorate.
- Postdocs | persons who have completed a doctorate and whose stay in Germany or abroad is funded in order to gain further qualifications through research. This also includes university lecturers and experienced academic staff from universities and research institutes.

Graduation year

A graduation year comprises the graduates of a winter semester and the following summer semester. The number of graduates in 2018 is the sum of the number of graduates of the winter semester 2017/18 and the summer semester 2018.

International students/internationally mobile students

Students who become internationally mobile for their studies, i.e. who cross national borders to get from their country of origin to their host country.

Students in later semesters

Different definitions exist depending on the survey study. In the DSW Social Survey, all university students in the 9th to 14th semester of higher education and all university of applied sciences students in the 7th to 11th semester are considered to be students in later semesters.

Temporary study-related visits abroad

Study-related visits abroad as part of a domestic study programme during which credit points are earned with the aim of having them recognised by the home university (e.g. semester abroad, placement abroad, summer school, language course).

Transnational Education Projects (TNE)

Transnational education projects are study programmes for which a university from abroad bears the main academic responsibility. Here, this refers only to TNE study programmes, TNE faculties, branch campuses – i.e. spin-offs or branches of universities abroad – and binational universities, i.e. no double degree programmes or distance learning programmes.

Types of study

The types of study include

- First degree programmes | programmes leading to a first university degree
- Postgraduate degree programmes | studies after completing a first degree programme; postgraduate degree programmes include second degree programmes, postgraduate studies, supplementary, extended and additional studies, contact/continuing education programmes, non-consecutive and consecutive master's programmes
- Doctoral studies | studies or academic work with the final goal of obtaining a doctorate

REFERENCES

- Anderson, S. (2020): *Immigrants and America's Comeback From The COVID-19 Crisis*. National Foundation for American Policy (NFAP Policy Brief). In: <https://nfap.com/wp-content/uploads/2020/07/Immigrants-and-Americas-Comeback-From-The-Covid-19-Crisis.NFAP-Policy-Brief-July-2020.pdf> (retrieved on 20.07.2020).
- Aristovnik, A. et al. (2020). *Impacts of the COVID-19 Pandemic on Life of Higher Education Students: A Global Perspective*. In: <http://www.covidsoclab.org> (retrieved on 20.07.2020).
- Barnett, G.A. et al. (2016): *The flow of international students from a macro perspective: a network analysis*. In: *Compare* 46 (4): 533–559.
- Brücker et al. (2018): *IAB-BAMF-SOEP-Befragung von Geflüchteten 2016: Studiendesign, Feldergebnisse sowie Analysen zu schulischer wie beruflicher Qualifikation, Sprachkenntnissen sowie kognitiven Potenzialen*.
- Bundesamt für Migration und Flüchtlinge (2019): *Das Bundesamt in Zahlen 2019*. Nürnberg.
- Deutscher Akademischer Austauschdienst (2013): *Strategie DAAD 2020*. Bonn.
- Didelon, C./Richard, Y. (2012) *The European Union in the flows of international students: attractiveness and inconsistency*. In: *International Review of Sociology* 22 (2): 229–244.
- Dohmen, D. (2020): *Studienanfängerprognose 2020: Welchen Einfluß könnte die Corona-Krise auf die Entwicklung der Studienanfängerzahlen haben?* (FIBS-Forum Nr. 74). Berlin.
- Drayton, E./Waltmann, B. (2020): *Will universities need a bailout to survive the COVID-19 crisis?* Institute for Fiscal Studies (IFS Briefing Note BN300). In: <https://www.ifs.org.uk/publications/14919> (retrieved on 20.07.2020).
- EY-Parthenon (2020): *COVID-19 crisis: Planning towards the new normal*. International Higher Education Market (unpublished).
- Gabriels, W./Benke-Aberg, R. (2020): *Student Exchanges in Times of Crisis – Research report on the impact of COVID-19 on student exchanges in Europe*. Erasmus Student Network. In: <https://esn.org/covidimpact-report> (retrieved on 20.07.2020).
- Gaul, J.-P./David, U. (2009): *Forschungsförderung in Europa – eine Erfolgsgeschichte. Entwicklung und Funktion der Forschungsrahmenprogramme der Europäischen Union*. In: *Wissenschaftsmanagement* 2009, 16 (6), S. 20–25.
- Gemeinsame Wissenschaftskonferenz (GWK) (2013): *Strategie der Wissenschaftsminister/innen von Bund und Ländern für die Internationalisierung der Hochschulen in Deutschland*.
- idp connect (2020): *International student crossroads: Demand for on-campus education amidst COVID-19*. In: <https://www.idp-connect.com/newspage/higher-education/international-student-crossroads-demand-for-on-campus-education-amidst-covid-19> (retrieved on 20.07.2020).
- Jump, P. (2020): *THE Leaders Survey: Will COVID-19 leave universities in intensive care?* In: <https://www.timeshighereducation.com/features/leaders-survey-will-covid-19-leave-universities-intensive-care> (retrieved on 20.07.2020).
- Kercher, J./Plasa, T. (2020): *Corona und die Folgen für die internationale Studierendenmobilität in Deutschland: Ergebnisse einer DAAD-Befragung von International Offices und Akademischen Auslandsämtern (DAAD-Arbeitspapier)*. Bonn.
- Knight, J./McNamara, J. (2017): *Transnational education: a classification framework and data collection guidelines*. London.
- Marinoni, G. et al. (2020): *The impact of COVID-19 on higher education around the world: IAU Global Survey Report*. Paris.
- Marshman, I./Larkins, F. (2020): *Modelling Individual Australian Universities Resilience in Managing Overseas Student Revenue Losses from the COVID-19 Pandemic*. Melbourne. In: https://melbourne-cshe.unimelb.edu.au/__data/assets/pdf_file/0009/3392469/Australian-Universities-COVID-19-Financial-Management.pdf (retrieved on 20.07.2020).
- Martel, M. (2020): *COVID-19 Effects on US Higher Education Campuses: From Emergency Response to Planning for Future Student Mobility (COVID-19 Snapshot Survey Series, Report 2)*. In: <https://www.iie.org/en/Connect/COVID-19/COVID-19-Snapshot-Survey-Series> (retrieved on 20.07.2020).
- Middendorff, E. et al. (2017): *Die wirtschaftliche und soziale Lage der Studierenden in Deutschland 2016: 21. Sozialerhebung des Deutschen Studentenwerks, durchgeführt vom Deutschen Zentrum für Hochschul- und Wissenschaftsforschung*. Berlin.
- Netz, N./Hampel, S. (2019): *Welche Rolle spielt der Promotionskontext für die Auslandsmobilität von Promovierenden?* In: *Beiträge zur Hochschulforschung* 41 (4): 136–153.
- OECD (2019): *Education at a Glance: OECD Indicators*. Paris.
- Preiss, B. (2012): *Indian student numbers falling*. *The Sidney Morning Herald*. In: <https://www.smh.com.au/national/indian-student-numbers-falling-20121213-2bcnq.html> (retrieved on 20.07.2020).
- Quacquarelli Symonds (2020): *The Outlook for University Admissions: The Impact of COVID-19 report*. In: <https://www.qs.com/portfolio-items/outlook-university-admissions-impact-covid-19-report> (retrieved on 20.07.2020).
- Rumbley, E.R. (2020): *Coping with COVID-19: International higher education in Europe*. The European Association for International Education (EAIE). In: <https://www.eaie.org/our-resources/library/publication/Research-and-trends/Coping-with-COVID-19--International-higher-education-in-Europe.html> (retrieved on 20.07.2020).
- Shields, R. (2013): *Globalization and international Student Mobility: A Network Analysis*. In: *Comparative Education Review* 57 (4): 609–936.
- Shields, R. (2016): *Reconsidering regionalisation in global higher education. Student mobility spaces of the European Higher Education Area*. In: *Compare* 46 (1): 5–23.
- Statistisches Bundesamt (2019a): *Bildung und Kultur, Personal an Hochschulen, 2018*. Fachserie 11, Reihe 4.4. Wiesbaden.
- Statistisches Bundesamt (2019b): *Bildung und Kultur, Studierende an Hochschulen, Wintersemester 2018/2019*. Fachserie 11, Reihe 4.1. Wiesbaden.
- Statistisches Bundesamt (2019c): *Bildung und Kultur, Prüfungen an Hochschulen, 2018*. Fachserie 11, Reihe 4.2. Wiesbaden.
- Statistisches Bundesamt (2019d): *Deutsche Studierende im Ausland, Ergebnisse des Berichtsjahres 2017*. Issue 2019. Wiesbaden.
- University of Oxford (2020): *Policy Responses to the Coronavirus Pandemic*. In: <https://ourworldindata.org/policy-responses-covid> (retrieved on 20.07.2020).
- Zhao, R./Wei, X. (2018): *Measurement and analysis of collaboration ability: The collaborative rate, collaborative breadth and collaborative depth*. In: *The Electronic Library* 36 (2): 270–285.

STRUCTURE OF THE WORLD REGIONS

Since the 2017 edition, the regional classification of “Wissenschaft weltweit” corresponds to the DAAD regional classification:

Western Europe

Andorra, Austria, Belgium, Cyprus, Denmark, Finland, France, Greece, United Kingdom, Iceland, Ireland, Italy, Liechtenstein, Luxembourg, Malta, Monaco, Netherlands, Norway, Portugal, San Marino, Spain, Sweden, Switzerland, Vatican City

Central and South Eastern Europe

Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Estonia, Kosovo, Hungary, Latvia, Lithuania, Macedonia, Montenegro, Poland, Romania, Serbia, Slovakia, Slovenia, Turkey

Eastern Europe and Central Asia

Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Moldova, Russia, Tajikistan, Turkmenistan, Ukraine, Uzbekistan

North America

Canada, USA

Latin America

Antigua and Barbuda, Argentina, Bahamas, Barbados, Belize, Bolivia, Brazil, Chile, Colombia, Cuba, Costa Rica, Dominica, Dominican Republic, Ecuador, El Salvador, Grenada, Guatemala, Guyana, Haiti, Honduras, Jamaica, Mexico, Nicaragua, Panama, Paraguay, Peru, St. Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Suriname, Trinidad and Tobago, Uruguay, Venezuela

North Africa and Middle East

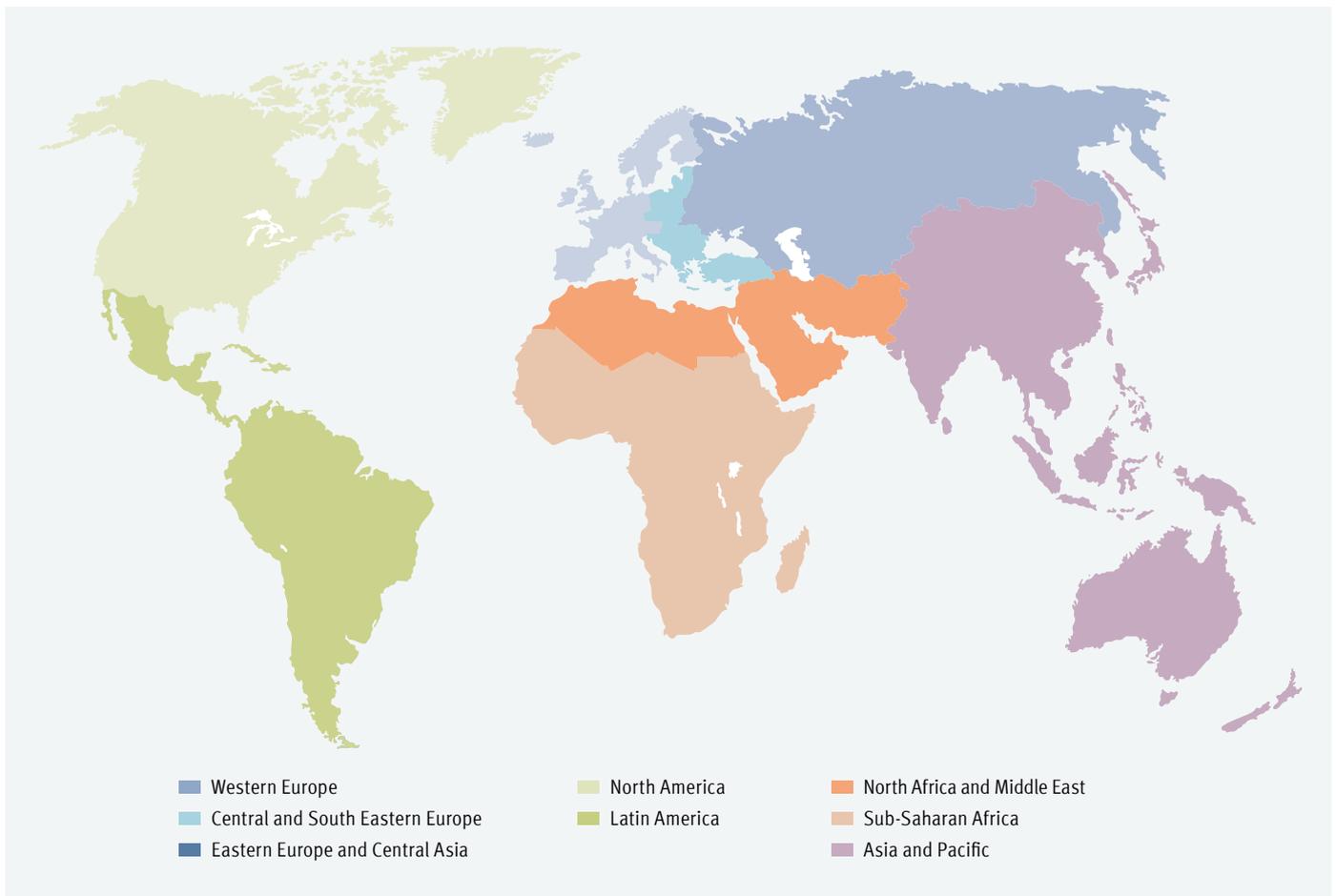
Afghanistan, Algeria, Bahrain, Egypt, Iraq, Iran, Israel, Jordan, Kuwait, Lebanon, Libya, Morocco, Oman, Pakistan, Palestinian territories, Qatar, Saudi Arabia, Syria, Tunisia, United Arab Emirates, Yemen

Sub-Saharan Africa

Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Cape Verde, Central African Republic, Chad, Comoros, Congo, Congo/Democratic Republic, Djibouti, Equatorial Guinea, Eritrea, Ethiopia, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Ivory Coast, Kenya, Lesotho, Liberia, Madagascar, Malawi, Mali, Mauritania, Mauritius, Mozambique, Namibia, Niger, Nigeria, Rwanda, São Tomé and Príncipe, Senegal, Seychelles, Sierra Leone, Somalia, South Africa, Sudan, Southern Sudan, Swaziland, Tanzania, Togo, Uganda, Zimbabwe, Zambia

Asia and Pacific

Australia, Bangladesh, Bhutan, Brunei Darussalam, Cambodia, China, Cook Islands, Fiji, Hong Kong (CN), India, Indonesia, Japan, Kiribati, Laos, Macao (CN), Malaysia, Maldives, Marshall Islands, Micronesia, Mongolia, Myanmar, Nauru, Nepal, New Zealand, Niue, North Korea, Palau, Papua New Guinea, Philippines, Samoa, Singapore, Solomon Islands, South Korea, Sri Lanka, Taiwan, Thailand, Timor-Leste, Tonga, Tuvalu, Vanuatu, Vietnam



Internationalisation is one of the prerequisites for the successful development of teaching and research at universities. For this reason, the internationality status of the German higher education system is subjected to regular empirical stocktaking to provide politicians and society with comprehensive information. In this context, “Wissenschaft weltoffen” has established itself as a central source of information on the mobility of students, academics and researchers.

The central statistical figures on the international mobility of students, academics and researchers will continue to be the basis of “Wissenschaft weltoffen”. For this year’s 20th edition, however, DAAD and DZHW have fundamentally revised the publication format. As part of this revision, the previous focus chapter has been replaced by the spotlights already introduced in the two previous editions. These spotlights present particularly relevant aspects in depth but, at the same time, as briefly and clearly as possible. Also, instead of a bilingual edition, there will be a separate German and English edition from this year on, as is already the case with the compact edition of “Wissenschaft weltoffen”.

A detailed spotlight in this issue is devoted to the currently ever-present topic of university teaching under the conditions of the COVID-19 pandemic. It is an attempt to give a first, still incomplete overview of the consequences of the pandemic for worldwide student mobility and a cautious outlook on further developments. Other spotlight topics in this issue:

- European academic collaboration in the Horizon 2020 research framework programme
- Refugees at German universities – a review and outlook
- International doctoral candidates in Germany

DAAD

The German Academic Exchange Service (DAAD) is the joint organisation of German institutions of higher education and their student bodies, devoted to internationalising the academic and scientific research system. Via scholarship programmes, the DAAD enables students, researchers and university lecturers to take advantage of the best study and research opportunities available. It promotes transnational cooperation and university partnerships and is the German national agency for EU higher education cooperation.

The DAAD actively supports Germany’s foreign cultural and educational policy goals, national scientific policies and development cooperation efforts. In addition to overseeing the International DAAD Academy (IDA), the DAAD operates a network of 69 regional offices and information centres as well as around 450 lectureships worldwide.

In 2019, the DAAD funded more than 145,000 German and international students, academics and researchers worldwide. The DAAD is principally funded by the Federal Foreign Office (AA), the Federal Ministry of Education and Research (BMBF), the Federal Ministry for Economic Cooperation and Development (BMZ) and the European Union.

www.daad.de

DZHW

The German Centre for Higher Education Research and Science Studies (DZHW) has its headquarters in Hannover. It carries out application-oriented research in the higher education field. The DZHW’s research is based on theory and related to practice, usually in the form of long-term observations and sometimes also including an international comparative perspective.

The DZHW considers itself to be part of the scientific community as well as a service partner, both of higher education institutions and of educational policy. One particular strength of the DZHW’s research lies in the long-term observation of trends in the higher education and science sector. The unique nationwide surveys of German young people qualified to study in higher education institutions, students and graduates form a major part of the DZHW’s profile.

The DZHW is a publicly funded institution, funded by German federal and state governments.

www.dzhw.eu

This publication was printed in sustainable ink on 100% recycled paper using a carbon-neutral process (certified with the German “Blue Angel” environmental label).



SPONSORED BY THE



Federal Ministry
of Education
and Research



Federal Foreign Office

wbv Publikation



ISBN: 978-3-7639-6574-8

wbv.de