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Republic of Austria  
Education, Science  
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# University Report > 2017

Executive Summary

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## Introduction

The University Report 2017 is the fifth report submitted to the Austrian National Council, which covers the public universities' previous developments and future orientation and especially focuses on fostering young scientists, on developments with regard to universities' staffing, and the situation of students. The report is based mainly on the universities' reports that were submitted from 2014 to 2017, in particular on the financial statements and intellectual capital reports from 2014 to 2016.

The University Report focuses primarily on the 22 public universities, which are part of a diversified Austrian higher education area. Furthermore, cross-sectoral strategy processes, or collaborations and permeability, respectively, are becoming increasingly more important for a systematic further development of the Austrian higher education area in all of its parts and especially in its qualitative entirety.

Within the framework of the legal mandate pursuant to § 11 Universities Act (*UG*), the report seeks to capture the necessary broader perspective in its description of the developments at public universities, which also includes the other sectors forming the Austrian higher education area – universities of applied sciences, university colleges of teacher education, private universities. The report shows that the public university sector remains to be the most dominant sector, quantitatively, but it also describes their interdependencies and interactions with the other sectors, e.g. in the context of cross-sectional strategies, in connection with strategic projects such as "Shaping HEIs for the Future", key cross-cutting reform plans such as the newly structured teacher training, or within the framework of the forecast of higher education or developments in the labour market with regard to academics.

The University Report 2017 gives account of the years 2014 to the end of 2017 and the changes and developments that have affected the university sector during the reporting period. It also covers pending and future developments. This brief summary is based on the report's executive summary, giving an overview of the most important contents of the ten chapters; figures and tables were not included. Each chapter is preceded by an introduction, which focuses on the key developments in the

corresponding subject area and includes an outlook where applicable.

The full report in German consists of 331 pages and is available for download on the website of the Federal Ministry of Education, Science and Research: [https://bmbwf.gv.at/fileadmin/user\\_upload/wissenschaft/publikationen/Universit%C3%A4tsbericht\\_2017\\_barrierefrei\\_20180312.pdf](https://bmbwf.gv.at/fileadmin/user_upload/wissenschaft/publikationen/Universit%C3%A4tsbericht_2017_barrierefrei_20180312.pdf).

### Please note:

At the time of the completion and publishing of the University Report 2017, a new federal government had taken office and a change of the departments' responsibilities had been introduced. An amendment to the Federal Ministries Act came into force on 8 January 2018, which merged the areas "science and research" and "education" to a new department "Federal Ministry of Education, Science and Research". The report, which at this point had already been finalised, uses the names that were valid throughout the reporting period from 2014 to 2017, especially "Federal Ministry of Science, Research and Economy" (*BMWFV*) and "Federal Ministry of Education" (*BMB*).

### 1 Further developing and strengthening the Austrian higher education area

Austrian universities are well established in the Austrian higher education area as well as in the international scientific community. Since wide-ranging autonomy was given to the universities in the Universities Act 2002 (*UG*), the paradigm "better performing universities through more competition" has proved effective. Universities are the motors of innovation for our country and – despite the difficult conditions – have managed to advance academisation in our society successfully. The increasing numbers of students show that. Now, the task is to guarantee sustainable funding and to link the expansion of the university of applied sciences sector to alleviating effects for the university sector.

Further developing and strengthening the Austrian higher education area must be seen as a process, which is driven forward in a context-related way. During the reporting period, recommendations of the Austrian Higher Edu-

cation Conference (*Österreichische Hochschulkonferenz*) as well as overlapping strategic processes provided impulses, which have an impact on all sectors of the higher education area. The strategic project “Shaping higher education institutions (HEIs) for the Future” elaborates on differentiation and cooperation as main aspects of further qualitative development, taking into consideration not only the universities but also the universities of applied sciences. Over the next few years, an emphasis will be put on strengthening the position of the Austrian universities and other higher education institutions – both in an international context, and also in their task to provide orientation for Austrian society. The *BMWF*’s main lines of action will focus on:

- further differentiating the higher education landscape by means of comprehensible and clear profiles and tasks of HEIs;
- promoting collaborations and strong network structures or clusters;
- encouraging creativity and providing a scope for individual action (among staff and students);
- achieving a balanced participation in education and further training which reflects the diversity of the broader population.

The Austrian National Development Plan for Public Universities (*GUEP*) as a strategic planning instrument for the university sector refers to these lines of action. Within the framework of its objective 1 – “Further develop and strengthen the higher education system” – it takes account of the fact that universities act as a part of the Austrian higher education area and that differentiation, the development of profiles and the division of tasks, linked with closer cooperation and better permeability contributes to strengthening the Austrian higher education system and enhancing its competitiveness. Furthermore, the *GUEP* moves two issues into focus, which will be relevant not only for the universities, but also for the further development of the entire Austrian higher education area: the issue of integrating the principle of sustainability and the role of digital transformation in higher education.

### Higher Education Conference

The Austrian Higher Education Conference plays an important strategic role in strengthening the dialogue on higher education policy issues between the different sectors. During 2015 and 2017 the Higher Education Conference adopted two recommendations to be implemented in the further development of the

Austrian higher education area, providing key impulses. In June 2015 the “Recommendation of the Higher Education Conference on the further qualitative development of doctoral training in Austria” (*“Empfehlung der Hochschulkonferenz zur qualitativen Weiterentwicklung der Doktoratsausbildung in Österreich”*) was adopted. Based on this recommendation, key quality aspects were subsequently adopted as criteria for the funding of structured doctoral programmes by means of Higher Education Area Structural Funds (*HRSM*). In December 2015 the “Recommendations of the Austrian Higher Education Conference on supporting non-traditional access to higher education” (*“Empfehlungen der Hochschulkonferenz zur Förderung nicht-traditioneller Zugänge im gesamten Hochschulsektor”*) were published. They can be seen as a supportive measure for improving social participation and the permeability between the sectors of the higher education area. A working group on “Improving gender competence in higher education processes” (*“Verbreiterung der Genderkompetenz in hochschulischen Prozessen”*) completed its work at the end of 2017. The results will be published in 2018.

### The project “Shaping HEIs for the Future”

In spring 2016, the *BMWF* started the project “Shaping HEIs for the Future” (*“Zukunft Hochschule”*), which was aimed at the strategic further development of the Austrian higher education system. In addition to improving the capacities of the university of applied sciences sector, it provided for an examination and optimisation of the following areas:

- pronunciation of educational profiles of universities (scientific/artistic and pre-vocational) and universities of applied sciences (practice-oriented training on a higher education level);
- a structure based on division and complementarity of tasks and/or the coordination of the degree programmes offered;
- permeability within the higher education sector.

Along five “action areas” and within the framework of a discussion and working process in 29 workshops, representatives of public universities, universities of applied sciences and the Austrian Science Council, all in all a collaboration of 329 participants from 31 higher education institutions, developed concept papers, which were completed in the summer of 2017. The process involved the fields of law studies, studies in economic sciences, life sciences,

computer sciences, and studies in humanities and cultural sciences, and also addressed the cross-cutting issues “improvement of permeability” and “further development of the universities of applied sciences’ portfolios”.

As a result, the characteristics and distinguishing features of the university sector as well as the university of applied sciences sector were clarified, and the potential for further cooperation identified. A quota of at least 30% of the total enrolment numbers of both sectors was specified as a mid-term goal for the expansion of the university of applied sciences sector. A broad consensus was reached regarding the topics for a coordinated development of the universities of applied sciences’ portfolios, also taking into consideration the aspect of relieving the university sector. In future, the number of dual degree programmes as well as part-time programmes and joint degree programmes between universities of applied sciences and universities shall be increased. As a result of the coordination process, it was clarified that the further development in the fields of economic studies and computer science studies shall focus on increasing staff capacities and improving the student-teacher ratios in the university sector, as well as on increasing the numbers of study places at universities of applied sciences. Furthermore, the requirements for a transfer from bachelor to master shall be made transparent in a standardised way. In the field of studies in humanities and cultural sciences, first steps towards coordination and supra-regional courses and/or teaching cooperations were identified. It was agreed that it is necessary to introduce admission regulations for law studies in order to improve the student-teacher ratio and reduce the drop-out rate. An “inter-facultary working group on mobility”, which was set up in the course of the process, agreed on a mutual recognition of study achievements in core subjects.

The outcomes of the project “Shaping HEIs for the Future” will be included in governance and steering instruments of the ministry: in the Austrian National Development Plan for Public Universities, in the performance agreements with the universities, as well as in the Development and Funding Plan for Universities of Applied Sciences.

#### **National strategy on the social dimension of higher education**

At the Yerevan Ministerial Conference in 2015, the member states agreed to develop national strategies for promoting the social dimension in the higher education sector. The same ob-

jectives are pursued also by means of the ministry’s impact-oriented budgeting and by the Austrian National Development Plan for Public Universities.

Following a broad discussion and consultation process with higher education institutions, social partners and counselling service institutions, the *BMWF* developed the “National strategy on the social dimension of higher education. Towards a more inclusive access and wider participation” in 2016. Beforehand, a survey on already existing measures addressing the social dimension had been completed, which shows that a number of relevant projects are already being implemented by higher education institutions. It is planned to expand these measures as well as to create new ones to be embedded in the institutions’ development plans.

The national strategy lays out three target dimensions with three action lines and corresponding measures for each, which shall be implemented by 2025:

Target dimension I “More inclusive access” primarily addresses the quality and accessibility of information materials and guidance or counselling services, outreach activities, the recognition and validation of non-formal and informal competencies.

Target dimension II “Avoid drop-out and improve academic success” refers to the structure of study programmes (i.a. increasing the compatibility of studying with other areas of life), the entry into higher education (i.a. establishing a “culture of welcome”) and the quality of teaching.

Target dimension III “Create basic parameters and optimise the regulation of higher education policy” addresses system-related issues in higher education systems (e.g. further developing legal provisions with regard to “studyability”, monitoring “studyability”, reviewing higher education funding and its effect on the social dimension) as well as the topics of creating appropriate governance structures at higher education institutions and of improving student support schemes.

The broader objectives include nine quantitative goals to be achieved by 2025, e.g. reducing underrepresentation of students whose parents do not have higher education entrance qualifications, increasing the number of non-traditional admissions as well as the admission of students with migrant backgrounds to higher education, and promoting gender balance in all degree programmes.

An interim evaluation is scheduled for 2021. The 2017 amendment of the Student Support Act (*Studienförderungsgesetz*) has already resulted in significant improvements with regard to student support.

### **The Higher Education Mobility Strategy of the Federal Ministry of Science, Research and Economy**

In our globalised world, mobility experience and stays abroad are becoming increasingly important for the labour market and for an academic career. Pursuant to the 2012 Bucharest Communiqué and the Mobility strategy 2020 for the European Higher Education Area, all European countries shall develop and implement their own internationalisation and mobility strategies.

In August 2016 the *BMFWF* presented its "Higher Education Mobility Strategy" ("*Hochschulmobilitätsstrategie*") with strategic goals, measures and recommendations to support transnational mobility at Austrian universities, universities of applied sciences and private universities. It focuses mainly on enhancing the quality of mobility of students, teachers, researchers and non-academic staff. The Higher Education Mobility Strategy has defined 16 action lines, which recommend further steps concerning, i.a. framework conditions or the phases before, during and following mobility abroad. Some of these measures have already been implemented (e.g. measures in the field of curricular design, measures to optimise information materials, to make use of experiences gained during periods spent abroad, as well as measures to foster "international experience at home"). The Higher Education Mobility Strategy has also defined three quantitative targets: In 2025 30% to 35% of those graduating at an Austrian higher education institution should have spent a study period abroad. By 2021 120,000 students in Austria should have taken part in the ERASMUS+ programme (the goal of 100,000 participations set for 2018 has already been met). By 2020 at least 4,500 members of the scientific or artistic university staff should have had an activity-based period spent abroad.

Necessary modifications identified in the course of implementation will be addressed in an update of the strategy.

## **2 Funding and governance**

The universities are funded mainly from public funds. A study on the economic and social effects of universities published in 2017 by the Austrian Institute of Economic Research (*WIFO*)

proves that these funds are well invested. According to the study, the services and achievements of universities are not only important factors for location decisions in business and industry, and thus for growth and competitiveness. Universities also generate positive returns for the state after a relatively short time through economic effects on the demand and supply side. Sums invested in universities turn out to be profitable after a mere three to five years.

Over the past few years, the federal government has successfully increased the university budget. For the performance agreement period of 2016–2018, a total of €9.7 billion were available for the universities, that is €615 million more than in the previous period. In addition, a path was agreed upon to increase the universities' efficiency and thus yield around €300 million to remain at the universities' disposal. This significant increase in expenditure was accompanied by an equally significant increase of student numbers. Because of insufficient possibilities for controlling student flows, the student-teacher ratios could be improved only partially and not to the desired extent. The preparations for a new model for financing universities in the future were continued and intensified during this reporting period, aiming at improving the student-teacher ratios in popular degree programmes, and at a state-of-the-art financing of academic research/advancement and appreciation of the arts. In this context, also uniform standards were defined for cost and activity accounting at public universities.

In its decision of 28 June 2017, the National Council established the university budget pursuant to § 12 para. 2 Universities Act (*UG*) for the performance agreement period 2019–2021 at €11.070 billion. The federal government was assigned the task of drawing up a government bill for a capacity-oriented, student-based funding of universities before the end of January 2018. The corresponding legislative proposal was assessed and further edited in the autumn of 2017. The implementation of the new model for university funding has to be accompanied by adequate legal provisions allowing the federal government in cooperation with the universities to regulate the access according to the available capacities.

Higher education funding, and the question of how to finance what, is inextricably linked with the issue of governance and steering. Efficient steering approaches in higher education must take into consideration two dimensions – a resource-related steering dimension and an issue-related or issue-driven steering dimen-



sion. In order to achieve an ideal form of interaction of these dimensions, which is crucial for the qualitative further development and international competitiveness of Austrian universities and the entire Austrian higher education area, suitable steering mechanisms and instruments are necessary. With a tiered governance model for the university sector, the Austrian National Development Plan for Public Universities (GUEP) and the performance agreements, Austria has a set of instruments that meet these demands. The GUEP has integrated both dimensions. It includes the parameters “students” and “staff” for resource-related and capacity-oriented steering as well as the priority areas for issue-related steering. The governance instrument “performance agreement” puts both dimensions into concrete terms for the individual university. In the context of the 2017 revision of the GUEP, the groundwork was laid for the implementation of the new model for university financing as of 2019, as well as for a future-oriented development of universities, which takes into account the fundamental importance of universities for social and economic development.

Higher education funding and steering require transparency in order to receive acceptance of the whole society and of the institutions and stakeholders concerned. The new indicator-based funding model for universities satisfies this demand for transparency. In the future, it will be necessary to increase the significance of data evidence and indicators for steering activities as well as for monitoring university performance – not only to steer the contributions of the individual universities, but also to make visible their performance and its effect in the overall social context.

### Funding of universities

Annual federal expenses within the so-called “higher education budget” have increased by 9.3% in the reporting period since 2013, the expenses directly attributable to the university sector have risen by 8.1%; this corresponds to the increase in GDP (+8.3%). Federal expenditure merely rose by 1%. The annual federal expenditure, excluding those directly attributable to the university sector, amounted to €3.447 billion in 2016 (4.5% of the federal budget).

Within the **performance agreement period 2013–2015**, which ran out during the reporting period, the federal government allocated €9.1 billion for the funding of universities, which is 8.9% more than during the previous period. Part of the additional funds (€450 million) were dedicated to the Higher Education

Area Structural Funds (*HRSM*), which have replaced the hitherto existing formula and are allocated based on indicators or calls for cooperation projects.

For the **performance agreement period 2016–2018** the university budget was successfully increased by another €615 million, €315 million going to the basic budgets and €300 million going to the *HRSM*. Corresponding to the international tendency, indicator-based funds were increased more (+67%) than basic funding (+3.8%). In connection with the increase of the *HRSM*, the former component for private donations was replaced by a component for structured doctoral programmes in order to promote the qualitative development of doctoral training and to strengthen basic research. Including the compensation universities received for the loss of tuition fees (€157 million per year), a total of around €9.721 billion are available to the universities in the period of 2016–2018, that is an increase of 6.8% in comparison to the previous period.

### Increasing the universities’ efficiency

When fixing the budget funds for universities in 2015 it was decided that universities will also implement internal structural reforms and, by increasing their efficiency, will gain additional budgetary room for manoeuvre. The path envisaged to increase the universities’ efficiency shall result in efficiency gains of around €300 million between 2016 and 2018, to remain at the universities’ disposal. Concrete measures were agreed upon with the individual universities and monitored as to their expected cost savings. The measures concern staffing, the field of teaching and studies, infrastructure and buildings, and also include other efficiency measures, e.g. in administration. All universities started implementing the measures agreed upon, most of the measures becoming effective during the first year of the performance agreement period. By the end of 2016, already a third of the steps had been taken on the path to increasing universities’ efficiency.

### Cooperation projects from the Higher Education Area Structural Funds

In the performance agreement period 2016–2018 the Higher Education Area Structural Funds (*HRSM*) available for cooperation projects of universities were increased to a total of €97.5 million. In 2016 there were three separate competitive calls, aiming at the areas of teaching, research/advancement and appreciation of the arts, and administration and management.

The area of **teaching** was endowed with a total of €35 million, the call for proposals focused on projects promoting the new teacher training and the joint degree programmes for secondary teacher training (general education) offered together with university colleges of teacher education; the Quality Assurance Council of Teacher Education was involved in the assessment of the submitted proposals for cooperation projects. The *HRSM* funds will make it possible to create 82 new positions in the four regional clusters (“*Verbundregionen*”), thus strengthening the specialised pedagogy staff, fostering young scientists and improving the administrative infrastructure for the new teacher training programmes.

For the *HRSM* call in the area of research, there was an amount of €50 million available for the modernisation, expansion, and new acquisition of **research infrastructure**, predominantly in the area of basic research. There was a focus on cooperation projects to provide and make accessible modern, high-tech (large-scale) research and data infrastructure as well as on cooperation projects to modernise and further develop existing R&D-infrastructure, thus fostering structural developments and supporting excellence. Furthermore, the universities were able to propose “unconventional” research projects and innovative projects for arts-based research – especially in the area of the advancement and appreciation of the arts. Involving the expertise of international peers, 46 cooperation projects were selected from among 90 proposals.

The third *HRSM* call was dedicated to the area of **innovative administration and management** and provided incentives to modernise and harmonise administration processes. The €12.5 million available have been invested primarily in two nationwide projects: a joint project among all universities aiming at developing uniform standards for cost and activity accounting at universities during the implementing phase; and a project in the field of Open Access, the goal of which is to create the necessary framework at universities in order to make research findings and scientific publications openly accessible and free of charge.

### **Building projects of universities**

The Austrian development plan for buildings is a planning instrument for building projects of universities, which was incorporated into law by the 2015 amendment of the Universities Act 2002 (*UG*) in §§ 118a and 118b. Pursuant to § 118b *UG*, the realisation and funding of building projects shall be agreed upon by the feder-

al minister and the university involved. The specific proceedings for the realisation of building projects of universities that exceed a specified limit are laid down in the Decree on the Planning Procedure and Realisation of Building Projects of Universities (*Uni-ImmoV*), the draft of which was assessed in autumn of 2017.

During the reporting period, from 2014 to 2017, building projects of universities amounted to a total investment of about €380 million. Among those projects were the new Med Campus Modul 1 of the Medical University of Graz and nine projects from the Federal Real Estate Company’s (*BIG*) special building programme 2014. In February 2017 a new special building programme was initiated, aiming at investing profit distributions by *BIG* amounting to €150 million in 12 building projects. Since the number of students has risen in the past decades and there is an increasing demand for space, the chosen building projects not only include building refurbishments, but also new constructions and building extensions.

### **A new model for university funding**

The National Council has dedicated a total sum of €11.070 billion to the funding of public universities for the performance agreement period 2019–2021 by federal law (Federal Law Gazette I No 129/2017) and commissioned the federal government with the development of an implementation model for a capacity-oriented, student-based funding of universities by 31 January 2018. Following this duty, a bill was submitted for assessment on 1 August 2017, which was based on the former federal act published in Federal Law Gazette. I No 52/2013 as well as on a funding model developed in coordination with the Federal Ministry of Finance (*BMF*) and Universities Austria (*uniko*). Simultaneously with the implementation of a capacity-oriented funding of universities, nationwide as well as university-related admission regulations shall be made possible whenever the figures for the student-teacher ratio in the degree programme concerned exceed a certain limit.

This new model for university funding is based on a capacity-oriented, student-related funding scheme. The *Austrian National Development Plan for Public Universities* stipulates the goals and framing parameters for further developing the universities. The contributions of the individual universities are negotiated and contracted by performance agreements. For their implementation, the universities will continue to receive a global budget. The global budget of each university will consist of three

components, for the performance areas “teaching”, “research/advancement and appreciation of the arts” as well as “infrastructure and strategic development” (three-pillar model). Specific indicators and seven weighted groups of disciplines form the basis for calculating the budget components for the first two areas: the number of students who actively take examinations (with equal or more than 16 ECTS - “study places”) and the number of scientific or artistic staff (“basic performance research/advancement and appreciation of the arts”). Furthermore, competition indicators like the number of graduates, the number of students with equal or more than 40 ECTS (“quick students”), third-party research funding, structured doctoral programmes, provide additional incentives.

A novelty is the linking of funds to a successful implementation of measures which aim to promote the social dimension in teaching and the social diversification of students. In order to ensure that these measures are realised, up to 0.5% of the universities’ global budget may be retained until evidence is provided that the measures have been effectively implemented.

#### **Cost and activity accounting**

Pursuant to § 16 para. 1 UG, each university shall install an accounting system, which includes cost and activity accounting (KLR). In March 2017 the Decree on Uniform Principles for Cost and Activity Accounting at Universities (KLRV) entered into force, which in future shall provide for information on cost structures in the universities’ most important tasks in the area of teaching and research as well as in other services offered. It will also be possible to show which costs are incurred by which services. The legal provisions developed are taking into account the universities’ autonomy; therefore, most of the regulations merely determine minimum standards. Data on the costs for the provision of services as well as key performance indicators (e.g. costs for teaching per student who actively takes examinations, per group of discipline) will also be submitted to the Federal Ministry of Science, Research and Economy (*BMWF*).

The universities are given five years to implement the provisions of the *KLRV* internally, and will be supported by means of *HRS* funds; the last two years shall be used for intensive tests and data validation. The first verified real data from the *KLR* systems of the 22 universities will be submitted to the *BMWF* by 2021 (concerning the year 2020).

#### **The financial and economic situation of the public universities**

Since 2008, the public universities are subject to “treasury and subsidiary controlling” by the *BMF* and have been required to also submit a “risk disclosure statement” for three years now.

The universities are obliged to submit an early warning report to the *BMFW* as soon as certain financial indicators point to a tight liquidity situation for the university. From 2014 to 2016 this necessity arose only once, namely for the University of Salzburg in the fiscal year of 2015. Owing to the actions taken, the university was, in consequence, able to achieve a balanced result.

The development of the financial and economic situation of the universities in the last two years of the performance agreement period 2013–2015 was satisfying. Within the performance agreement period 2013–2015 the balance sheet total rose by 13%, the fixed assets also further increased. The “capital” (equity plus reserves and investment subsidies) also experienced a positive development, increasing to a total sum of around €1 billion for all universities by the end of the performance agreement period. All universities put together generated a net profit of around €178 million over the entire performance agreement period.

For the fiscal year of 2016 there has been an increase in the universities’ fixed assets, and two thirds of the universities were able to maintain or even increase their financial substance. The overall liquidity situation can be regarded sufficient – nearly all universities were able to cover their short-term liabilities by the balance sheet date 2016 by current assets. The financial situation of the public universities remained stable in 2016. On the whole, the universities have a good equity base of about 43%. The profit situation has improved significantly as compared to the previous year. The “operating performance” (sum total of revenues, changes in inventory, own work capitalised and other operating income) has increased by 2% as compared to the previous year. In contrast, the sum total of all operating expenses has only risen by about 1% (including an increase of 3% for personnel expenses).

#### **The role of private sources for the funding of universities**

International comparisons show that in Austria private sources play only a small role in the funding of universities and of tertiary education in general. In Austria only 0.1% of GDP ex-

penses for tertiary educational institutions come from private sources (OECD average: 0.5%, EU average: 0,3%). Whilst in OECD countries on average 30% of the expenses for tertiary educational institutions are privately funded, and 22% on average in EU member states, the proportion in Austria is only 6%.

The revenue structure of Austrian universities substantiates the dominance of public funds for the financing of universities. The global budget share (including the compensation received for the loss of tuition fees) amounts to 78% of the universities' revenues; tuition fees and revenues from degree programmes in continuing education, i.e. revenues coming from private sources, bring a return of only 1% each. Resources from private donors (2016: €17.3 million) represent only a very small proportion. Academic research is also mainly publicly funded; between 2014 and 2016 around 29% of the universities' R&D revenues came from private sources (25% from business companies, 4% from private foundations or associations etc.).

At universities, there are many forms of sponsoring, including monetary donations and non-profit foundations, sponsorships of events or study information activities, and so-called "sponsorships for lecture halls". Fundraising, i.e. raising private donations and other forms of sponsorship, has been professionalised over time by a number of universities, and is often combined with the strategic acquisition of endowed professorships. In 2017, there were 46 privately endowed professorships. At the beginning of 2016, an extensive legislative package ("non-profit package") entered into force, which includes a new law on non-profit foundations and a number of corresponding adjustments to tax provisions, and is aimed at making it easier for higher education institutions to acquire funds from private sources.

### **Governance and steering**

In the university sector, governance and steering has to be put into practice considering the tensions between regulation and the universities' autonomy, Austria has implemented a tiered model for governance in the university sector. The respective governance and steering instruments are the Austrian National Development Plan for Public Universities (*GUEP*), the universities' development plans and the performance agreements with universities, complemented by a reporting system for steering, monitoring and accountability.

### **Austrian National Development Plan for Public Universities**

The *BMWF* uses the *GUEP* as a strategic planning tool for developing higher education and as an instrument for transparently presenting its priorities and objectives for the next two performance agreement periods. As such, the *GUEP* has been integrated into the Austrian planning and steering system of higher education. A first version of the *GUEP* covering the planning period of 2016–2021 was developed in 2015, following a consultation process with 42 higher education institutions. In preparation for the negotiations on the performance agreements for the period 2019–2021 in 2018, the *GUEP* has already been revised on a rolling basis in 2017 for the new planning period 2019–2024. The objectives and aspired developments in the university sector are outlined in the *GUEP* in eight objectives on system level, thus providing the strategic framework for activities and tasks to be prioritised by the universities. The *GUEP* includes key indicators for the area of teaching and their development, such as, for example, student numbers, numbers of graduates, student-teacher ratios. With the indicator "students who actively take examinations" the *GUEP* also contains a parameter of the new model for university funding.

### **Development plans of universities**

In 2015 a new regulation, which is defined in § 13b *UG*, has established a specific standard for the universities' development plans, which, for the first time, stipulates detailed specifications as to their structure and content. From now on, the development plan shall be prepared by 31 December of the second year of every performance agreement period for the following two performance agreement periods, and based on rolling forecasts. Regarding the content and structure of the development plans, the universities shall be guided by the legal regulations concerning the content of the performance agreements. Furthermore, universities' development plans now must contain a description of the universities' human resource strategy and an outline of human resource development. In addition to the number of university professorships according to § 98 and § 99 *UG*, universities' development plans also have to indicate the number of tenure-track positions as well as the number of positions for associate professors and "university docents" (*Universitätsdozentinnen und -dozenten*), who can be appointed as university professors in a simplified process.



### Performance agreements with the universities

The performance agreements for the period of 2013–2015 were used to further develop an effective steering of the university sector, in order to meet fundamental medium- and long-term higher education policy goals in cooperation with the universities. The projects and targets agreed upon were successfully implemented by the universities. These included better coordinated academic profiles and a prioritisation of teaching and research, improving the teaching capacities by means of the “quality package teaching”, and also measures aimed at gender equality and at improving mobility and internationality as well as at implementing the new teacher training. Furthermore, the numbers of study places were stipulated in the performance agreements with those universities that have made use of the possibility to regulate access in very popular degree programmes.

For the performance agreement period 2016–2018, processes for preparing and concluding the performance agreements as well as their structural and content-related design were further developed. The topics of focus were, among others, the further development and deepening of priorities and profiles in research, an enhancement of quality in teaching with the ultimate aim of providing a study environment of reasonable quality, further improvements in quality assurance (auditing), a focus on university staffing (based on a set of indicators) as well as on the fostering of young scientists and their career development, an increase in the performance of universities with regard to the Horizon 2020 EU Framework Programme for Research and Innovation, a focus on strategic knowledge and technology transfer, and the ongoing implementation of the new teacher training.

Regular meetings (“*Begleitgespräche*”) twice a year between the *BMWF*W and the heads of the universities accompany and monitor the implementation process of projects and targets agreed upon in the performance agreements. These meetings have proved an effective complementary instrument, allowing for suitable support of the universities’ implementation processes and for an institutionalised mutual exchange. A reporting on the implementation of the performance agreements is included in the annual intellectual capital report submitted by universities. According to the information given in the intellectual capital reports 2016, already 5% of the 1.440 projects agreed upon have been realised after the first year of the 2016–2018 period, the remaining

projects still being implemented. 79% of the agreed target values have been reached or even exceeded by the universities.

For the performance agreement period 2019–2021, the *BMWF*W’s key guiding principles as well as concerns and objectives are provided mainly by the *GUEP*. In the area of teaching the concrete contributions by the individual universities shall be agreed upon for each of the *BMWF*W’s targets of impact-oriented budgeting. Among other topics, university staffing and career development as well as integrating digital transformation into the universities’ provision of services at all levels (including the development of a relevant strategy for the university) are of central importance.

### Evidence-based governance in the university sector

Evidence-based governance and the use of indicators have become increasingly important for steering and funding universities. Identifying and further developing suitable performance indicators for the relevant target fields of higher education policy (e.g. intensifying study progress, improving student-teacher ratios, optimising personnel structures, achieving equality objectives) together with supporting (reform) measures deriving from the monitoring of these performance indicators, remain to be the key challenges. Altogether, the goal is to implement a practicable and stringent steering model, which is based on a broad commitment of the stakeholders. In order to optimise the necessary coordination between the *BMWF*W and the universities, the permanent working group *OEPIGuni (Österreichische permanente Indikatoren-AG Universitäten)* was established in May 2016 as a joint operating platform.

Current reform projects such as the implementation of a capacity-oriented, student-based funding of universities, will require the development and testing of additional forms of intervention aiming at reducing the number of dropouts and improving study progress, e.g. early warning systems, incentives (“nudging”), learning analytics, student monitoring and tracking of graduates’ career paths – thus, analytical methods in terms of Big Data, that contribute significantly to strengthening the steering and management possibilities of the federal government and the universities.

### Further developing the intellectual capital report

The intellectual capital report is the universities’ key instrument for reporting, communica-

tion and giving account. It serves the purpose of presenting the intellectual capital, the core processes and the output in teaching and research/advancement and appreciation of the arts, and is thus an essential source of information. Its further development shall ensure that this instrument meets the current requirements. In 2016 a revised Decree on Intellectual Capital Reports (*WBV 2016*) entered into force. It renamed the sections which the intellectual capital report must contain, included a revision of the topics of the "performance report" and provided the opportunity to publish the entire performance report focusing only on the first year of the performance agreement period. It also introduced two new indicators (indicator "representation of women in the appointment procedures for university professors" and indicator "professors and equivalents"), and further modified eleven indicators. Currently, universities must submit information on a total of 24 indicators. Medical universities and the Johannes Kepler University Linz must submit four additional specific indicators on the medical sector.

In 2017 the *WBV 2016* was amended, particularly taking into consideration the changes to the Education Documentation Regulation for Universities (*BiDokVUni*), which also had an effect on the intellectual capital report indicators.

### 3 Staffing, promoting young scientists, and academic careers

Personnel planning, recruitment and human resources development are the basis for ensuring and developing the quality of teaching, research, and organisation at universities. During the last years, the universities have enhanced and further professionalised their human resources development, improved their quality assurance mechanisms regarding staffing decisions, and institutionalised the mechanisms for planning their personnel structures. The universities face the requirement of implementing a personnel structure, which is at the same time efficient and fundable with the resources available, which is gender-balanced, but also meets intergenerational needs, giving future generations of junior scientists a sporting chance of employment in the academic staff.

With the 2015 amendment of the Universities Act (*UG*), the Federal Ministry of Science, Research and Economy (*BMWF*) has taken important steps to provide a legal framework which will increase the attractiveness for an

academic career at the public universities. Enhanced organisational conditions will improve the career paths for young scientists. The new regulations in § 99 *UG* allow for a continuous career path (tenure track) and strengthen participation of highly qualified scientific staff. They enable to realise the respective measure stipulated in the Research, Technology and Innovation Strategy (*FTI-Strategie 2011*) as well as in the *BMWF*'s Action Plan for a Competitive Research Area (2015), increasing the attractiveness of Austria as a science and research location.

The career models implemented by the universities are competitive and performance-oriented. New provisions in the *UG* stipulate quality standards for the selection procedure to ensure the quality of tenure-track positions and career paths. The universities are requested to complete all tender and selection procedures for tenure track positions according to international standards, the challenge being to find a balance between a strategic in-house human resources development and a competitive international recruiting process.

For fostering young scientists, the universities have further developed their offerings and supporting measures during the last years. A focus was put on enhancing the quality of doctoral training, which many universities combined with an expansion towards structured doctoral programmes. The *BMWF* provided an additional incentive with its financial support of structured doctoral programmes by means of Higher Education Area Structural Funds (*HRSM*) applying strictly defined quality criteria.

The 2015 Action Plan for a Competitive Research Area addresses key areas of activity in the field of human resources at universities, in particular career prospects, tenure-track positions, and the high proportion of third-party funded employees and fixed-term contracts. The performance agreements 2016–2018 with the universities place a focus on personnel structure and staffing policy as issues of crucial importance. On the basis of an indicator-based analysis, university-specific targets in personnel structure to be reached by 2018 were agreed upon with the public universities. Measures on expanding highly qualified scientific personnel shall contribute in particular to improving student-teacher ratios and the quality of support. During the forthcoming performance agreement period, a main focus of steering will continue to be on human resources. At the end of the day, the success of the measures taken in the human resources area

as well as in the field of personnel development and fostering of young scientists will be visible and measurable by the performance of universities and their teaching and research.

#### **Legal framework**

Since the *UG* 2002 entered into force, the universities themselves are employers and thus entitled to the recruiting and employment of staff according to the Salaried Employees Act (*Angestelltengesetz*). The legal framework of applicable regulations is a heterogeneous one: On the one hand, there is the collective bargaining agreement applicable to the universities' employees (for those who entered into employment after 1 January 2004), and on the other hand, there is the civil service and salary legislation (*Dienst- und Besoldungsrecht*) (for civil servants as well as for government contractual employees transferred to university employment). To date, the staff of the Danube University Krems is not subject to any collective bargaining agreement. At the end of 2016, more than three quarters (77%) of the employment contracts were based on the collective bargaining agreement. Less than a quarter are employment contracts that have been in place before the collective bargaining agreement entered into force.

Since 2014, a series of amendments concerning regulations on university staff in the *UG* came into force, in particular, new regulations on career paths, on fixed-term contracts, on Corporate Collective Insurance (*betriebliche Kollektivversicherung*) and (paid) leave for teaching activities as a university professor. Concerning the collective bargaining agreement, three addenda were made with a view to salary agreements.

#### **Employees' council agreements according to the Hospital Working Hours Act**

Scientific and artistic university staff are subject to the provisions made in § 110 *UG* for the hours of work. Scientific staff which is subject to the Hospital Working Hours Act (*KA-AZG*) is excluded from these provisions. In accordance with EU legislation, the maximum hours of work specified in the *KA-AZG* were reduced as of 1 January 2015: The maximum weekly working time within a reference period of 17 weeks was reduced from 60 hours to 48 hours. The maximum permissible number of extended hours of duty was reduced from 32 to 25 hours. Provided that appropriate employees' council agreements (*Betriebsvereinbarungen*) have been concluded, the maximum weekly working time of 60 hours may be maintained during the

interim phase ending on 30 June 2021. As part of the implementation of the new arrangements for the hours of work of physicians, the medical universities of Vienna, Graz and Innsbruck concluded employees' council agreements, under which salary increases for university employees working as physicians were agreed upon. Within the framework of the "opt-out" permitted by EU law, § 110 *UG* now provides the legal basis for an average weekly working time of up to 60 hours to be determined under specific conditions for scientific staff which is subject to the *KA-AZG*.

#### **Reformation of career structures at universities**

Career-inhibiting structures might have a negative impact on Austria as a research and science location. Due to the provisions for the appointment of university professors in § 98 *UG*, young scientists had, until recently, no prospects of a continuous career up to a full professorship at their universities. The career path provided for in the Collective Bargaining Agreement ended at being permanently employed as "associate professor" pursuant to § 27 of the Collective Bargaining Agreement for University Staff (*KV*), without being a professorial member of the academic staff.

The 2015 *UG* amendment established new legal regulations for more continuous career paths. § 99 para. 4 *UG* now provides for the legal possibility to appoint "university docents" and associate professors as university professors in a simplified procedure, thereby opening a career path for those members of the non-professorial staff ("*Mittelbau*"), who, with the exception of an appointment according to § 98 *UG* or § 99 para. 1 *UG*, had no further career possibilities. In the case of appointment, the simplified appointment procedure leads to the conclusion of an employment contract with the university professor as laid down in § 25 *KV*. Many universities have already specified the terms for a simplified procedure in their statutes, while at the end of 2017 others are still engaged in the process of implementation and discussion.

With the introduction of new regulations in § 99 paras. 5 and 6 *UG*, the law now, for the first time, presents a form of a tenure-track model, and thus a continuous career perspective from selection process to professorial membership. According to § 99 para. 5, the offer of concluding a qualification agreement requires a selection procedure that conforms to international, competitive standards, in particular the international advertisement of the

post. Pursuant to § 99 para. 6 *UG*, those persons, who have successfully gone through the selection procedure pursuant to § 99 para. 5, who concluded a qualification agreement after 1 October 2016 and successfully met their qualification goals, shall be members of the professorial staff – without any further appointment procedure. According to organisational law, they are deemed to be university professors. Most universities have reacted positively to this model. In the large majority of cases, its implementation takes place by way of adapting current guidelines of the rectorate, to a lesser extent by way of adapting employees' council agreements.

#### **Staff and human resources development in the performance agreements**

The performance agreement period 2013–2015 was used by the universities to optimise the working conditions of their employees by way of implementing further measures for an enhanced work-life balance, for improved compatibility of career and family, as well as for occupational health care. Universities expanded offerings in the fields of human resources development and continuing education (leadership development, coaching, mentoring, development of skills for “internationalisation”). Target values agreed upon in performance agreements often related to an increase in professorships and permanent positions, also in the context of improving the student-teacher ratios.

For the performance agreement period 2016–2018, projects aiming at enhancing the work-life balance, especially for employees with care commitments, as well as projects to expand occupational health care schemes are of central importance. Another focus is laid on measures for a human resources development suiting the different target groups, and further training of the scientific, artistic and administrative staff (leadership development, training and continuing education in didactics, skills in entrepreneurship, language skills). Fostering young scientists remains a central area of activity (supporting their career development, coaching and mentoring, providing support by special services or by specific funding programmes, by mobility funding, grants or start-up financing).

During the performance agreement period of 2016–2018 the *BMWFV* clearly focuses on the universities' planning of personnel structures and has agreed on relevant projects or targets with all universities. The relevant topics for steering are derived from the higher ed-

ucation policy objectives, which have been defined in the ministry's impact-oriented budgeting objectives as well as in the RTI strategy and in the ministry's action plan for research. They cover issues such as gender balance, continuous career paths for young scientists (tenure track) as well as enhanced student-teacher ratios. The personnel structure targets are planned in dialogue with the universities concerned and are based on an “obligatory” set of indicators, which complements the performance agreements and consists of five indicators: proportion of women professors, proportion of women in tenure-track positions, percentage of professors and equivalents among the scientific staff, percentage of tenure-track positions, percentage of administrative staff. Moreover, further targets concerning the personnel structure were agreed upon with single universities, (e.g. targets for the ratio of third-party funded staff/staff funded from the global budget, or to the ratio of fixed-term contracts/permanent contracts).

#### **Quantitative development of university staff**

In the winter semester 2016 a total of 56,600 people were employed at public universities, that is an increase of about 2,600 employees (4.8%) over the reporting period, i.e. in comparison to winter semester 2013. 48% are women. The academic university staff saw a higher increase (5.1%) than the non-academic university staff (3.8%). The proportion of women in the academic staff rose from 39.5% (2013) to 40.5%. Owing to the considerable proportion of assignments that require less working hours than a full-time employment (e.g. lecturers, student staff), the number of persons (56,600 headcount) covers a staff capacity of only 35,700 full-time equivalents (FTE). This number has increased during the reporting period by 1,164 FTE (3.4%). The academic staff's capacities were increased more (690 FTE) compared to the non-academic staff (475 FTE). In both areas the rise is mainly due to an increase in the number of women.

Concerning the positions of university professors (§ 98 and § 99), since the winter semester 2013 the staff capacity has risen by 5.5% (124.4 FTE), whereas the number of people increased by 5.9% to 2,494. Professorships pursuant to § 99 have seen disproportionately large growth (+20.6%). The proportion of women in § 98 professorships (22.5%) is significantly below the proportion of women employed as professors under limited-term contracts pursuant to § 99 (31.6%). Raising the proportion of women as professors (§ 98 and



§ 99) is an objective in the impact-oriented budgeting of the ministry, aiming at providing equal opportunities, and also a key target for the relevant personnel structure indicators.

The age structure among the university professors has shifted further towards the younger age groups, due to the numerous new appointments since 2013 – 27% of the professors active at the end of 2016 were appointed during these three years. 53% of the overall 667 newly appointed professors come from abroad, mainly from EU member countries, among which 66% are from Germany.

The number of tenure-track positions, i.e. assistant professorships and associate professorships, has increased by 46% to 1,378 (626 assistant professorships and 752 associate professorships). Due to the 2017 amendment of the Education Documentation Regulation for Universities (*BidokVUni*), also persons who are employed in a position with the prospect of concluding a qualification agreement will be statistically identified in the future. The number of tenure-track positions has increased, whereas at the same time the number of (expiring) positions of “university docents” (*Universitätsdozentinnen und -dozenten*) has declined.

In the broad group of scientific and artistic adjunct personnel (university assistants, senior scientists/artists, senior lecturers etc.), the number of employees has risen by 6.2% (FTE +5.5%). The developments vary according to the employment: Whilst the number of scientific staff in expiring employments declined by 10%, the number of university assistants was increased by 7.3%, of senior lecturers by 22.8% and of senior scientists/artists even by 33.7%.

The number of lecturers (headcounts) has increased by 3.1% to 10,061, the personnel capacity having declined though, being at 1,390 FTE by the end of 2016. In the winter semester 2016, also 6,011 student staff members (+4%) were employed at the universities, covering personnel capacities of 1,173 FTE.

The staff funded by R&D-revenues pursuant to § 26 and § 27 *UG* has increased its numbers since 2013 by another 5% up to 11,600 persons. The group of the third-party funded scientific and artistic staff has risen by 6%, more than the scientific and artistic staff in total (+5%). The personnel capacity of third-party funded staff has grown by 1.2% to 7,729 FTE (2016). The importance of personnel capacity funded by R&D-revenues among the scientific staff is especially high at technical universities.

The majority of employment contracts at universities (63%) are concluded for a fixed pe-

riod of time, especially in scientific-artistic staff groups (78%). As a rule, employment contracts for training positions (e.g. positions for university assistants, physicians in training), are concluded for a fixed period of time, just as the employment contracts of student staff.

#### **Student-teacher ratio**

For the winter semester 2016, statistics showed an average 117.9 students in relation to one professor (2013: 121.0) and 20.6 students in relation to one full-time equivalent of teaching staff (2013: 20.8) at public universities. Both ratios have improved compared to 2013, owing to the increase in university staff.

If statistical calculations take into account only “students actively taking examinations” (i.e. students taking examinations amounting to at least 8 semester hours or 16 ECTS per year), there was an average of 13.3 students actively taking examinations per full-time equivalent of teaching staff in the academic year 2015/16, and an average of 76.0 students actively taking examinations per professorship. These student-teacher ratios have remained stable since 2012/13.

Another and more broadly defined ratio was developed in the context of the capacity-oriented, student-based funding model for universities, comparing the number of professors and equivalents to the number of students actively taking examinations, also on the level of fields of education. In the academic year 2015/16, there was an average of 42.5 students actively taking examinations in a bachelor, diploma or master degree programme per professorship or equivalent position; this ratio has also remained unchanged. The field of “social sciences, economics and law” continues to be the (ISCED-)field of education with the highest number of students per full-time equivalent.

#### **Fostering of young scientists**

Universities consider fostering young scientists a fundamental strategic objective and put increasing emphasis on it when developing their institutional profiles. The universities strive to offer attractive working conditions and career perspectives to young scientists, especially by way of tenure-track positions and qualification agreements. The universities have implemented career models with a focus on performance-orientation and competitiveness. Universities have defined the ratio and number of tenure-track positions in the context of the internal planning of personnel structures, the aim being an adequate proportion between tenure track positions allowing for professional

qualification on the one hand and flexible fixed-term positions for young scientists on the other hand. It is important to ensure that there are enough career opportunities for excellent young scientists as well as leaving room for "mobility" (by way of fixed-term positions) in view of intergenerational justice.

Universities offer a large number of supporting measures, ranging from continuing education, coaching and mentoring to doctoral scholarships or grants and the promotion of mobility, as well as start-up financing for junior researchers. Their offerings regarding human resources development, continuing education and development of skills for teaching and research are tailored to meet the needs of young scientists and junior researchers. Such training and further education programmes help to gain qualifications and key competences, which also will be of value in the case of inter-sectoral mobility or when switching to a non-university career. During the last years, universities in particular have expanded their support for acquiring entrepreneurial skills. Most of the universities offer training programmes on didactic methods for their junior scientific staff. In order to reduce the loss of qualified women over the course of academic careers, many universities especially support young female scientists in pursuing their careers. Universities use the revenues of third-party funded research projects to increase employment opportunities for doctoral students and post-docs at the university. By shaping the curriculum and the organisational design of doctoral studies and by fostering group-oriented doctoral training (doctoral programmes, doctoral schools, graduate schools, doctoral academies), the universities influence the quality of the training of junior researchers.

The universities' support measures are complemented by scholarship programmes and grants offered by the *BMWF* (grants for outgoing as well as incoming researchers), the Austrian Science Fund (*FWF*) and the Austrian Academy of Sciences (*ÖAW*), as well as by the mobility programmes within the framework of European funding programmes or international university networks.

On the basis of several different programmes, the **Austrian Science Fund** awards individual grants and special prizes and awards to junior researchers. Within its programmes for funding and promoting research, the *FWF* employs predoctoral and postdoctoral researchers, thus making a significant contribution to the fostering of young scientists and junior researchers. Working in *FWF* projects

offers the doctoral students an environment, which significantly supports the start of a successful scientific career. By 31 December 2016 a total of 1,759 predoctoral and 1,077 postdoctoral researchers funded by *FWF* were employed at the universities.

In 2016 a new supporting model, *doc.funds*, was developed to promote excellent structured doctoral programmes at Austrian research institutions entitled to award doctoral degrees. *Doc.funds* is based on a modified division of responsibility between the research institution and *FWF*: It is the research institution's task to design and take responsibility of the doctoral programme throughout its duration, while the *FWF* provides supplementary funding for ambitious and coherent research as well as quality assurance. In the autumn of 2016, the first call for applications for the new programme was started. The target group of *doc.funds* are outstanding doctoral programmes existing at least two years at research institutions that are entitled to award doctoral degrees.

The **Austrian Academy of Sciences** supports qualified young scientists by awarding fellowships for doctoral theses by the following programmes: *DOC*, *DOC-team* (for studies in arts and humanities as well as social sciences) and the *Post-Doc-Track* programme.

### Doctoral training

So far, it was only possible for PhD awarding doctoral programmes that the curriculum may prescribe qualitative requirements for the admission. With the 2017 *UG* amendment, these regulations were extended and now apply to all doctoral degree programmes.

Following an all-time high of 30,000 students in the winter semester 2009, the number of doctoral students has gradually gone down. The decline can be associated with the transition to three-year doctoral degree programmes. This trend has continued during the reporting period. In the winter semester 2016 25,503 students (among them 46% women) were enrolled in a doctoral degree programme, 8% less than in the winter semester 2013.

According to the 2015 Social Survey of Students (*Studierenden-Sozialerhebung 2015*), 83% of the doctoral students in Austria are working. 30% of the doctoral students write their thesis in the context of their work, 6% are employed solely for the purpose of writing a thesis. In general, employment contracts for doctoral students are seen as an important pillar of doctoral training. The institutional involvement and networking opportunities associated with employment are considered a qual-

ity factor and beneficial for the advancement of the career. Thus, structured doctoral programmes, which allow for a temporary employment at the university, are regarded to be of great value. According to the intellectual capital reports, in 2016 a total of 7,926 doctoral students had an employment contract with the university, that is 6% more than in 2013. 47% were employed as third-party funded project staff.

Since the transition from two- to three-year doctoral degree programmes, the *BMWF* has aimed at a further qualitative development which is geared towards quality criteria of structured doctoral programmes – e.g. integration into the universities' research activities, active mentoring and adequate supervision, doctoral thesis agreement, independent research of high quality, adequate organisational structures. The "Recommendations of the Higher Education Conference on the further qualitative development of doctoral training in Austria" (*Empfehlungen der Hochschulkonferenz zur qualitativen Weiterentwicklung der Doktoratsausbildung in Österreich*) and the "Universities Austria Position Paper on Doctoral Studies" (*Positionspapier der Österreichischen Universitätenkonferenz zum Doktorat*) published in 2015, were important impulses.

During the reporting period the *BMWF* has promoted the further development in accordance with these recommendations to provide targeted support for structured doctoral programmes. On the one hand, when concluding the performance agreements 2016–2018 with the universities, a focus was put on a qualitative development towards structured doctoral programmes. On the other hand, Higher Education Area Structural Funds amounting to €30 million were provided for the period 2016–2018 to stimulate structured doctoral programmes. The funds are allocated on the basis of the indicator "doctoral students in structured doctoral programmes employed for at least 30 weekly hours".

For the future, it is planned to promote a stronger cooperation with universities of applied sciences, the universities keeping the right to award the doctoral degrees, whereas both institutions may be jointly responsible for the supervision of the students.

#### **Postdocs in academic careers**

Neither the *UG* 2002 nor the collective bargaining agreement provides for legal regulations especially for postdoctoral employees at universities. The denomination "postdoc" describes scientific-artistic employees who have

completed their doctoral training and are employed in various staff categories or job groups.

By the end of 2016 6,193 postdocs were employed at Austrian universities, that is 13.7% more than in 2013. The number of postdocs has grown more than the overall scientific or academic staff. 59% of all postdocs were funded by global budget funds, 41% by third-party funds. The proportion of postdocs has increased in all relevant staff categories and at present represents one third of all relevant employment contracts. The highest proportions are found among the staff categories "assistant professors" (77%) and "senior scientists/artists" (66%). Among university assistants and senior lecturers, nearly one third are post-docs; among third-party funded employees it is 28%.

The 39% foreign post-docs come from 88 countries, Germany being the dominating country of origin. 34.4% of the postdocs with a foreign citizenship are from Germany. Foreign postdocs are mainly employed as third-party funded project staff (60%).

The majority of employment contracts at postdoc level (67.5%) are concluded for a fixed period of time, especially because fixed-term employment is the rule in the dominating staff categories (university assistants, third-party funded project staff). The data indicates that in certain job groups, a postdoc position increases the chances for permanent employment.

48% of the postdocs employed in the winter semester 2010 for a fixed period of time have left the university by 2016, and also 18% of the post-docs with permanent contracts have left. Third-party funded postdoc employment does not necessarily end with the postdoc leaving the university sector: 17% of the third-party funded postdocs of the winter semester 2010 were employed by a university on a permanent basis in 2016. However, employment as a member of the (global-budget funded) academic staff will promote a postdoc's career path far more.

By defining prerequisites for offering a qualification agreement and by establishing qualification targets to be achieved, the universities determine the criteria for an academic career at their institution. The guidelines for qualification agreements that were in force in 2017 demonstrate that, as a rule, the completion of a doctoral or PhD degree programme is an explicit prerequisite for the conclusion of a qualification agreement. Further prerequisites are teaching experience, relevant scientific publications as well as – depending on the university – experience in research cooperation, acqui-

sition of third-party funds or (international) working experience.

The qualification agreements' aim is always to develop an individual research and teaching profile. Ten universities (according to their employees' council agreements or guidelines) explicitly request habilitation as a target of qualification. The other universities have mostly defined target criteria similar to achieving habilitation. They often demand qualification goals, such as involvement in management and administration, further and continuing education, research stays abroad or proven external experience, as well as acquisition of third-party funds and development of a research group. At universities of arts, qualification agreements have so far been of minor significance, since universities of arts predominantly appoint international artists and persons with external artistic experience.

Tenure-track positions are a "classical" instrument for promoting a university career. Due to the growing number of postdocs, however, the universities are experiencing an increasingly critical bottleneck. A sufficient number of attractive postdoc positions is seen as an important measure to counteract this development and thus, the *BMWF* put a focus on this issue for the performance agreement period 2016–2018.

#### 4 Research at universities

The more a country's economy is operating at the boundaries of technology, the more significant basic research will be for its innovation system. Austria is well on its way to become one of the leading knowledge economies, the principal actors in the field of basic research being the universities, which play a key role in two respects: Firstly, guided by the paradigm of research-based teaching, they train young scientists and provide highly qualified staff for the different areas of the country's innovation system. Secondly, they generate scientific findings, which as a public good are taken up by companies, further developed to new products, and commercially exploited. Both factors – access to highly qualified research staff as well as to scientific knowledge and new developments in research – are especially important criteria for location decisions of R&D-intensive companies.

Universities are competing against each other – at a national and international level – for students, researchers, reputation, and visibility. This competition is based, not least, on their performance in research, especially on

outstanding performance in basic research. In spite of a tight federal budget, it was possible to further increase the universities' basic budget, thus ensuring basic funding for university research. Furthermore, competitive funding by way of research funding programmes was enhanced, especially by funding programmes aiming at cooperations between universities, other research institutions and companies. The increase in third-party revenues demonstrates that universities are effectively participating. Having established targeted supporting structures, the universities also successfully raise EU funds, especially within the scope of the Horizon 2020 programme.

At the same time, the public funds for research infrastructures were increased, the universities getting targeted support for major research infrastructural projects. The research infrastructure database of the *BMWF* was enhanced and opened for non-university collaborations. All of these measures aim to improve the research performance of Austrian universities.

In recent years, competition and societal challenges have contributed to universities generally opening up. Open Access was strongly encouraged and promoted by various initiatives. Especially in research, collaborations have become indispensable with regard to knowledge transfer, at an international as well as at a national and regional level. That is why, for the past two performance agreement periods, the *BMWF* has put an emphasis on improving the universities' profiles based on their strengths in research. The aim is to "build on one's strengths", in order to achieve or expand critical mass in selected fields of research, thus further enhancing the performance in research and the visibility of institutions and excellent researchers. In some fields, for example in quantum physics, Austria has already systematically achieved excellence; international visibility and scientific reputation obtained give evidence of the success. The aim now must be that universities achieve similar success in other research fields as well, by exploiting the potentials of digitalisation and in order to meet the Grand Challenges of our society effectively.

#### Research staff in Austria

According to the R&D survey, there were 41,960 persons equalling 15,226 FTE engaged in research and development at public universities – that is an increase by 6% in persons and 4% in FTE as compared to 2013, the majority being part of the scientific staff. Depending on their employment contract and their scope of duties,



the different groups of the scientific staff dedicate a different amount of their working time to tasks in R&D, e.g. professors about 53%.

### Research funding at universities

Public funds (89.4% of the total research expenditures at universities in Austria) continue to play the most important role in funding research at Austrian universities, especially federal government funding. In 2015, the R&D expenditures funded by the federal government totalled €1.62 billion (75.2%). 4.8% (€104 million) was funded by the business enterprise sector, 0.7% by the private non-profit sector, 3.3% (€71 million) by the EU, and 1.8% came from other sources abroad. Amongst public funding sources, the funding resources from the Austrian Science Fund (*FWF*) and the Austrian Research Promotion Agency (*FFG*), which represent a total share of 12.5%, are of significant importance.

In line with the system, most of the funds for basic research go to the universities. In 2015, these funds amounted to €1.16 billion (incl. university clinics) – thus, 63% of all basic research in Austria is carried out at the universities. Austrian universities also have a strong presence in the field of applied research. In 2015 €787.9 million in research funds were spent for applied research at universities, that is 21.7% of the overall funds for applied research in Austria. Research of this kind is carried out in particular in collaboration with the industry and in technical fields, while basic research is essential especially for resource-intensive sciences like natural sciences, human medicine and health sciences, as well as for humanities and social sciences.

At universities, third-party funded research plays an increasingly important role. Competition for research funding has intensified, the effort in the acquisition process for third-party funds has increased. The third-party revenues of the universities from R&D projects have risen once again during the 2014–2016 period and have reached their peak of €670 million in 2016. Accordingly, annual third-party revenues have risen by an average of 3.9% since 2013, also because performance in third-party funding is a fixed issue in performance agreements. The origins of university third-party funds for research are heterogeneous. Within the period 2014–2016 companies were the key providers of funds for third-party funded research projects, with an accumulated total of €482.6 million, thus funding 24.6% of the universities' research revenues. The main sources of public third-party funding were the *FWF* (€477.4 mil-

lion, 24.3% of all funds), the EU (12.7%) and the *FFG* (9.7%). From 2014 to 2016, the *FWF*'s share has slightly declined in nominal terms, while EU funds have slightly increased, and *FFG* funds even strongly increased. These four sources cover nearly three quarters of the overall third-party research revenues of the universities.

The *FWF* is especially important for funding basic research. In the period 2014–2016 86.6% of the newly approved *FWF* grants (€491.6 million) were distributed to universities. The total amount of funds granted to each university varied, depending on the size and specialisation of the universities. Technical and medical universities have proven to be particularly successful in gaining high sums. Furthermore, the Programme for Arts-based Research (*PEEK*) has been successfully evolving: From 2014–2016, a total of €9.5 million in *FWF* funds was granted to universities of arts. In general, a majority of the *FWF* funds is invested in projects to finance the scientific staff. In 2015 the *FWF* funded a total of 3,989 persons, nearly half (49.6%) of which were predoctoral researchers.

Grants from the *FFG* are of growing importance for funding research, especially in the context of knowledge and technology transfer. Within the period of 2014–2016, grants amounting to a total of €179.1 million went from the *FFG* to public universities – an increase of 40% as compared with the 2011–2013 period. The shares of the single universities differ according to their research orientation and their focus on applied research.

### Research infrastructure

Well-developed research infrastructures establish the main basis for excellent research. The RTI strategy and the Austrian National Research Infrastructure Action Plan (*Forschungsinfrastruktur-Aktionsplan*) 2014–2020 make provisions for a harmonised and coordinated further development of research infrastructures at universities. On the basis of the 2015 Action Plan for a Competitive Research Area (*Aktionsplan für einen wettbewerbsfähigen Forschungsraum*), research infrastructure cooperations with research institutions in the business and industry sector were strengthened. In establishing a publicly accessible research infrastructure database, the *BMWF* has implemented a fundamental measure to enhance research infrastructure. The research infrastructure projects agreed upon in the performance agreements promote further development. Furthermore, in 2016, 43 cooperation

projects to improve R&D infrastructure facilities at universities were subsidised by Higher Education Area Structural Funds (*HRSM*).

Austria's participation in international infrastructures, especially within the scope of the ESFRI-Roadmap, is very important for developing the national academic profile as well as for Austria's international competitiveness. Austria is currently participating in eleven ESFRI projects.

#### **Research in the performance agreements**

Already in the performance agreement period 2013–2015 the universities have started to focus on key research areas in order to promote their academic profile and to enhance their competitiveness. This will be continued in the period 2016–2018.

In the performance agreements of 2016–2018 all universities have defined research priorities, which become visible in their research performance as well as in the quality of researchers. Thereby, achievements in basic research as well as in knowledge and technology transfer are becoming increasingly important.

#### **Research achievements**

Universities use various ways to record, to communicate and to measure research achievements and research results, which also differ according to the discipline. During the last few years, publishing research findings in "peer reviewed" journals has gained considerable significance. In 2016 the publications in SCI, SSCI and A&HCI journals, amounting to 14,416 first publications (plus 14% compared to 2013), were among the most important types of publications, as well as publications in edited volumes (totalling 13,136 first publications). Especially in human medicine and natural sciences as well as in technical sciences, publications in peer reviewed journals are of great relevance, whereas in the social sciences and humanities also edited volumes and other scientific journals play an important role. In addition to publishing, there are also other dimensions used for recording and measuring research output and its exploitation, such as scientific lectures and presentations, patent applications, external research funds raised, academic spin-offs, the number of collaboration projects with companies and the integration into research networks.

#### **Open Access to research findings**

An open access to research findings and their database is the foundation for a broad use of knowledge and scientific findings by research-

ers as well as by the general public. The universities have recognised that access to research results and data offers the opportunity to make their research achievements more visible. Austria has made good progress in the fields of Open Science and Open Access. The Austrian copyright law was amended in 2015. The Open Access Network Austria (OANA) with its 60 members (universities, universities of applied sciences, *FWF* and research institutions) has developed recommendations in order to implement an Open Access publishing model for preferably all the publications until 2025. Since 2008, the *FWF* has been practicing an Open Access policy which provides free access to *FWF* funded publications and which promotes Open Access infrastructures, alternative Open Access models as well as Open Access journals. Open Access has also been an issue in the performance agreements. 14 universities have already established an institutional Open Access policy; there are currently 18 institutional repositories operated by Austrian universities. The "Austrian Academic Library Consortium" (*KEMÖ*) consists of 58 scientific libraries in Austria. Its purpose is the coordinated acquisition and management of electronic resources and the negotiation of price offsetting and Read & Publish agreements beneficial for the price formation. By Higher Education Area Structural Funds, the *BMWF* also promotes the setup of e-infrastructures necessary for Open Access and the transformation of all scientific publication activities to Open Access.

#### **Cooperation in research**

Over the past years, the cooperation culture has intensified significantly, in particular in the field of research. Owing to their collaborations, Austrian universities have been able to form strategically important and internationally visible alliances to conduct top-quality research. Also the non-university research institutions are strong cooperation partners, which strengthen the alliances with collaborations exceeding research, such as Double Appointments in teaching. Many of these collaborations have already been evolving successfully, documented by excellent research achievements, for instance the award of an ERC grant or a Wittgenstein-Award. It is the aim to further reinforce the networking of research activities, in order to better being able to respond to the Grand Challenges in society via networks and cooperation.

## 5 Studies, teaching and further education

Quality research-oriented teaching aims at training students to become independent graduates with a high level of expertise and social skill, who think in a critical and interdisciplinary way. A modern and innovative university education takes into consideration the students' needs and the demands of science, society and economy. Providing high-quality teaching in spite of high student numbers, promoting inter- and transdisciplinarity – which is vital for solving key social problems – in study programmes, and offering adequate training in continuing education to promote “lifelong learning”, those are the main challenges the universities are facing today.

During the last years, the universities strived to appropriately develop their degree programmes as well as their programmes in continuing education and to meet the high quality standards, which accompanied the change from teacher-centred learning to student-centred learning. The universities increasingly use teaching and learning methods, which promote the students' independence and include innovative formats. Universities consider digital technologies to be a key issue for the further development of teaching and learning and as a basis for modern innovative education. During the last years, universities have extended their use of digital technologies in teaching and taken accompanying measures to foster teacher competence. The use of digital technologies in teaching has become commonplace, and it is hardly possible to imagine teaching without e-technologies. Over the next few years, universities will have to embed further developments in this field in an overall strategy of the university on the use of digital technologies.

Since 2014, there were a number of amendments to the Universities Act 2002 (*UG*), dealing with fundamental developments in the fields of studying, teaching and continuing education. The amendment of the *UG* by F. L. G. I No 21/2015 (“2015 minor amendment”) incorporated provisions for teacher training programmes offered as joint programmes of universities and university colleges of teacher education. The next step, the 2017 *UG* amendment on “joint study law” (as amended by F. L. G. I No 129/2017), harmonised the provisions of study law according to the Universities Act 2002 and to the Teacher Education Act 2005 (*Hochschulgesetz*) completely. This allows for a high quality scientific as well as practically ori-

ented training of future teachers in close cooperation between universities and university colleges of teacher education. Furthermore, this amendment enables equal participation of universities of applied sciences and private universities in joint study programmes. These new regulations set the course for future cross-sectoral collaborations and innovative further developments in the field of studies, which were subject and result of the “Shaping HEIs for the Future” project.

The “2015 major amendment” (*UG* as amended by F. L. G. I No 131/2015) reflects the outcome of the mandatory evaluations of the studies with admission regulations and of the orientation period (*StEOP*) carried out in 2015. These legal measures are intended to make a contribution to increase the proportion of students graduating. The adapted regulations regarding the *StEOP* aim at ensuring a successful start of university studies by providing the students with an overview of the most important contents, giving them a realistic picture of the degree programme and its requirements on the one hand, and clarifying and establishing a mutual obligation between student and university on the other hand. The positive evaluation of the admission regulations was the prerequisite and basis for its legal prolongation until 2021. An accompanying monitoring is important in order to guarantee transparency and assess the effectiveness and necessary amendments, also in view of a new evaluation in 2020. Moreover, the continuation of the admission regulations forms part of a forthcoming capacity-oriented, student-based funding of universities, the implementation of which must be accompanied by adequate possibilities to control the access according to the capacities.

Students are not only consumers of higher education, but they actively participate in shaping higher education. A number of universities already builds on the participation of their students in the further development of teaching and study programmes and encourages the self-responsibility of students. A survey carried out on behalf of the Council for Research and Technology Development (*Rat für Forschung und Technologieentwicklung*) and based on the contributions of students and graduates, points out the students' high expectations of future higher education (Winnovation Consulting 2017). The results show that students have high expectations regarding the further development of teaching in an increasingly digitised environment, the promotion of their individual development and their being prepared for working life – thus pointing out

the areas the universities will have to focus on over the next few years.

#### **Degree programmes offered at universities**

In the winter semester 2017 a total of 1,109 degree programmes were offered at universities. Bachelor and master degree programmes account for 86% in the range of studies, 10% are doctoral degree programmes, only 4% diploma degree programmes.

Since the winter semester 2016, teacher training programmes are only offered as bachelor and master degree programmes. Nearly all teacher training programmes have been designed as joint programmes by universities and university colleges of teacher education in four regional clusters.

The bachelor degree programme in human medicine established at the University of Linz in 2014 was implemented corresponding to the development roadmap (*Aufbauplan*). In the academic year 2016/17 there were study places for 120 new students. The preclinical training is carried out in cooperation with the Medical University of Graz. Preclinical training in Linz will start in the academic year 2018/19. The master degree programme in human medicine started with the academic year 2017/18.

The universities continuously adapt their range of degree programmes offered. Between 2015 and 2017, in addition to the new teacher training programmes 17 new bachelor degree programmes, 60 new master degree programmes and 11 new doctoral degree programmes augmented the range of programmes offered. The focus was in particular on expanding non-consecutive master degree programmes. Among the new degree programmes, there is a growing number of interdisciplinary studies. To comply with the Islam law 2015, the University of Vienna established a bachelor degree programme "Islamic Theology".

In order to internationalise their studies and enhance the general and subject-specific language competences, the universities are further expanding the range of courses and degree programmes offered in English, focusing on master and PhD programmes. In 2016, the universities offered 166 degree programmes in English, most of them master degree programmes (119) and doctoral or PhD programmes (44). English degree programmes thus represent 15% of the universities range of studies.

According to the intellectual capital reports 2016, five universities (The Universities of Vienna, Innsbruck, Linz, Klagenfurt and the Vienna University of Economics and Business Ad-

ministration) offered part-time study programmes among their degree programmes. Also the majority of the certificate university programmes for further education offered at the universities are part-time. Especially in master degree programmes, universities are increasingly taking into account the needs of working students.

Collaborations of universities in the field of teaching, such as "NAWI Graz", allow for organisational and subject-related synergy effects by way of joint degree programmes or harmonised course offerings. In 2016 16 universities offered cooperative degree programmes; 89 degree programmes were national study cooperations (the majority cooperating with another Austrian university or with university colleges of teacher education), and 88 degree programmes were joint, double and multiple degree programmes offered as international collaborations.

#### **Implementing the new teacher training**

Starting in the academic year of 2016/17, the new joint teacher training programmes for secondary schools (general education) are offered in all four regional clusters ("*Verbundregionen*"). Teacher training programmes are offered for more than 35 subjects. Students are required to complete a multi-stage admission procedure, which includes a self-assessment and a test to demonstrate their aptitude for teaching. In 2016/17 a joint admission procedure was conducted in three regional clusters (Southeast, Central, West), its development having been funded by Higher Education Area Structural Funds (*HRSM*). The regional cluster Northeast carried out its own procedure.

The implementation of the new teacher training made it necessary to clarify and harmonise the provisions of study law in the Universities Act 2002 (*UG*) and the Teacher Education Act 2005 (*Hochschulgesetz*). The universities, university colleges of teacher education and the Austrian National Union of Students (*ÖH*) were involved in the drafting of the new study law, which was adopted by the National Council in June 2017. According to new regulations, joint study programmes may be offered at all Austrian post-secondary educational institutions on the basis of a curriculum to be enacted identically by the participating educational institutions, thus also allowing for the participation of universities of applied sciences and private universities.

In 2016 the Federal Ministry of Science, Research and Economy (*BMWFW*) provided *HRSM* funds for structural and quality enhancing



measures in teacher training. The funding of additional scientific staff up to 82 FTE aims at enhancing subject didactics (especially in the MINT subjects as well as in German and English), focusing on fostering young scientists. Other cooperation projects funded by *HRSM* concern the further development of admission procedures for teacher training programmes, which are carried out at 20 universities and university colleges of teacher education, as well as a teacher training programme for “lateral entrants” in the field of musical education.

To ensure the scientific character as well as the practical orientation of the new teacher training programmes, the Quality Assurance Council of Teacher Education (*QSR*) recommended in 2014 establishing “working units” (*Arbeitseinheiten*) which include scientific staff as well as persons with practical experience. The universities and university colleges of teacher education are currently implementing these working units, which are staffed with personnel funded by *HRSM*, the Federal Ministry of Education (*BMB*) being accountable for new professorships at university colleges of teacher education. The *QSR* supports the establishment of the working units on a consultative basis.

### Digital media in teaching

Media-supported teaching and digital media in communication and knowledge transfer are becoming increasingly common at universities. Learning platforms are used for communication purposes and the administration of studies and provide learning materials as well as tools for collaborative tasks online. During the last years, universities have extended the use of digital technologies in teaching and implemented accompanying measures to develop teaching competence. Especially when dealing with high numbers of students or a heterogeneous student body, digitalisation plays an important role in the field of teaching and learning. At 16 universities there are special service centres for media-supported teaching available for university teaching staff.

A large majority of universities have included e-learning activities in their performance agreements for 2016–2018: further developments (e.g. of existing learning platforms or learning environments), plans to expand the IT infrastructure in connection with technology-based teaching and learning, as well as new projects for the organisation of teaching and learning. Increasing e-learning in order to make teaching more flexible is an often discussed issue as regards students with special needs or working students.

Open Educational Resources (OER) are teaching and learning materials, which are made freely accessible for others to use. In cooperation with partner institutions, the association “Austria Forum New Media in Teaching” (*Forum neue Medien in der Lehre Austria*) has developed recommendations on the integration of OER at higher education institutions in Austria in 2016 and in this context has also drawn up a concept for OER certification at Austrian higher education institutions.

The *BMWF* supports cooperation projects in the field of digital media in teaching by *HRSM* funds, i.a. the project “Open Education Austria”, which is also building up infrastructure.

The use of digital technologies in teaching has become commonplace, and it is hardly possible to imagine teaching without technologies. Over the next few years, it will be the universities’ responsibility to further develop digitisation in this field based on an overall strategy on the use of digital technologies.

### Quality of teaching

Over the past years, “quality of teaching” has become an important issue in the political discourse in higher education, also gaining importance as a field of action for universities. The Austrian Higher Education Conference (*Österreichische Hochschulkonferenz*) has published recommendations in 2015 on the enhancement of the quality of teaching in higher education.

In the performance agreements 2016–2018 the universities have taken due account of initiatives and measures for strengthening and enhancing the quality of teaching. The universities are implementing measures concerning the design of studies, organisation of teaching and learning, and for enhancing teaching competences (e.g. teaching competence programmes, courses for basic qualification or further training in teaching, specific courses for e-didactics and the use of digital media in teaching).

Adequate student-teacher ratios are a key aspect of the quality of teaching. The *BMWF* has supported the improvement of student-teacher ratios in very popular fields of education by way of a “quality package teaching” specified in the performance agreements 2013–2015, which provides for 95 additional positions for highly qualified scientific staff. These positions were filled within the performance agreement period. The funding of these positions will be continued in the performance agreement period 2016–2018.

With the aim of encouraging an intensified dialogue on teaching issues, the website “*Atlas*

*der guten Lehre*“ (an online reference of examples of good teaching practice) and a series of events “Dialogue on teaching in higher education” were launched. The series of events comprises four events in 2017 and 2018, which are organised by the *BMFWF* in cooperation with the Austrian agency for international mobility and cooperation in education, science and research (*OeAD*). The importance of good teaching is also demonstrated by honours and prizes awarded to teachers by the universities and by the *BMFWF* “*Ars docendi*” award.

### **Teaching and studies in the performance agreements**

In the performance agreement period 2013–2015 the universities have implemented measures and carried out projects, which focused mainly on enhancing the quality of teaching and increasing the “studyability” of degree programmes. Universities have further developed their range of studies in a needs-based manner and successfully realised their projects for introducing new degree programmes or adapting existing ones. Further fields, in which the universities successfully implemented their plans, were the training and further education of teachers in teaching methods, an expanded use of new media in teaching and the implementation of the new teacher training.

The further enhancement of the quality of teaching will remain a central concern of the universities throughout the performance agreement period 2016–2018. Since the implementation of the Bologna structure of degree programmes has largely been completed, the focus now lies on the enhancement of quality. With regard to their portfolio of studies, the universities have planned for the period of 2016–2018 to introduce new study programmes or discontinue or adapt existing degree programmes, among which some shall be further developed towards interdisciplinary programmes and joint or double degree programmes. The implementation of the new teacher training and the joint teacher training programmes with university colleges of teacher education plays a major role at all universities involved. Projects on the use of digital media and the development of new teaching and learning methods, as well as digitised courses are of central importance at most of the universities. Many universities are further expanding their didactic training courses for teachers, some of them with additional measures including coaching or peer teaching, most of them with a focus on teaching technologies and media didactics, and also on didactics of

examining. Specific projects aim at making the significance of teaching competence more visible, and at raising the status of teaching. Another focus is put on projects with the aim of providing information for potential students and on projects to improve the provided information and counselling services. In order to provide orientation to potential students prior to the beginning of their studies, online self-assessments are being designed and further expanded, which shall support their choice of studies.

With regard to the international orientation of studies, the projects of universities focus on strategic objectives such as integrating mobility windows into the curricula, introducing degree programmes offered in English and increasing the number of courses offered in English.

### **Evaluation of the admission regulations**

The admission regulations pursuant to § 124b *UG* (relating to degree programmes subject to the German *numerus clausus*), pursuant to § 14h *UG* (in very popular degree programmes) as well as the qualitative admission requirements for the admission to master and PhD programmes (§ 64 para. 4 and 5 *UG*) were limited until the end of 2015 and 2016 and, by law, had to be evaluated.

The evaluation of the degree programmes with admission regulations according to § 124b *UG* (human medicine, dental medicine, other medical studies, veterinary studies, psychology, the bachelor degree programmes of journalism and communication studies ruled by decree in § 124b para. 6) came to the result that the admission regulations run smoothly and have been successively enhanced. They were found to have a positive effect on the study progress, the students’ satisfaction with their studies, and the proportion of those graduating. In human medicine the retention quota after two semesters went up to 97%, also the number of students who actively take examinations increased. The proportion of students completing their studies within the standard period of study rose significantly at all medical universities, the average duration of study was reduced by about two semesters.

The evaluation of the admission regulations pursuant to § 14h *UG* included an analysis of applicants and enrolled students according to their social and cultural background. Following the implementation of these admission regulations, the number of students beginning their studies declined significantly by 31%. Within the first year of the implementation, the num-

ber of registrations did not exceed the sum total of study places at nearly all locations (with the exception of pharmacology); in the case of admission tests, less applicants than the number of study places available took a test. In the second year after the implementation, the number of new students increased by 13% as compared to the previous year. The evaluation found that these developments were a reaction on the implementation of application procedures in general, leading to increased reflection and commitment – and subsequently self-selection – in the choice of studies, but also to a diversion of the demand towards studies without admission regulations (“*Ausweichstudien*”). The composition of applicants and enrolled students in terms of social and cultural background has shown little change. Therefore, the evaluation suggested a continuation of the admission regulations for another limited period of time and further monitoring over a longer observation period.

#### Legislative amendments

According to the 2015 amendment of the *UG*, F. L. G. I No 131/2015, the admission regulations pursuant to § 124b and § 14h *UG* will be continued in a slightly modified form until 2021, and the ramifications shall be newly evaluated by 2020. The §§ 71a to e comprise all admission regulations in one chapter (Chapter 3a), thus continuing them for the fixed period of time.

§ 71c *UG* represents the follow-up provision for § 14h *UG*, also containing the degree programmes “journalism” and “communication studies” by now. In § 71d *UG* the former regulations of § 124b *UG* have been adopted, with a reference to the “supplementary provisions relating to admission to degree programmes subject to German *numerus clausus*”.

§ 71e *UG* regulated the admission to master and PhD degree programmes. In the 2017 *UG* amendment these provisions were included under § 63a *UG*, which now provides for the possibility of admission restrictions for all doctoral degree programmes and not, as hitherto, solely for PhD degree programmes.

#### Quota regulation in human and dental medicine

Since 2006 an infringement procedure of the European Commission was pending against Austria regarding the so-called “safeguard clause” for its medical studies (quota regulation, 75% of the study places being reserved for applicants with a higher education entrance qualification acquired in Austria). On 17 Mai 2017 the European Commission announced

that they would lift the EU moratorium and close the pending infringement procedure against Austria. Due to this decision of the European Commission, the quota regulation for human medicine will be maintained.

#### Quantitative developments in studies with admission regulations

In the winter semester 2016 new entrants enrolled for nearly 53,000 studies at public universities. 39% thereof had in place some form of admission regulation (degree programmes according to § 71d and § 71c *UG*, provided that the universities had made use of the admission regulations; studies in the fields of teaching, arts and sports requiring an aptitude test). 35.5% of all studies that were begun in the winter semester 2014 had in place admission regulations. This proportion has increased during the reporting period to 39%, since some more universities started admission procedures according to § 71c or § 14h *UG* for some degree programmes.

**Degree programmes with admission regulations according to § 124b or § 71d *UG*:** In human and dental medicine the number of applications and participants in the admission tests has increased successively since 2014, while in veterinary medicine the demand remained at about the same level. In psychology the number of test participants has stagnated at a high level (around 4,500 participants for 1,245 study places). The admission regulations are selective and result in an admission rate of less than 20% in human medicine and around 25% to 30% in the other studies. The proportion of German new entrants is very high compared to other fields of education.

**Degree programmes with admission regulations according to § 14h or § 71c *UG*:** In the winter semester 2016, or in the academic year 2016/17, respectively, it was possible to put into place admission regulations for 47 studies (incl. journalism) – 10 universities in 34 studies (incl. journalism) made use of admission procedures. The University of Natural Resources and Applied Life Sciences Vienna and the Vienna University of Technology introduced admission procedures for some studies in the winter semester 2016 (Food Science and Biotechnology, Informatics). In pharmacology, journalism, and in economic studies (excl. one location) there are admission procedures for all degree programmes. In informatics, the University of Innsbruck introduced admission procedures in the winter semester 2014, the University of Vienna and the Vienna University of Technology in the winter semester 2016.

In 2016/17 the “utilisation rate”, i.e. the share of new entrants compared to the number of study places, was around 79% in pharmacology, and at 62% in the field of education “management and administration, business and administration, economic sciences”; in informatics, it was at 89% at locations having admission regulations in place, and at 87% in total.

In the field of education “architecture and town planning” admission regulations according to § 14h or § 71c were introduced at the Graz University of Technology and the University of Innsbruck. While the utilisation rate stands at 54% in the locations that have admission regulations in place, it amounts to nearly 90% in total. These numbers indicate the reluctance of new entrants to take part in an admission procedure.

In the field of education “biology and biochemistry” admission was regulated from the start. At the beginning there were admission procedures in place at about two thirds of the locations, meanwhile nearly all locations have activated some kind of admission regulation. In the academic year 2016/17 only 79% of the study places available had been occupied, in “journalism and communication studies” about 74%.

Following the introduction of admission regulations, the number of new entrants in degree programmes pursuant to § 14h or § 71c had initially dropped, then increased until the winter semester 2015 by annually 11%, and most recently – between the winter semester 2015 and the winter semester 2016 – declined again by 6.7%. This means that the number of study places offered is not fully exploited in any of the relevant fields of education (best in the academic year 2016/17 in informatics with 87% and in pharmacology with around 79%, in economics, however, amounting to only 62%, in biology to 79%).

### **Orientation phase**

The statutory provisions regulating the orientation phase (*StEOP*) were introduced for a limited period, until 31 December 2015. An evaluation of the regulations had to be submitted by the end of 2015. The report on the results of the evaluation was submitted to the responsible committee of the National Council in June 2015. The evaluation has also taken into consideration recommendations of the Court of Audit, following an examination of the implementation of the *StEOP* at different universities. The amendment of the *UG* (F. L. G. I No. 131/2015) has taken into account most of the

evaluation results, which was acknowledged by the Court of Audit.

The revised provisions stipulate that the *StEOP* is to be implemented in all degree programmes with the exception of degree programmes at the universities of the arts (in studies according to § 71d UG an orientation period can be omitted if the rectorate decides so by decree – all universities concerned have done so). By taking up the respective proposal of the evaluation, a minimum and maximum scope of ECTS credit points for the *StEOP* was defined. Pursuant to the new provision, it therefore shall amount to a total of at least 8 and no more than 20 ECTS credit points.

Another recommendation of the evaluation was to clarify whether it is possible to take more advanced courses prior to the successful completion of the *StEOP*. Pursuant to the new provision, the curriculum may permit to take such courses up to 22 ECTS credit points. It was also decided that for the *StEOP* examinations the same regulations as for other examinations shall apply regarding the number of repetitions of an examination.

The universities were given time until 30 June 2017 for including the new regulations in the curricula. The implementation and the discipline-specific adaptation of the *StEOP* at each university was subject of the meetings with the universities accompanying the implementation of the performance agreements (“*Begleitgespräche*”) in the autumn of 2017.

### **Continuing education at universities**

Since 2014, the universities’ range of programmes and courses in the field of continuing education was further expanded. Quality assurance is ensured because continuing education activities of universities are included in the audits which are obligatory for all universities according to the Act on Quality Assurance in Higher Education (*HS-QSG*). Furthermore, a great number of accreditations of certificate university programmes for further education for which a master’s degree is awarded, were carried out on a voluntary basis, the focus being on MBA programmes.

The continuing education programmes offered by universities take into account the different needs of their target groups as well as the economic demand. The interest in certificate university programmes has further increased; in the winter semester 2016 more than 20,000 students took advantage of these offerings (+6.7% compared to 2013). In continuing education there is a trend towards high-quality training and trainings to enhance



qualifications; the increase in students in certificate university programmes for further education, for which a master's degree is awarded, is significantly higher than in other certificate university programmes for further education. Apart from the Danube University Krems being a university for continuing education, the Universities of Salzburg, Klagenfurt and Vienna as well as the Vienna University of Economics and Business are the most important providers of continuing education in the university sector. Certificate university programmes for further education address postgraduate students as well as non-academics and often take into account relevant (working) experience. This is illustrated by the age of the students: More than 70% of the students in such certificate university programmes are over 30 years old.

Within the performance agreement period 2013–2015, the universities have successfully started to link their programmes offered in continuing education to their institutional development planning, also taking into account their respective LLL strategy. During the period of 2016–2018, the universities will continue to implement and further develop more focused institutional LLL strategies. Another priority are projects in the fields of “responsible university” and “entrepreneurial university”, which involve the regional economy.

Since 2014, following a programme accreditation by the AQ Austria, the Danube University Krems offers two PhD programmes – in the research fields “migration studies” and “regenerative medicine”. In the winter semester 2016 nine students were enrolled. Two more PhD programmes are being developed, which shall be ready by the end of 2018: “cultural heritage” and “educational research and LLL”.

## 6 Students and graduates

Public universities remain to be the most dominant part, quantitatively, of the higher education sector: They provide 60% of the degree programmes, train 79% of all students and award nearly two thirds of all degrees awarded per year. The number of students at public universities has further risen over the last years, and the “Higher Education Forecast” of Statistics Austria anticipates further growth.

However, the growth of the university budget in the past ten years was not able to match the student numbers. The developments of some key indicators during the last years suggest that the efficiency losses already known continue to exist, adding to the pressure on the university system: The proportion

of students actively taking examinations has risen less significantly than forecasted in the Austrian National Development Plan for Public Universities, the number of graduations and the success rates have declined. Students are staying in the “system university” longer than manageable for the system under the current conditions. Easing effects due to the demographic developments cannot be expected, and given the current framework conditions in the higher education sector, participation in higher education, which is forecasted to rise further, will continue to strongly affect the public universities. Therefore, it will be necessary to adapt the framework conditions of the public university system, be it by implementing projects such as the initiative “Shaping HEIs for the Future”, which aims at a discharge by further expanding the university of applied sciences sector, be it by implementing a new funding model for universities, be it by strategic instruments for capacity and development planning of universities.

At the same time, the universities are called upon to monitor the study progress of their students and to use the results to enhance studyability, quality and efficiency, thus contributing to an increase in the proportion of students who finish their studies.

The participation in university education has further increased during the last years – around 30% of an age cohort are currently beginning a university degree programme. However, not all social groups participate to the same extent – this is no Austria-specific phenomenon, but can be observed in other countries as well. Statistic findings and sociological surveys – most recently the 2015 Social Survey of Students – prove that the social background and especially the parents' education have a significant effect on the educational career, and also influence the decision to study at a university as well as the choice of studies. In addition, the regional background and the availability of educational institutions in the immediate vicinity have an influence on these decisions.

The universities are confronted with a great heterogeneity and diversity of their students. The different forms of employment and of the life and family situation of the students result in different needs, which affect the design of the curricula and the organisation of studies, time management, and student support. In view of the increasing degree of internationalisation among the student body, the students' linguistic and cultural background is another aspect of diversity that has gained in importance.

The universities are facing the challenge of adapting the initial stage of studying, study environment and institutional framework conditions to the needs of underrepresented groups so that they may participate adequately and effectively take advantage of courses and programmes offered. This is also an objective defined in the “National strategy on the social dimension of higher education” of the Federal Ministry of Science, Research and Economy (*BMWFW*). The ministry will promote appropriate measures at universities by way of performance agreements. Furthermore, it will be essential that the universities establish a suitable form of monitoring the diversity of their students and include diversity data in their monitoring instruments – all the more, as the social diversification shall be taken into account in the new model for university financing.

### **The universities’ position in the tertiary sector**

Tertiary education in Austria is dominated by the higher education sector, which is composed of the 22 public universities, 21 universities of applied sciences, 14 university colleges of teacher education and 12 private universities. Within the higher education sector, the public universities play a dominant role. 60% of the degree programmes in the higher education sector are offered at public universities, 60% of the new entrants in the academic years of 2016/17 began their studies at a public university, 79% of the students are found in the university sector, and 64% of the degrees are awarded at public universities.

At public universities, the average duration of studies or enrolment is significantly high: In average, slightly more than half of the beginners in a bachelor degree programme at public universities graduate within 14 semesters, another fifth is still studying at that point. In comparison, at universities of applied sciences and university colleges of teacher education, three quarters of the bachelor students finish their studies within the minimum duration of the degree programme or with a slight delay. No student takes longer than 12 semesters for the successful completion of their bachelor degree programme. The disparities in the study patterns of different types of higher education institution are caused by their different admission regulations and the different organisation of degree programmes (e.g. cohorts/“classes” at universities of applied sciences and university colleges of teacher education).

### **Access to public universities**

48% of the holders of an Austrian secondary school leaving certificate (“*Maturanten*”), (49% of female holders, 47% of male holders) begin a degree programme at a public university within three semesters (51% within five semesters) after having earned their certificate. The highest entrance rate is found in secondary school graduates having completed their education at an Academic Secondary School (*AHS Langform*) (75% within three semesters). The entrance rate in secondary school graduates having finished a College for Higher Vocational Education (*BHS*) is currently at 35%. Consequently, among all new entrants in 2016/17, *AHS* school graduates are the largest group with a share of 54%.

In the academic year of 2016/17 50,179 students from Austria and abroad have been admitted to a degree programme or a non-degree programme at an Austrian public university for the first time, among them 41,314 “new entrants” to a regular degree programme (“*ordentliche Erstzugelassene*”). During the reporting period, the number of new entries at public universities per year initially increased slightly, but most recently declined (-4.8% compared to 2013/14); considering only “new entrants” beginning a regular degree programme, there has also been a decline in 2016/17 (-2.1% compared to 2013/14). A change in statistical counting in the winter semester 2016, which was necessary for statistically recording the joint study programmes of the new teacher training, has presumably contributed to these declines in numbers. The development since the academic year of 2014/15 shows that the downward trend is higher in Austrian new entrants than in foreign new entrants, where there was a significant increase in the number of new entrants to non-degree programmes in connection with the MORE initiative for refugees and asylum seekers from conflict areas. The proportion of new entrants from abroad has increased from 44% to 46% since the academic year 2013/14.

The “first matriculation quota” (Austrian new entrants to degree programmes at public universities in relation to the mean age group of 18- to 21-year-old Austrian resident population) is regarded as an indicator for participation in university education and amounted to 29.8% in the academic year of 2016/17. The quota has further increased compared to the academic year of 2013/14 (28.9%). 62% of foreign persons beginning a degree programme come from EU member countries (among them 27% or 6,202 persons from Germany).

36.6% of those beginning a degree programme in the winter semester 2016 chose a study in the field of “social sciences, economics and law”. 28.2% began their studies in a so-called STEM subject (ISCED-fields of education “natural sciences” and “engineering, manufacturing, construction”). Although the total number of new entries to bachelor and diploma degree programmes in the winter semester 2013 declined compared to the winter semester 2016 by about 3%, new entries to STEM studies gained 4%. 31.2% of the new students had enrolled in one of the 10 most popular studies (law, economics and social sciences, English and American studies, pedagogics, German philology, historical studies, business law, biology, psychology and informatics). More than half of the new students in the winter semester 2016 (56.6%) chose a degree programme out of the group of the 20 most popular studies.

As a result of the changeover to degree programmes structured according to the Bologna system, 86% of all new students who begin a degree programme leading to a first degree are enrolled in a bachelor degree programme and only 14% in a diploma degree programme, with legal and medical studies representing the largest part of the diploma studies.

### Students

Since the winter semester 2013, the total number of students at public universities has further increased by 3.3% to 308,000 students (winter semester 2016: 308,374 Austrian and foreign degree- and non-degree-seeking students). The increase can be attributed largely to foreign students; most recently 28.7% of the degree- and non-degree-seeking students came from abroad. 66% of the foreign students (enrolled in degree programmes and non-degree programmes) are from EU member states.

280,783 persons, among them 205,042 Austrians, were enrolled in a regular degree programme, the proportion of foreign students being 27%. There has been a decline in the number of Austrian students over the past two years, while the number of foreign students has further increased (by 10.2% since the winter semester 2013).

In the winter semester 2016 55% of the students were enrolled in bachelor degree programmes, 19% in diploma degree programmes, 18% in master degree programmes and 8% in doctoral degree programmes.

The number of students who actively take examinations has increased during the reporting period by 2.3%. The proportion of students

who actively take examinations in relation to all students enrolled is an indicator for the degree of study activity and averages 53% during the reporting period. Calculations which compare the number of students actively taking examinations with the number of enrolments illustrate that at universities or in the fields of education where admission regulations are in place (pursuant to § 71c or § 71d *UG* 2002) or which require an aptitude test (pursuant to § 63 *UG* 2002), the proportion of students actively taking examinations is significantly above average (at medical universities and universities of arts between 76% and 87%).

### Graduates

The number of graduates has declined within the reporting period. A total of 35,864 graduations in the academic year of 2015/16 mean a decline by 3.9% compared to 2012/13. The decline can be explained by the discontinuation of a number of diploma degree programmes as of 2013/14 and the phenomenon that for this reason students had prioritized the completion of these diploma degree programmes – so in the academic year of 2012/13 a new maximum of 37,312 graduations had been reached. Also the sharp decline of the success rates, from a maximum of 86.5% in the academic year 2012/13 to 62.8% in the academic year 2015/16, must be seen in this context.

The proportion of female graduates has decreased and came in at 55%. The number of foreign graduates has increased as compared to 2012/13, presenting 25% of all graduations. In the academic year of 2015/16 there were 16,848 graduates of bachelor degree programmes, that is an increase by 4% during the reporting period. A proportion of already 47% of all graduates has completed a bachelor degree programme. The number of graduations in master degree programmes (9,545 in the academic year of 2015/16) continues to grow (+60% in the reporting period), while the number of graduations in diploma degree programmes is falling (–44%). Graduations in doctoral degree programmes have remained at a constant level of about 2,200 per year throughout the reporting period. The proportion of female doctoral graduates was 41.9%, the proportion of foreign graduates of 33% was above average, indicating the appeal of a doctoral training at an Austrian university.

In the academic year of 2015/16 the average duration of a degree programme was 8.0 semesters for bachelor degree programmes and 5.6 semesters for master degree programmes and has remained nearly unchanged. In diplo-

ma degree programmes the average duration declined nearly by one semester to 13 semesters, also showing the effects of the discontinuation of diploma studies. Doctoral degree programmes were completed after an average of 9 semesters.

67% of the graduates having completed a bachelor degree programme in the academic year of 2014/15 continued their studies by the summer semester of 2017 with a master degree programme – a declining trend (graduation year 2008/09 81%, graduation year 2011/12 73%). According to the 2015 Social Survey of Students, around 16% of the graduates having completed their diploma or master degree programme take up a doctoral degree programme within two years.

### **Diversity of the student body**

The student body at public universities is characterised by heterogeneity and diversity. This results in different needs of students which university institutions are facing, affecting the organisation of studies, time management and support of students. In the performance agreements 2016–2018 the *BMWF* has taken up these issues by agreeing on university-specific measures. These issues will remain in focus. The monitoring of student diversity and heterogeneity by the individual universities is a key element of quality enhancement and quality assurance in teaching and the organisation of studies.

### **Age of students**

77.8% of the students are under 30 years, 15.7% between 30 and 40 years, and 6.5% are 40 years or older. The age structure and mean age differ, depending on the type of studies. On average, Austrian students in bachelor degree programmes are 22 years old (winter semester 2016), students in diploma studies 24 years old, students in master degree programmes 26 years old. The mean age of women is lower, as men usually begin their studies later owing to the fact that they have to complete their compulsory community or military service and also take longer to complete their studies. Doctoral students are 32 years old on average.

The mean age of Austrian new entrants to a bachelor or diploma degree programme is 19 years (winter semester 2016). 82% begin their studies at a public university immediately (i.e. within two years) following their secondary school leaving examination, 18% have delayed the beginning of their studies. The proportion of persons having delayed the begin-

ning of their studies (“non-traditional applicants”) is on the rise.

### **Social background of students**

Participation in university education is influenced by many factors, including professional interest, regional course offerings, financing of studies, compatibility of studying with care commitments and employment, as well as the socio-economic background. “Educational inheritance” mostly takes effect already in the preceding school system, resulting in selection mechanisms, and also has an impact on university access (and subsequently also on study progress).

Persons whose parents do not have higher education entrance qualifications are significantly underrepresented in access to (public) universities by a factor of 2.7 compared to persons with parents having higher education entrance qualifications. Improving this recruitment quota is one of the goals defined in impact-oriented budgeting and also in the National strategy on the social dimension of higher education. However, compared to the rest of Europe, Austria is even among the countries, in which the composition of the student body represents that of the resident population to a relatively large extent.

Over the period of 2011/12 to 2014/15, an average of 8% of the new entrants at public universities were students, whose fathers did not have a formal education beyond compulsory schooling, and 43% whose fathers have a medium level of education; they are therefore underrepresented compared to the distribution in the fathers’ generation. Among the new entrants, there were 21% whose fathers have a higher education entrance qualification and 28% having a university degree, while in the fathers’ generation (40- to 65-year-old male residents) only 14% have a higher education entrance qualification and 11% have a university degree. The educational background and socio-economic factors also influence the choice of type of higher education institution and the choice of studies. At medical universities, universities of arts as well as at universities in Vienna in general, new entrants come from educated families more often than average.

### **Refugee initiative “MORE”**

Since the winter semester 2015, universities have special offerings for asylum seekers and persons entitled to asylum. Within the frame of the refugee initiative “MORE” by Universities Austria (*uniko*), they offer language trainings,



sport activities, easy access to selected regular courses, and other support. In the winter semester 2015, 633 persons took part in the MORE programme. This number has risen in the summer semester 2016 to 1,106 and declined again in the following semesters. In the summer semester 2017, a total of 738 persons were enrolled as MORE students, most of which come from Syria, Iraq and Afghanistan.

### **Employment and financial situation**

Working during the semester or during the holidays has become an integral part of everyday university life for the vast majority of students. According to the 2015 Social Survey of Students, 62% of students at universities work during the semester in addition to their studies, nearly 48% of which are employed and 14% only work occasionally during the semester. 38% do not work during the semester. The average working time of a student, who is employed during the semester, is 19 weekly hours. The employment rate (i.e. the proportion of students working) as well as the working hours increase with the age of the students.

Around two thirds of all working students consider themselves primarily as students, around one third as employed persons who also study. Among all students, including the non-working students, this percentage amounts to 20%.

Three quarters of the working students state that their employment is necessary to finance the cost of living; 61% state that they work in order to be able to afford a little more; about half of them want to gain work experience (multiple entries were possible). With the double burden of studying and working, many are facing a higher total weekly workload. From a time perspective, employment has a negative effect on the students' time dedicated for studying. Around 54% of the working survey participants at universities stated that they have difficulties to combine work with their studies.

In 2015 students at a public university had at their disposal an income of around €1,100 on average (on average €968 ready money, and benefits in kind equivalent of €133). The main source of income is their own gainful employment, representing an average of 41% of the students' overall budget; an average of 24% are cash payments received by the family, 12% are benefits in kind. With increasing age the financial support provided by the family decreases, while the income from own gainful employment becomes more important. Due to their own income, older students therefore

have on average higher monthly means than younger students.

### **Students with children**

Among all students, 9.5% have at least one child, among which most students have a child (or children) under the age of 15 years living in the same household. Studying parents are on average more than 10 years older than students without children. The employment rate, i.e. the proportion of students who are employed or work occasionally during the semester, is at 86% in student fathers and at 64% in student mothers. The employment rate and weekly working time of mothers strongly correlates with the age of their youngest children – the older the child, the higher the employment rate.

The time budget of students with child(ren) is composed differently owing to the fact that in addition to time requirements for studying and the weekly working hours, time must also be invested in child care. With a regard to the hours spent on studying, there are no gender differences. Student mothers, however, spend more time on child care, student fathers have higher weekly working hours.

### **Students with disabilities or with chronic diseases**

The Universities Act 2002 has defined guiding principles stipulating, among others, that special attention must be given to the needs of the handicapped. At nearly all universities there are disability officers for students or special centres, to which students with disabilities, health impaired students, or students with chronic diseases may turn to. According to the 2015 Social Survey of Students, 12% of the students stated that they have one or more health impairments, which limit their options or make studying more difficult; that amounts to a projected number of about 36,760 persons, among which, according to their own statements, 6% have a disability (that is only 0.8% of all students, totalling around 2,200 persons). The measures of the individual universities for students with disabilities or chronic diseases include special information leaflets, online course offerings, the provision of barrier-free working and study conditions, as well as the organisation of guidance and tutoring. All these measures are also an integral part of the performance agreements. At the Vienna University of Technology, students of all higher education institutions in Vienna with hearing impairments as well as deaf students receive comprehensive support provided by the *GESTU*

project (*Gehörlos Erfolgreich STUdieren*, successfully studying for deaf people).

### 2017 Higher Education Forecast

In 2017 Statistics Austria carried out the third Higher Education Forecast on behalf of the *BM-WFW*, forecasting important quantitative developments in the Austrian higher education area until 2035/36. It includes Austrian students as well as students from abroad studying at public universities, universities of applied sciences, university colleges of teacher education and private universities, with a particular focus on the development of the number of people with a university entrance qualification from Germany.

The basis for the Higher Education Forecast is the forecast on the numbers of pupils taking the secondary school leaving examination (*Matura*) after completing their upper level secondary or vocational education. In this context it is decisive that the number of persons of the typical age for the secondary school leaving examination is tending to decrease during the forecast horizon, but that this will be compensated, seeing that every year a larger proportion of pupils choose school types leading to a secondary school leaving examination. The proportion of pupils having taken secondary school leaving examination in the average age cohort will increase over the coming decades from around 43% (2015) to about 51% in 2035. In 2035 around 48,000 persons will take their secondary school leaving examination. On average, around 73% of all pupils having taken their secondary school leaving examination at an Academic Secondary School (*Allgemeinbildende höhere Schule AHS*) begin a degree programme at a public university within three years. This quota is 35% for those having taken their secondary school leaving examination at a College for Engineering, Arts and Crafts (*höhere technisch-gewerbliche Schule BHS*), 43% for those having taken it at a College for Business Administration (*höhere kaufmännische Schule BHS*), and 22% for those at a Kindergarten Teacher Training College or College for Social Education (*LHS*). Most of those having passed their secondary school leaving examination and entering higher education begin a degree programme at a public university. Pupils having completed a *LHS* school very often choose a university college of teacher education, whereas *BHS* graduates more often choose universities of applied sciences.

With a view to the number of persons beginning a degree programme at an Austrian higher education institution for the first time

(around 67,700 in the academic year 2015/16), the number of new entrants at universities of applied sciences, university colleges of teacher education, and private universities will remain nearly unchanged until 2035/36, according to the Higher Education Forecast. Only the number of new entrants at public universities will increase slightly by 2035/36 (from 53,100 in 2015/16 to 57,600 in 2035/36). The number of new entrants with a German citizenship will presumably remain at the 2015/16 level.

The survey anticipates that the total number of students at universities, universities of applied sciences, university colleges of teacher education and private universities will further increase, from an overall of approx. 370,000 persons in the academic year 2015/16 to about 423,000 persons by the academic year 2035/36. The increase is largely owing to a rise in Austrian students (from 282,000 students in 2015/16 to approx. 314,000 by 2035/36); the proportion of foreign students is expected to remain constant over the forecast period. Provided that the current admission regulations continue to exist, by the academic year 2035/36 around 9% of all students (not including mobility students) will be Germans, a further 8% will come from other EU member states and the proportion of non-EU members will increase to 9%; nearly three quarters will be Austrians. An increase in student numbers is expected in all sectors of higher education. At public universities the number of students in the academic year 2035/36 will be higher by 18% compared to 2015/16, at universities of applied sciences by 24%, and at university colleges of teacher education by 9%. The forecasted increase for private universities is 67%.

The number of graduations at higher education institutions is still growing. The increase is mainly due to the higher numbers of graduations at universities, which is explained partly by the successful changeover to degree programmes structured according to the Bologna system (instead of graduating once in a diploma degree programme, students now often complete a bachelor degree programme and after that a master degree programme). According to the prognosis, the number of graduates will further increase over the years to come, by 16% at public universities (at universities of applied sciences by 20%, at university colleges of teacher education by 9%, and at private universities by 58%). This growth is mainly based on an increase in successfully completed bachelor and master degree programmes. The number of completed diploma studies is projected to decline. The number of

successfully completed certificate university programmes for further education is expected to rise until 2035/36 to around 16,600 per year, and the number of graduates of doctoral degree programmes to approx. 2,500 per year.

## 7 Student counselling and student support

Targeted information and counselling for students is important to help them make the right choice of studies and avoid unnecessary dropping out and changing of degree programmes. In order to provide optimum support for a well-informed choice of studies, the Federal Ministry of Science, Research and Economy (*BMWF*), the Federal Ministry of Education (*BMB*), the Austrian National Union of Students (*ÖH*) and the Public Employment Service Austria (*AMS*) have developed a number of information and counselling offerings. The individual universities' and higher education institutions' commitment as well as joint activities of universities and universities of applied sciences to provide information on studies are becoming increasingly important. The cooperation of all stakeholders is crucial for enabling students to make sustainable decisions regarding their studies and future professions and to draw on the full potential of the young generation.

When providing information on studies, it must be taken into consideration that the internet, being the main source of information, is used by today's youth mainly via mobile devices such as smartphones and tablets. The platform [www.studiversum.at](http://www.studiversum.at) provides websites and information in mobile-friendly versions, suited to the target groups. Nevertheless, it is especially the individual counselling, such as offered in the programme "18plus. Career and Study checker" (*18plus. Berufs- und Studienchecker*), the *ÖH* programme "Guidance for students and prospective students" (*Studien- und Maturant\_Innenberatung*) and "Try studying" (*Studieren probieren*) or at training and education fairs, that play an important role when it comes to drawing the right conclusions from the great amount of information available. Offerings and measures in the fields of student counselling, and information on studies shall be further constantly adapted to the needs of pupils and prospective students. That is also the declared goal of the evaluation of the programme "18plus", which started in 2017.

In the field of student support, the development in the university sector was characterised by declining numbers of applications for

study grants and the number of study grants received over several years. Since 2014, the public student support was significantly improved following several amendments. The technical basis was established in the previous legislation period, the political implementation has now taken place during the 25th legislation period. The most recent amendment of the Student Support Act (*StudFG*) entailed a significant raise of the amounts of study grants and the income limits. This means that, in future, an estimated 20% more students will receive study grants, the amount of the grants will increase by at least 18%, so talents will be supported in the best possible way, independent of their social background. By enhancing the support system, the *BMWF* contributes consequently to meeting the goal defined in the "National strategy on the social dimension of higher education" of achieving a greater social permeability at Austrian higher education institutions.

In further enhancing student support, expert work and political activity have excellently complemented each other. All students, who require financial support, i.e. who would not be able to complete a degree programme without government support, can profit. The Institute for Advanced Studies (*Institut für höhere Studien*) has shown in its evaluation survey of 2012 that student support makes it possible for an average of 1,500 students per year to graduate, who would not have been able to complete their studies without student support. In the long term, this will result in an increase of the gross domestic product and lead to a higher state income. Thus, over the long term, the investments in student support also pay off from a budgetary point of view.

### Counselling and information for (prospective) students

Counselling and orientation at the interface between school and higher education are the key factor for successful and well-founded educational choices. There are a number of supporting services in this phase. Apart from the information provided by the different institutions, such as the federal ministries, *ÖH*, *AMS* as well as the educational institutions, it is especially the individual counselling that plays a fundamental role in a well-founded choice of studies.

The programme "18plus. Career and study checker" supports pupils in the final two grades of the upper level of Academic Secondary Schools (*AHS*) and Colleges for Higher Vocational Education (*BHS*) in the process of choosing a degree programme or profession. The

programme was expanded during the reporting period, so that in 2017/18 it will reach approx. 25,000 pupils all over Austria. Within the ÖH project "Guidance for students and prospective students" trained students give presentations, providing the pupils with information on different fields of study and everyday higher education life. The programme "Try studying", which is also organised by the ÖH, gives the pupils the opportunity for real-life encounters at universities. They can attend (introductory) lectures and are supervised by students from the corresponding branch of study, who answer their questions on the studies. For first-year students, the ÖH offers beginners' tutorials.

The Psychological Counselling Services also play an important role in supporting students to help them deal with their studies and their living situation as students. Counselling centres are available in the whole of Austria. Psychological counselling to help with the choice of a study programme focuses on the prospective students' individual skills, desires and ideas on the one hand, but on the other hand also takes into consideration the personal background for making a decision. In 2016 13,000 persons were attended.

A number of universities provide *online self-assessments* for selected degree programmes, which shall serve as an orientation and allow for an assessment of one's aptitude for a specific branch of study. For bachelor degree programmes with admission regulations, most of the universities request a *self-assessment, which is obligatory* within the framework of the admission procedure.

The student ombudsman serves as a central contact point for all Austrian and international students from the entire higher education area, providing information and advice.

### **Social support for students**

Direct and indirect federal student support measures are meant to facilitate studying without financial pressure. Federally funded study grants based on the Student Support Act 2002 (*StudFG*) are the most important direct supporting measures. Entitlement derives from distinctive social criteria and requires proven positive academic success. In the university sector, the decline in the number of applications and study grants received has continued over the reporting period in the university sector, as well as their increase in the university of applied sciences sector. The relation of study grants received to the number of applications has remained practically the same since

2013/14 (currently 71%), whereas the average amount of the study grants received has further risen during the reporting period. The declining trend in the numbers of university students who receive study grants ended with the entry into force of the 2017 amendment of the Student Support Act 1992.

The 2015 Social Survey of Students illustrates that more than half of all students have received some kind of financial support during the summer semester of 2015, the family allowance being clearly the most common aid form received (43% of the students received family allowance). The survey reconfirms that student support is a well-targeted measure to compensate social disadvantages.

The *StudFG* was amended three times during the reporting period. The 2015 amendment effected the equal treatment of foreign and Austrian citizens in the area of student support; another amendment in 2016 especially improved the support conditions for students aged over 27. The third amendment of the *StudFG*, which entered into force on 1 September 2017, greatly increased the amounts of study grants. The maximum study grants were raised by around 18% (compared to 2007), the parents' income limits were also raised. Furthermore, new provisions take better account of the circumstances of older students (older than 24 or 27 years), of foreign students and of students with separated parents. This amendment and, relating thereto, the largest investment of budget funds made so far in the area of student support, have factored in the inflation and income developments of the past few years as well as the changed living conditions of students, and have also taken into account numerous recommendations of the scientific evaluation carried out in 2012 on the impact of student support, as well as recommendations by the Austrian Higher Education Conference. In the medium term, prospectively 20% more students will receive study grants, the increase of the study grants will be at least 18% for all groups. By enhancing student support, the *BM-WFW* contributes consequently to meeting the goal defined in the "National strategy on the social dimension of higher education" of achieving a greater social permeability at Austrian higher education institutions.

## **8 Equality and diversity management**

Gender equality as well as the promotion of and professional approach to diversity are objectives for the Austrian and the European Higher Education and Research Area. European



initiatives contribute to a broad consultation and coordination taking place at the national level regarding the content of equality objectives in the field of science and research.

Within the reporting period the tripartite European equality objective – consisting of the dimensions “representation”, “structures and processes”, and “gender aspects in research content” – was integrated into the relevant strategy and planning instruments (Austrian ERA Roadmap, Austrian National Development Plan for Public Universities), and also into steering by the performance agreements. Supported by a policy mix and versatile measures, the impact-orientation in budgeting (which still represents a novelty in administrative practice) shall also be used to increase the effectiveness of equality measures by addressing and implementing coordinated equality objectives throughout the entire higher education and research area.

The developments at the universities show positive effects in the reporting period. The rise in the number of women in high-level positions in the university staff and in university governing bodies indicate the effectiveness of the implemented promotional tools. A view to the existing horizontal segregation demonstrates that effective measures to promote gender equality or the promotion of women at universities, respectively, are still necessary.

The European comparison illustrates that national successes in gender equality in the university sector must be further improved, and the participation of women in science and research significantly be increased. Facts as well as challenges are well-known, recommendations for an improvement of the situation are available. Therefore, the statutory equality regulations, the measures defined in the Austrian ERA Roadmap, and the projects envisaged in the performance agreements of the universities must be consequently put into practice and their effectiveness further enhanced by means of innovative policy instruments aiming at structural and cultural change.

The scope of tasks regarding gender equality was further developed, now including diversity management. These tasks to be fulfilled by each university require a professional approach to diversity. It is important that science and research policies support and further the universities’ qualification and motivation to manage and use diversity in their own interest and of their own accord and not to limit their efforts in gender equality on merely implementing the statutory obligations. The Federal Ministry of Science, Research and Economy (*BMWF*) has

embedded diversity management as an area of activity in the most important strategies and governance instruments, namely in the performance agreements, the Austrian National Development Plan for Public Universities (*GUEP* system objective 8) and the “National strategy on the social dimension of higher education”. Over the medium term, the developments will lead towards a diversity-oriented equality policy, which also incorporates into governance further dimensions such as age, sexual orientation, religion etc. and their interactions. The course for this differentiation has already been set by the equality legislation.

#### **Presence of women at universities**

During the reporting period, the presence of women at universities has been continuously increased. Their proportion in scientific leading positions as well as in university governing bodies was further raised: The proportion of women professors was already at 24% in 2016. In rectorates it was 48%, in the university councils 49% and in the senate 46%. Since 2015, there is a women’s quota of 50% for these governing bodies, and in 2016 the composition of the governing bodies “rectorate” and “university council” were almost completely gender-balanced; the senates for the most part.

Besides the elimination of the “glass ceiling” for women, the reduction of the horizontal segregation of students according to fields of education (e.g. women are underrepresented in informatics and technology, men in veterinary medicine) has become a focus of attention: This segregation continues on the labour market and has contributed to the wage gap in Austria, which according to Eurostat was 21.7% in 2015. In the technology sector, segregation is the major reason for the underrepresentation of women in scientific leading positions. In the “National strategy on the social dimension of higher education”, the *BMWF* has targeted to reach a proportion of at least 10% of the underrepresented sex in each (ISCED-)field of education at each higher education institution by 2025.

By further improving the key indicators of the intellectual capital report “women’s quota in collegial bodies” as well as “wage gap between men and women” and the introduction of the key process indicator “representation of women in appointment procedures”, it was also possible to enhance the equality monitoring during the reporting period.

The Higher Education Conference has set up a working group on “gender competence in

higher education processes“, whose recommendations will be submitted by 2018 and will provide important impulses for the sustainable integration of the gender dimension in research and research-oriented teaching, as well as in university structures and processes.

#### Legislative amendments

The Universities Act (*UG*) amendment F. L. G. I 2015/21 was an important step towards equal treatment and equality at universities. The women’s quota for members of university collegial bodies was adjusted to that of the Federal Law on Equal Treatment of Men and Women (*B-GIBG*), and raised to at least 50%. The broadening of the equality approach was the reason for explicitly including the issue of “compatibility” in the guiding principles of universities defined in the Universities Act. The compatibility of studying or working with care commitments for children and relatives shall be taken into account in the fulfillment of all university tasks – “compatibility mainstreaming” for universities. By including care aspects, the compatibility issue was placed on a broader base. Furthermore, an equality plan shall be included in the statutes of the university, ruling the dimensions of anti-discrimination: age, sexual orientation, ethnic affiliation, religion or ideology as well as compatibility. Diversity may also be included in the plan.

#### Performance agreements 2016–2018

The most important steering instrument at the level of individual universities are the performance agreements. For the performance agreement period of 2016–2018, numerous targets and projects within the field of equality were agreed upon, particularly with regard to their contribution in reaching the *BMWF*’s equality objective fixed in impact-oriented federal budgeting. Against the background of the ministry’s tripartite approach (comprising the dimensions “representation”, “structures and processes”, and “gender aspects in research content”), the universities are targeting a particularly large number of goals regarding the reduction of the vertical gender segregation, in the fields of compatibility as well as gender mainstreaming.

In the next performance agreement period, those policy areas, that were less strictly regulated so far, shall be taken into greater account: e.g. reducing the horizontal segregation of students according to fields of education, increasing the gender competence of university members, as well as integrating the dimension sex or gender into research and teaching.

#### Diversity management

Creating equal opportunities and educational equality in science and research goes beyond the gender dimension: Active diversity management allows universities to appreciate the heterogeneity of students and staff as a chance and resource in the competition within the higher education area. Accordingly, the *BMWF* has integrated diversity management as an area of activity into its most important governance and steering tools, the performance agreements, the *GUEP* and the “National strategy on the social dimension of higher education”. With the newly established diversity management prize “*Diversitas*”, which was first awarded in 2016, the ministry set an example to enhance perception of excellent and innovative performance in the field of diversity management.

## 9 Internationalisation and mobility

In the past few years internationalisation and mobility have become increasingly important for strategic concepts and operative measures in the university sector. Institutional internationalisation strategies and mobility strategies demonstrate that universities are understanding internationalisation as an ongoing cross-cutting task for their research, teaching, administration and human resources development, which helps to enhance their quality. Since internationalisation contributes significantly to the academic profile of a university, international relationships, international cooperation, mobility and all related measures are important aspects of academic development.

Austrian universities play an active role in international education and research networks and are involved in a scientific and strategic process of exchange with partner institutions worldwide, while at the same time competing on an international level: for the best brains in research, teaching, and among students, for research funds and research success. As a result, each university faces the challenge to find the right balance between competition and cooperation, also in the field of internationalisation.

International presence of the university and international presence at the university go hand in hand. Recruiting more international top researchers is important for a successful positioning in the global competition. The universities have increased the proportion of foreign citizens among their professors to 39%, among doctoral students to 31%; among the professors newly appointed during the reporting period, already 53% come from abroad.

During the last years the universities have implemented further measures especially aiming at strategic alliances and at a targeted use of the European funding programmes for mobility and cooperation in research. The exchange and mobility of students, researchers and university staff was further promoted. Within the framework of the ERASMUS+ programme, an increasing number of students studying at Austrian higher education institutions have spent a funded study or training period abroad. The successful participation of Austrian universities in the EU research programme Horizon 2020 has not only strengthened international, but also intersectoral and interdisciplinary cooperation. In the process, the universities' increasingly aim at creating strategic networks with international partner universities with the purpose of strengthening their research.

In order to improve the international competitiveness of university members and students, as well as of graduates and young scientists, the universities have further worked on enhancing the framework conditions for "internationalisation through mobility" and "internationalisation at home". This includes the establishment of "mobility windows" in the curricula and "spaces" for inter-cultural exchange, as well as a further expansion of the range of courses and degree programmes offered in English, and the creation of new international joint degree and double degree programmes. Projects addressing these issues are an integral part of the performance agreements with the universities.

Internationalisation is an investment in the future. Internationalisation is also a process, which is never complete and requires constant efforts. Strategies and concepts such as the Austrian ERA Roadmap or the "Higher Education Mobility Strategy" developed in 2016 by the *BMWFV* provide a framework and additional impact for this ongoing development for the next few years.

#### **Higher education within the context of the European Higher Education Area**

In the Yerevan Communiqué in May 2015 the ministers for higher education have agreed on focusing especially on the following fields until 2020: the structure of degree programmes, quality assurance, recognition, employability and the relevance of academic degrees for the labour market, lifelong learning, as well as the mobility of teachers. Additionally, the role and responsibility of higher education institutions in contributing to meeting the current chal-

lenges in economy and society was pointed out. The Yerevan Communiqué addresses the use of new technologies and innovative pedagogic concepts in teaching and learning, a stronger dialogue between higher education institutions and economy and the improvement of social framework conditions for students as specific goals. The working programme of the Bologna Follow-up Group (BfuG) for 2015–2018 is based on these specifications.

#### **Higher education within the context of the European Union**

In the strategy "Europe 2020" Europe has also put a political focus on higher education. The objectives of "Europe 2020" shall be realised by investing more effectively in education, research and innovation. The most important objectives of this strategy include to increase the share of 30- to 34-year-olds having completed tertiary education ("tertiary quota") to 40% until 2020. Austria has already reached the national target of 38% in 2012 and even exceeded the target value of the European core objective in 2016 (40,1%).

The Strategic framework – Education & Training 2020 (ET2020) and its strategic objectives were subject to a mid-term evaluation in 2015. Subsequently, some priorities were slightly adopted. In future, the focus will be on the acquisition of knowledge, skills and competences of high relevance, especially with regard to employability, innovation and social commitment; equity; an open and innovative education system, which fully adopts the achievements of the digital age; transparency and recognition of competences and qualifications to facilitate learning and working mobility; sustainable investments in education; quality and efficiency of educational systems.

In May 2017 the European Commission also adopted a renewed European agenda for higher education, in which important objectives, such as the prevention of future imbalances between the demand and supply of competences, the integration of higher education institutions in innovation funding and the funding of networked and efficient higher education systems were established. An important measure in this context is the European initiative on graduate tracking (tracking of careers and further training activities).

#### **Participating in the ERASMUS+ programme**

Since Austria started participating in the ERASMUS programme in 1992/93, there has been a continuous increase in student mobility. Since then, more than 100,000 students from Austria

have had a stay abroad funded by the ERASMUS programme.

The EU programme ERASMUS+, which started in 2014, is made up of three key actions with different funding programmes: “Learning mobility of individuals”, “Cooperation for innovation and the exchange of good practices” as well as “Support for policy reform”. The objective of the funding programme for learning mobility in higher education is to increase the number of graduates with international experience. Students can spend study periods between three and twelve months at a higher education partner institution, or internships between two to twelve months in a company, a research or training institution or another organisation, the experience being recognised. ERASMUS+ offers teachers and administrative university staff the opportunity for a funded teaching stay or an educational stay abroad. Since 2015, Erasmus+ also offers funded student and staff mobility in countries or for people from outside Europe.

In 2017 the European Commission started an interim evaluation of the programme, which is based on national reports of the member states as well as on a public consultation, in which students, university staff, higher education institutions and other institutions involved in the programme were allowed to participate. The results of the interim evaluation report will be available in 2018.

#### **National implementation of the EHEA objectives**

Austria addresses the key topics and areas of activity regarding the further development of the European Higher Education Area (EHEA) by setting national priorities and taking corresponding measures for their implementation. This is achieved, i.a. by legal measures and implementation measures in the performance agreements. Projects and targets in the performance agreements 2016–2018 with regard to EHEA objectives comprise for example recognition, employability, lifelong learning, the structuring of degree programmes in teacher training according to Bologna, and the establishment of curricular mobility windows. Priority topics of the EHEA encourage the development of corresponding national strategies, e.g. the *BMWF*’s “Higher Education Mobility Strategy” and the “National strategy on the social dimension of higher education”. The goals and key topics of the EHEA have furthermore been taken into account for the Austrian National Development Plan for Public Universities specifying the strategic orientation of Austrian uni-

versities. The Austrian Bologna Service Point and the team of EHEA experts provide consulting and assistance for the universities in the concrete realisation and implementation.

#### **Mobility of students**

Experience abroad and international networking have become important success factors for individual career paths as well as for the science and research location in general. That is why mobility is one of ET2020’s four strategic priorities.

Student mobility is realised either in the form of “credit mobility” or “degree mobility”. “Credit mobility” means a student may spend a study-based period abroad at a foreign higher education institution, which is recognised for their studies at home. The number of outgoing students on the basis of credit mobility has increased during the reporting period by another 9%, about 7,900 students (outgoing) having spent a period abroad in 2016/17 within an international mobility programme. Self-organised outgoing credit mobility is usually not recorded – according to the Social Survey of Students, however, 11% of the students who have spent a study-based stay abroad, have not done it within a mobility programme. Also the annual number of incoming students in mobility programmes has further gone up, and was at around 8,500 students in 2016/17 (approx. 9% more than in 2013/14).

“Degree mobility” means, a whole degree programme or an entire cycle of a study is completed abroad. In 2015 around 16,000 Austrians were enrolled at a higher education institution in a foreign OECD country, among which approx. two thirds were “degree mobile” students. Austria has become an attractive study location for foreign students, who want to complete an entire degree programme here, especially for German-speaking students. According to calculations, around 59,300 foreign students were enrolled at an Austrian university on the basis of degree mobility, that is 78% of all foreign students enrolled in degree programmes. Around 40% of the foreign degree mobility students (23,686) came from the Federal Republic of Germany.

Of the Austrian graduates of the academic years 2015/16, 22% state that they have spent a period abroad during their now completed study programme. The lowest rate is observed among bachelor graduates (17%), with higher rates among graduates of master degree programmes (25%) and doctoral programmes (28%). In a special evaluation of the *BMWF*, calculations took into account all the study-

based periods abroad within the study career of graduates, not only within the recently completed programme. The results show a proportion of 27% graduates who have spent a study-based period abroad.

According to the 2015 Social Survey, the most common obstacles for student mobility are the negative impact on the studies, in particular a delay in study progress, as well as financial and organisational difficulties associated with a stay abroad. The universities have implemented a great number of measures in order to raise student mobility and establish favourable framework conditions for mobility, which are also provided for in the performance agreements. These include intensified information activities and personal advice, “mobility windows” in the curricula, transparent recognition modalities, improved Housing Services, orientation events and efforts to establish more international joint degree programmes. Measures regarding “internationalisation at home” are used to enable non-mobile students to acquire intercultural and language skills or international contacts. These include an increase in English-language teaching and in international scientific and artistic staff and international guest lecturers. The “Higher Education Mobility Strategy” published in 2016 by the *BMWF* can serve the universities as an orientation for new approaches to expanding mobility activities.

#### **Mobility of university staff**

Mobility is increasingly becoming an integral part of the careers of highly qualified researchers and teaching staff, but also offers the administrative staff opportunities for further training and competence gains. Staff mobility at universities takes place in an institutionalised form via programmes, as well as in an individually organised form. ERASMUS+ offers staff mobility programmes for teaching staff and training visits for administrative staff. In the academic year 2015/16 almost 700 university members participated in such programmes. The number of scientific staff who have spent a period abroad of at least five days for teaching or research purposes (outgoing) has risen to around 4,200 in the academic year 2015/16. Another 2,500 people registered shorter stays abroad. The proportion of “mobile” scientific and artistic staff was thus around 27% in 2016.

In order to remove obstacles to the mobility of researchers and students, a new directive of the European Parliament and the Council came into force in May 2016 to facilitate the condi-

tions of entry and residence of third-country nationals for research, study or traineeship purposes. In Austria the “Red-White-Red Card”, which was established in 2011, was further developed in 2017, and now also takes into account graduates of bachelor degree programmes, doctoral and PhD studies. In addition, the permissible period for a job search for third-country nationals was extended to twelve months after graduation in Austria.

#### **The European Research Area**

The Treaty on the Functioning of the EU (Treaty of Lisbon) constitutes the objective of a “European Research Area” (ERA), where new knowledge can be freely exchanged and knowledge carriers can be mobile without obstacles. The implementation of ERA involves more than the previous EU research funding, it aims at the necessary structural changes in the member states to facilitate and make more effective cross-border cooperation in the field of research.

The European Commission (EC) has identified priority areas in which the implementation of a unified European Research Area appears particularly urgent. In 2015 it presented a “European Research Area Roadmap 2015–2020” with seven areas of activity and six priorities (these concern effective research systems, grand challenges, research infrastructures, an open labour market for researchers, gender equality in research, open science and open innovation, international cooperation). As a basis for the implementation of ERA priorities at a national level, Austria drew up the “Austrian ERA Roadmap” in 2016 and identified suitable indicators for each priority. A first progress report was presented in 2017.

#### **Participation in Horizon 2020**

The 8th EU Framework Programme Horizon 2020, which has been running since 2014, is the world’s largest transnational programme for research and innovation with a budget of around €77.2 billion and a central driving force for Austria in the RTI sector. It is made up of three major pillars: “scientific excellence”, “leading role of the industry”, and “social challenges”, with the former being of particular importance for Austria. As of 2017, Austria ranks 9th in the EU–28 in terms of participation rates. The public universities contribute 26% of the successful Austrian participations (428 out of 1,684 participations). 29% of the funds allocated to Austrian organisations go to the universities. The three universities most strongly represented in terms of participation and project



coordination are the Vienna University of Technology, the University of Vienna and the Medical University of Vienna.

Within the “scientific excellence” pillar, the share of public universities being at 52% is the highest among the Austrian participations, owing, in particular, to the great importance of the funding programmes “European Research Council” (ERC), “Future and Emerging Technologies” and the “Marie-Sklodowska-Curie-Actions”, in each of which more than half of the participants come from public universities. In the “leading role of industry” pillar, 20% of the Austrian participations are accounted for by public universities. The funding programmes of the “social challenges” pillar attract mainly private companies and non-university research institutions; universities account for 14% of the successful participations.

To systematically promote basic research in all disciplines, the ERC awards “Advanced Grants” (for established researchers), “Starting Grants” (for young researchers) as well as “Consolidator Grants”, which are awarded solely based on the criterion of scientific excellence. Among the grants awarded by ERC so far (as of 2017/05), Austria represents 191 participations, 82 of which were awarded within the Horizon 2020 programme, where Austria has achieved a success rate higher than average of 17% (11% in the EU-28).

Horizon 2020 has incorporated the European Institute of Innovation and Technology (EIT) into its framework programme. By clustering activities within the knowledge triangle (education – research – innovation) in “knowledge and innovation communities” (KICs), it is intended to facilitate and accelerate the transformation of scientific findings into innovative achievements. The thematic priorities of the KICs were defined in the Strategic Innovation Agenda: energy, climate, ICT, health, raw materials, food, manufacturing, urban mobility. The tender procedures on the topics “manufacturing” and “urban mobility” are planned to be carried out in 2018, starting the last KICs in this programme phase. In 2014 an Austrian consortium led by the Leoben University of Mining won the tender for a KIC “Raw Materials”, which deals with the sustainable exploration, extraction, processing, recycling and substitution of raw materials. The initial phase was extremely successful. The Leoben University of Mining’s participation in the KIC will provide more opportunities for participating in numerous international projects in the field of research, education and innovation as well as in Horizon 2020 projects.

### **ERA Dialogue**

The Austrian Research Promotion Agency (FFG) has been entrusted with the support of the Austrian RTI players also for the framework programme period of Horizon 2020. Within the so-called “ERA Dialogues” with the vice rectorates, which are prepared in close cooperation with the internal research service centres of universities, the FFG offers support and information on Horizon 2020 and the European Research and Innovation Area. Since the start of the new framework programme, the ERA Dialogue has been launched at twelve universities and three major non-university research institutions. Furthermore, researchers may continue to benefit from personal advice and support by FFG.

### **The European Charter for Researchers**

In 2005 the European Commission adopted a recommendation on the European Charter for Researchers and the Code of Conduct for the Recruitment of Researchers. By implementing the recommendations, research institutions contribute to improving the framework conditions for researchers as well as increase their own attractiveness. To date, 19 universities in Austria as well as “Universities Austria” have signed the Charter and Code. To support institutions in the task of implementing the principles set out in the Charter and Code, the European initiative “Human Resources Strategy for Researchers” was developed. Following its successful adoption, the institutions are awarded the “HR Excellence in Research” logo. In Austria five institutions have received the logo so far, among those are three universities.

### **Bi- and multilateral educational and research cooperation**

Bi- and multilateral educational and research cooperation outside the context of the Bologna process has been successfully continued and will also play a leading role in the years to come. North America, Europe (European Union, Central and Eastern Europe, and the Danube area) as well as parts of Asia remain to be the Austrian universities’ priority areas for such cooperations. The cooperative relations are often established at an institutionalised basis within the framework of specific projects, programmes (such as Fulbright, CEEPUS), institutions (such as Austrian Centres and Offices of Science and Technology) or networks (such as ASEA-UNINET, Eurasia-Pacific Uninet). Among other things, such cooperations aim at supporting Austrian researchers and their networking abroad, providing jointly financed

funding and mobility programmes as well as an optimal framework for joint projects.

## 10 Universities, economy and society

Knowledge is the most important factor of production in a highly developed economy, reinforcing competitiveness and contributing significantly to solving societal problems. Universities have become strategic key institutions, which provide impulses for social and technological progress.

Universities have a lot of positive effects on economy and society. They create knowledge through research and train graduates for innovation in business. Forecasts assume that the importance of highly qualified human resources for the economy and society will continue to grow. But higher education pays off also for individuals. University graduates benefit from good career opportunities and may still expect higher income. Over the past few years, universities have successfully improved the basis for an entrepreneurial way of thinking and entrepreneurial education at universities, so graduates are now also well prepared for self-employment and starting a business. High employment rates and, by comparison, low unemployment rates among university graduates can be taken as an evidence for a good balance between demand and supply in the academic labour market in Austria. However, studies and surveys indicate that in some fields there is a high demand, which can hardly be satisfied, e.g. in engineering studies, informatics and medicine. Higher education policy measures will focus mainly on these fields over the next few years.

Being key actors in the shaping process of economy and society, universities have a social responsibility in their entire scope of duties. Actively participating in the "Third Mission" activities can give rise to far-reaching social effects. Mechanisms and activities by which universities have a direct impact on society include knowledge transfer, continuing education – also for a broader population (LLL) –, scientific communication, a direct cooperation with civil society actors, and the supporting of socially or otherwise disadvantaged groups. In the future, this potential of universities shall be used even more effectively for society. Therefore, the exchange and interaction between universities and society and economy shall not only be further intensified, but also actively shaped and integrated into the universities' strategic plans. The future organisation of university research and teaching shall involve more open and co-creative research, teaching

and innovation processes, and the universities' contribution to the implementation of the sustainable development goals (SDGs) shall be intensified.

Knowledge and technology transfer being a main element of the "Third Mission" has gained importance over the past years. In implementing and further developing their strategies in the field of intellectual property rights and exploitation, the universities have established a professional and strategic knowledge and technology transfer management. With its numerous supporting measures, the Federal Ministry of Science, Research and Economy (*BMWF*) has helped the universities to make the use of the generated knowledge even more viable for economy and society. Examples are the establishment of knowledge transfer centres, the patent promotion and prototype sponsorships or the Austrian Founder Award "*Phönix*". The increasing integration of Open Innovation into research and innovation processes shall bring in solutions and ideas from the outside of academia. The long-term successful programmes funding collaborations between science and industry have been an important factor in Austria's achieving a leading position within the EU in terms of innovation cooperation between higher education institutions and industry. At the same time, new measures for the promotion of start-ups in Austria have been developed, such as the Spin-off Fellowships initiative, in order to create ideal framework conditions and adopt measures that will encourage the establishment of academic spin-offs in promising fields.

### **Social responsibility, "Third Mission" and "Responsible Science"**

The universities are driving forces in societal, economic and technological developments and help shape these areas. Therefore, they have social responsibility in all their areas of activity. Social responsibility must be understood as a "cross-cutting issue" and builds on the concepts of "Third Mission" and "Responsible Science". Within and beyond the scope of their core missions "teaching" and "research", universities perform tasks and fulfill activities, which are referred to as "Third Mission", including activities and responsibilities in the area of interaction with society and economy, in particular: knowledge and technology transfer, continuing education and lifelong learning, as well social commitment. The concept of "Responsible Science" describes a scientific culture, which evolves in a constant process of reflection and exchange between science and

society and takes into account societal developments and needs within its core activities.

In the performance agreements 2016–2018 many projects were agreed upon with the universities, which refer to the “Third Mission” as well as to objectives of “Responsible Science”. Among others, there was a focus on activities in the context of the concept “Entrepreneurial University”, to reinforce an entrepreneurial way of thinking and entrepreneurial education. For the performance agreement period 2019–2021, the universities are expected to actively shape their interactions with economy and society and to integrate them into the university’s strategic plans.

### **Universities’ impact on economy and society**

A study conducted by the Austrian Institute of Economic Research 2017<sup>1</sup> shows that public investments in universities generate positive returns for the state after a relatively short time, which even increase on a long-term basis. Short- to medium-term economic effects arise due to demand and added value effects, which are generated simply by the very operation of the university (e.g. investments and salaries for 58,700 employees). Public investments in universities are even more profitable, given the longer-term economic effects, which include, in particular, the higher tax revenues from the employment of university graduates and the comparatively lower government spendings on unemployment, owing to the lower unemployment rate and longer duration of employment.

In addition, the knowledge generated by universities in research and teaching has an increasing effect on productivity and is a key element in (entrepreneurial) innovation processes, which secure Austria’s position as a location for business and industry. Owing to their highly qualified graduates as well as cooperations with the industry, universities contribute significantly to a structural shift towards knowledge-intensive industries and to the growth of innovative start-up companies.

Further positive, non-quantifiable, social effects result from university knowledge transfer and knowledge communication, offerings in continuing education, and the cooperation with civil society. That way, universities make scientific and technological contributions to solving the Grand Challenges such as climate change.

### **Tertiary quota and proportion of academics**

The proportion of people with university or tertiary education in the population is seen as an important indicator for determining a society’s ability to innovation and viability. Education is one of the most important growth determinants of an economy, especially in the OECD member states, which are characterised by complex technologies. The “tertiary quota” illustrates the proportion of people with tertiary education on ISCED level 5 to 8 in the 25- to 64-year-old population, also including short-cycle tertiary education programmes. In 2016 the overall quota was at 31.4% and thus basically consistent with the EU average. Owing to the adoption of the ISCED Classification in Austria in 2011, now Colleges for Higher Vocational Education (*BHS*) are also rated among the short-term tertiary education programmes (ISCED level 5), resulting in an increase in the tertiary quota by 9%. However, there are considerable differences between the age groups: Among the 25- to 34-year-olds, the tertiary quota being at 40% is significantly higher than among the 55- to 65-year-olds (23%).

In contrast, the calculation of the “proportion of academics” takes into consideration only the ISCED levels 6 to 8 and represents the proportion of 25- to 64-year-olds holding a university degree in the resident population. In Austria, with 15.8% in 2016, this proportion is clearly below the “tertiary quota” and also well below the EU average. It also varies greatly according to age: While 22.6% of the 25- to 34-year-olds have completed a university degree programme, it is only 9.8% among the 55- to 64-year-olds.

### **Academics in the labour market**

The diversity of the fields of education and of the professions is broad, so one cannot speak of one single labour market for academics. Graduates of higher education institutions find their place in many different, highly differentiated labour markets. In general, higher education has a positive effect on employment opportunities: In all OECD countries the average wage level and employment rate of university graduates is higher and the unemployment rate lower than that of people having completed only primary or secondary education. The financial benefits of tertiary education for the individual continue to be higher than the pri-

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1 Janger, Jürgen / Firgo, Matthias / Hofmann, Kathrin / Kügler, Agnes / Strauss, Anna / Streicher, Gerhard / Pechar, Hans (2017): Economic and social impact of universities. Study report by the Austrian Institute of Economic Research 2017 on behalf of the Federal Ministry of Science, Research and Economy and Universities Austria. Vienna. (*Wirtschaftliche und gesellschaftliche Effekte von Universitäten. Studie des Österreichischen Instituts für Wirtschaftsforschung im Auftrag von BMWFW und UNIKO. Wien*)

vate costs incurred. Also in light of the high increase in the proportion of academics in the population, a university degree is still valued.

The number of employees in all academic professional groups is increasing, particularly in the so-called STEM professions: Over the past five years, the number of people employed in the professional field of natural sciences, mathematics, and engineering has increased by 48%, in the high-skilled information and communication technology professions it is 40% more. The skills shortage in the field of technicians with higher education qualifications for data processing and mechanical engineering, which is also often complained about in company surveys, has led to the fact that they now appear on the “list of understaffed professions” (*Mangelberufsliste*). Bottlenecks in the availability of highly qualified engineers in the fields of IT, mechanical engineering and electrical engineering is not a singularity in Austria, but presents an issue in different European regions.

According to a forecast by the Austrian Institute of Economic Research (*WIFO*), the number of employed persons in academic professions will continue to increase at a much stronger rate between 2013 and 2020 (+2.4% per year) than the overall number of working people (+0.9%). In view of the possible technological changes, which have not been fully considered in this forecast, even an acceleration in demand growth for highly qualified persons might be expected: While digitalisation of work and automatisisation through industry 4.0 is expected to make positions for low-skilled workers as well as workers in service jobs superfluous, the activities carried out by academics have the lowest risk of automatisisation. The development of new job profiles is also predominantly expected in higher-qualified areas. In future, digital transformation is expected to significantly increase the demand for digital competences throughout Europe in nearly all economic sectors. According to the precalculations of *WIFO*, the rise in the demand of STEM and health professions will be especially strong, however growth is also expected in the other academic professional fields.

Based on the labour market data and expert assessments, the Public Employment Service Austria (*AMS*) has forecasted the career prospects for graduates of law, healthcare, technology and engineering as well as mining to develop favourably over the years to come. Graduates in natural sciences may benefit of the increasing environmental awareness and thus the higher demand for “green jobs”.

Academics are affected considerably less by unemployment than people with lower qualifications. In September 2017 the unemployment rate of 3.6% (according to the national definition) was far below the Austrian average of 7.6% and the unemployment rates for people with secondary school qualifications (*AHS* 6.0% or *BHS* 4.1%). The unemployment rate of university graduates has risen on a noticeably smaller scale as that of people with other educational qualifications. However, because of the increase in the total number of academics, the absolute numbers of unemployed people with higher education qualifications has risen disproportionately. In September 2017 the number of university graduates registered as unemployed was at around 20,000 according to the *AMS*. According to Eurostat, Austria ranked in the top range European countries with low unemployment in 2016, the average rate being 3.6% among the 20- to 64-year-olds with a tertiary level education, while the EU-28 average being 5.1%.

#### **Activities supporting transition to working life**

Universities bear the responsibility of providing their students with competences, which will enable them to apply their scientific knowledge and skills outside the academic system. The universities take various measures to facilitate the transition between studying and the labour market, including career fairs, job portals, information events and training opportunities, which support the acquisition of further qualifications and the strengthening of personal soft skills. Most of the universities have set up “job centres” or “career centres”, some of them linked with alumni associations. Many universities have established a survey system for graduates in order to receive information on their employment, necessary competences, and labour market integration. To increase and make comparable the knowledge about the graduates’ career paths after the completion of their studies, twelve universities have started to establish tracking system for their graduates in cooperation with Statistics Austria, the cooperation project being funded by Higher Education Area Structural Funds (*HRSM*) during the performance agreement period 2016–2018.

#### **Lifelong learning**

Supporting lifelong learning is a priority in higher education within the Bologna process. The universities are important actors when it comes to implementing the national LLL:2020 strategy. Their participation in the implementing process has been included in the perfor-

mance agreements with relevant projects, especially to enhance institutional LLL strategies. Currently 18 universities have a LLL strategy. An important area of activity is the support of studying alongside work, e.g. by establishing part-time master degree programmes. With various formats, such as target-group specific courses, seminars, workshops and lectures, high-quality further education is also made accessible for the interested public.

A strategy on the validation of non-formal and informal learning was developed during the reporting period and presented in 2017, thus implementing a measure of the LLL:2020 strategy and the relevant Council recommendation. The AQ Austria offers higher education institutions consulting workshops on the implementation of validation processes for non-formal and informal competences. With selected universities, subject-specific projects on the recognition and transfer of credits for non-formal and informal competences will be agreed upon in the performance agreements for 2019–2021.

In March 2016 the Act on the National Qualifications Framework (*NQR-Gesetz*) entered into force. For allocating the qualifications to the eight qualification levels, Austria has opted for a kind of “Y-model”: the national qualifications framework (NQF) levels 1 to 5 apply to all qualifications equally, the levels 6 to 8 are split into two frames – one frame for the Bologna qualifications (Bachelor, Master, PhD) which presents the Austrian higher education area, and one frame for non-university qualifications, which are classified according to the allocation request pursuant to the *NQR-Gesetz* (the Bologna degrees do not require classification pursuant to the *NQR-Gesetz*, their allocation is based on the Dublin descriptors; thus they are directly classified).

During the ongoing implementation phase of the NQF, the formal qualifications of teaching professions, Schools for Intermediate Vocational Education (*BMS*), Colleges for Higher Vocational Education (*BHS*), and engineer’s qualifications were classified first and then entered into the NQF register. Further steps are planned in 2018 for the allocation of non-formal qualifications.

#### **Universities as a factor for location and region**

Universities play an essential role for the knowledge-based location policies. The new European location policy – “smart specialisation” – is considerably more comprehensive than traditional location policies of businesses. It rather represents an innovation policy, which addresses education, knowledge, and the cre-

ative potential of a city and region in addition to economic-technological aspects. Strong regional networks and the recognition of the strengths of universities as competitive factors for cities and regions will also help the international perception of Austrian knowledge locations.

Within its “Lead Institutions Initiative”, the *BMWF* has invited universities to actively position themselves as partners in the knowledge-based location policy. Of the 14 universities active in this regard, 11 had developed their own or a joint (like the four universities in Graz) location concept by the end of 2015. During the performance agreement period 2016–2018, the majority of the remaining universities followed with their own projects. The “Lead Institutions Initiative”, which will be further developed after the end of the performance agreement period, aims at a change of perspective in the medium term – from a purely institutional view on universities to location planning.

The European structural and investment funding programmes, which were launched with some delay throughout Europe in 2016/17, and especially the European Regional Development Fund (ERDF), also involve universities. While the universities continue to show interest, the framework conditions for university participation remain complex.

#### **Knowledge and technology transfer**

Knowledge and technology transfer as an essential element of the “Third Mission” has gained in importance over the past few years, pushing the universities to assume responsibility, not only as holders of knowledge, but also as its sender in economy and society. By embedding open innovation into research and innovation processes, in the future more sources of ideas from the outside shall be brought in. In order to support and promote the opening up of systems in the sense of open innovation processes in a sensible and targeted way (e.g. overcoming the limits of branches, disciplines and organisations, creating new forms of interaction and partnerships to acquire new knowledge), the government adopted an Open Innovation Strategy in 2016. Three action areas and 14 concrete measures have been defined to establish open innovation as a guiding principle in the innovation system.

In February 2017 the federal government adopted a strategy for intellectual property (IP Strategy). It offers companies, higher education institutions, and research institutions a set of measures for five areas of activity, which



aim at supporting them to protect and make use of their innovations in the best possible way and thus to strengthen Austria as a business and science location. Measures relevant for the higher education sector include, in particular, the sharpening of the strategies in the field of intellectual property rights and exploitation, the establishment of degree programmes or courses on the subject of “IP management”, as well as an extension of the IPAG (Intellectual Property Agreement Guide) database on standard contracts to include sample contracts with a special focus on spin-offs and open innovation processes.

Since 2014, knowledge and technology transfer and the exploitation of intellectual property rights at universities were further promoted, and the respective strategies in the field of intellectual property rights and exploitation successfully implemented according to the performance agreements. In 2016 the *BMWF* provided the universities with a guideline for the further development and reporting on their intellectual property rights and exploitation strategies.

Between 2014 and 2016 a total of 844 patent applications were filed by universities. Most of the patents (49.4%) were filed by universities of technology. Furthermore, a continuous growth of spin-offs was recorded. Since 2013, the number of registered university spin-offs was doubled; from 11 in 2013 to 23 in the year 2016.

In addition, the numerous supporting measures created by the *BMWF* over the past few years contribute to making better use of the knowledge generated at universities for society and economy: the knowledge transfer centres, the patent promotion and prototype sponsorships or the Austrian Founder Award “*Phoenix*”.

The *BMWF*'s funding programme “Knowledge transfer centres and IPR exploitation” is aimed at further strengthening the efficient and rapid exploitation of scientific findings, and at ensuring that useful knowledge generated at universities is best identified and made available to the respective channels of exploitation (e.g. by way of patents or spin-offs). With a fund total of about €20 million, the programme, which is set to run until 2018, comprises 16 cooperation projects with participants from all Austrian universities. The funding programme also offers financial incentives for the strategic advancement of university patents and the development of university prototypes. By December 2017 the funding agency *FFG* received a total of 559 such applications of universities. Prototype sponsorships are intended to facili-

tate the transfer of scientific findings from universities into economic practice and ensure a faster exploitation of inventions made at the university. The best 50 projects among the annual calls from 2013 to 2016 were funded with a total of €5.2 million.

Within the context of the federal government's start-up initiative, the “spin-off fellowships” programme was developed, which offers an additional incentive for turning research results into business ideas, and for the establishment of a company. The target group are students and researchers at universities and research institutions, who have achieved market-relevant research results and shall receive the opportunity to work on their business idea over a maximum period of one and a half years, to be launched subsequently as a university spin-off. The budget frame for this programme, which was set up by the Austrian Research Promotion Agency (*FFG*) and started in 2017, amounts to €15 million.

#### **Cooperation between science and industry**

A successful cooperation between science and industry provides access to know-how and top research, promotes synergies and plays a crucial role for location decisions and in regional policies. Bringing together the complementary competences of universities and companies in cooperative research is an important objective of the national RTI policy. Austria's position when compared to other European countries demonstrates its success: Austria holds a leading position within the EU in innovation cooperation between higher education institutions and the industry. The intensity of cooperation between higher education institutions and companies is nearly twice the EU average: In 2014 57% of all big innovation active companies and about 30% of the innovation active SMEs in Austria were cooperating with higher education institutions.

*FFG*'s COMET programme for competence centres provides a strong impetus for cooperative research in technological fields of strength. It is funded by the Federal Ministry for Transport, Innovation and Technology (*BMVIT*) and the *BMWF* and supported with additional funds by the Austrian provinces. The funds invested in different projects since 2008 amount to €875 million (€583 million provided by the federal government, €292 million by the Austrian provinces). So far, five K2 centres, 21 K1 centres and 54 K-Projects have been funded. According to the revised programme of 2016, the programme lines K1 and K2 will be replaced by “COMET Centres” and “COMET Modules”. In

2017 12 universities were involved in five K2 centres, and 16 Austrian universities in the 17 K1 centres. 14 universities are participating partners within the 35 K-projects running during this reporting period. The universities of technology and the University of Linz are the universities with the most partnerships.

The Christian Doppler Laboratories are an Austrian model of cooperation between science and industry proven over decades, financed through public funds and through participating companies. In 2017 an overall budget of about €27 million were available to the CD-Laboratories. In 2017, 74 CD Laboratories were set up at 14 universities, aiming at a cooperation between university research and industrial development.

The *BMWWF* programme "Research Studios Austria" is aimed at processing the knowledge generated at universities, universities of applied sciences and research institutions for the take-up by industry in an application-oriented way and making it available for the market via Research Studios. Seven Austrian universities are involved in 13 of the currently running 25 Research Studios. Especially the universities of technology and the University of Natural Resources and Life Sciences Vienna are strongly engaged within this cooperation and knowledge transfer programme with industry.

With the programme "R&D Competences for Industry", the *BMWWF* supports measures especially in small and medium-sized companies for the systematic development and qualification of their research and innovation staff, also aiming to promote the integration of industrially relevant research fields at universities and universities of applied sciences. The support measures include qualification seminars, qualification networks and tertiary-level courses on innovation. Universities are participating in 25 out of 32 funded qualification networks and in four out of seven funded tertiary-level courses on innovation, by totalling 46 participations.

The Ludwig Boltzmann Institute and Cluster is a network of partnerships with companies and institutions, who work on clearly defined problems within the research fields of human medicine and the humanities, social sciences and cultural sciences, as well as interdisciplinary research fields. In 2017 seven universities were partner universities of nine Ludwig Boltzmann Institutes, three of these also participated in five clusters.

Since 2014, the *BMVIT* is funding eight endowed professorships within three calls for tender in the research fields of materials and

production, aviation, transportation logistics, data science and automated driving, which were received by the Universities of Technology in Graz and Vienna, the Leoben University of Mining, the University of Natural Resources and Life Sciences Vienna and the University of Innsbruck.

### **Dialogue between science and society**

Scientific findings are gaining in importance for society and economy. Therefore, a dialogue between science and society, between the academic and non-academic world is required, as well as an openness on both sides – a scientific literacy on the part of the population as well as a societal literacy among academics. New participative models such as "Citizen Science" and "Responsible Science" may contribute to strengthening the interaction between science and society and set new impulses in both directions. A scientific-societal co-production of knowledge will open up knowledge potentials that have remained unused so far. However, this requires a society, which is open to science and innovation. This constitutes a broad field of duty for science communication and knowledge transfer.

The universities have further expanded their activities in the field of public relations and knowledge communication over the past few years. They make increased use of social media for their communications work and implement new concepts and formats of science communication, which include multimedia channels as well as new electronic information services. Researchers present their work to a broad public at special events, which are often-times located at the interface to continuing education, or within new formats such as "science slams". They also participate in the "Long Night of Research" (*Lange Nacht der Forschung*). The activities of the Austrian Science Fund (*FWF*) within its new programme for science communication play an important role in raising public awareness for the value of scientific research and its promotion.

Children and young people are specific target groups of science communicating activities by universities, aiming at arousing the interest for science and research at an early stage. Joint activities of universities and schools or extracurricular educational venues are supported by the *BMWWF* with promotional activities, in particular the children's universities, the involvement of pupils into research projects (e.g. the Sparkling Science programme) or the activities of the Young Science Centre for cooperation of science and school.

Such projects of the universities are also included in the performance agreements.

### Responsible Science and Citizen Science

In 2015 the Alliance for Responsible Science was established, which so far 37 Austrian institutions have joined. Among those are Universities Austria (*uniko*), universities, *FWF*, *BMWF* and the Austrian Academy of Sciences (*ÖAW*). The goal of the Alliance is to build hybrid networks between universities, non-universities, research, economy, and civil society, and to use Citizen Science or crowdsourcing to exploit previously untapped potentials of knowledge in society for purely knowledge-driven basic research as well as for practice-oriented fields of research. Citizen Science describes a model of knowledge production to gain new findings in collaboration with interested amateurs. In the future, universities intend to make better use of crowdsourcing methods for generating new scientific findings. Over the years to come, innovative elements of open research, teaching and innovation processes shall be increasingly integrated in planning and shaping university research and teaching.

In 2015 the *FWF*, the *BMWF*, and the Austrian agency for international mobility and cooperation in education, science and research (*OeAD*) introduced the “Top Citizen Science” programme, and a call is issued annually for this funding initiative to support the involvement of citizens in research projects. The successful implementation of a number of pilot projects funded by this programme points out the engagement of Austrian universities in this initiative. In 2015, the Citizen Science Award was awarded for the first time, now being awarded every year.

### Sustainable development goals

The Resolution “Transformation of our world, the 2030 Agenda for Sustainable Development” was adopted by the UN General Assembly in September 2015 by all heads of state or government. The Agenda 2030 contains 17 goals and 169 targets that aim at sustainable development – the so-called sustainable development goals (SDGs) for the period of 2016 to 2030. The goal of Agenda 2030 is to jointly tackle today’s global and complex challenges

(e.g. poverty, hunger, inequalities, climate change, crises and conflicts in and between countries). The three dimensions of sustainable development – economy, social well-being, and environment – are equally taken into consideration.

In January 2016 the federal government instructed all federal ministries to integrate the principles of the Agenda 2030 and their sustainable development goals into their relevant strategies and programmes. Within its objectives “enhancing the quality of teaching” and “strengthening basic research”, the Austrian National Development Plan for Public Universities commits itself to include the SDGs in study, teaching, and the university profiles. The SDGs will be taken into account in the preparation of the performance agreements 2019–2021 to ensure that all universities can make a contribution to the Agenda 2030.

### Education for sustainable development

As a follow-up programme to the UN Decade of Education for Sustainable Development, the General Conference of UNESCO adopted the “Global Action Programme on Education for Sustainable Development” in the autumn of 2014. The Austrian universities have accepted the challenges, which accompany the concept of sustainable development, and started internationally renowned initiatives. Now eleven universities have formed the “Alliance of Sustainable Universities in Austria”, which jointly launches initiatives to strengthen the issue of sustainability at their institutions. Together with the “Alliance of Sustainable Universities in Austria”, the *BMWF* has organised the “Enquete of opportunities: Social responsibility of universities” in October 2015 and, following, several dialogue conferences as a platform for the exchange between universities, economy, and civil society. In 2016, dialogue conferences on energy, social & sustainable entrepreneurship, distributive justice and mobility took place.

Since 2008, the *BMWF* is awarding a Sustainability Award in eight categories every two years to universities, universities of applied sciences, and university colleges of teacher education.

## Abbreviations

### Abbreviations

AHS – Allgemeinbildende höhere Schule	Academic Secondary School
AMS – Arbeitsmarktservice Österreich	Public Employment Service Austria
aws – Austria Wirtschaftsservice	Austrian Federal Promotional Bank
A&HCI	Arts & Humanities Citation Index
BFuG	Bologna Follow-up Group
B-GIBG – Bundes-Gleichbehandlungsgesetz	Federal Law on Equal Treatment of Men and Women
BHS – Berufsbildende höhere Schule	College for Higher Vocational Education
BiDokVUni – Bildungsdokumentationsverordnung Universitäten	Education Documentation Regulation for Universities
BIG – Bundesimmobiliengesellschaft	Federal Real Estate Company
BMB – Bundesministerium für Bildung	Federal Ministry of Education
BMF – Bundesministerium für Finanzen	Federal Ministry of Finance
BMS – Berufsbildende mittlere Schule	School for Intermediate Vocational Education
BMVIT – Bundesministerium für Verkehr, Innovation und Technologie	Federal Ministry for Transport, Innovation and Technology
BMWFW – Bundesministerium für Wissenschaft, Forschung und Wirtschaft	Federal Ministry of Science, Research and Economy
ECTS	European Credit Transfer System
EHEA	European Higher Education Area
EIT – Europäisches Innovations- und Technologieinstitut	European Institute of Innovation & Technology
ERA	European Research Area
ERC	European Research Council
ESFRI	European Strategy Forum on Research Infrastructures
Eurostat	Statistical Office of the European Union
FFG – Österreichische Forschungsförderungsgesellschaft	Austrian Research Promotion Agency
FWF – Fonds zur Förderung der wissenschaftlichen Forschung	Austrian Science Fund
FTE	Full Time Equivalent
GESTU – Gehörlos Erfolgreich Studieren	Successfully Studying for Deaf People
GUEP – Gesamtösterreichischer Universitätsentwicklungsplan	Austrian National Development Plan for Public Universities
HEIs	Higher Education Institutions
HR	Human Resources
HRSM – Hochschulraum-Strukturmittel	Higher Education Area Structural Funds
HS-QSG – Hochschul-Qualitätssicherungsgesetz	Act on Quality Assurance in Higher Education
ICT	Information and Communication Technology
ISCED	International Standard Classification of Education
KA-AZG – Krankenanstalten-Arbeitszeitgesetz	Hospital Working Hours Act
KEMÖ – Kooperation E-Medien Österreich	Austrian Academic Library Consortium
KIC	Knowledge and Innovation Community
KLR – Kosten- und Leistungsrechnung	Cost and Activity Accounting
KLRV – Verordnung über einheitliche Standards für die Kosten- und Leistungsrechnung an Universitäten	Decree on Uniform Principles for Cost and Activity Accounting at Universities
KV – Kollektivvertrag für die Arbeitnehmerinnen und Arbeitnehmer der Universitäten	Collective Bargaining Agreement for University Staff
LHS – Bildungsanstalten für Elementarpädagogik und Bildungsanstalten für Sozialpädagogik	Kindergarten Teacher Training Colleges and Colleges for Social Education
LLL	Lifelong Learning
NAWI – Naturwissenschaften	Natural Sciences
NQF	National Qualifications Framework
NQR-Gesetz – Bundesgesetz über den Nationalen Qualifikationsrahmen	Act on the National Qualifications Framework

## Abbreviations

ÖAW – Österreichische Akademie der Wissenschaften	Austrian Academy of Sciences
OeAD – Österreichischer Austauschdienst	Austrian Agency for International Mobility and Cooperation in Education, Science and Research
OECD	Organisation for Economic Co-operation and Development
ÖH – Österreichische Hochschülerinnen- und Hochschülerschaft	Austrian National Union of Students
OEPIGuni – Österreichische permanente Indikatoren-AG Universitäten	Permanent Working Group on Indicators
PEEK – Programm zur Entwicklung und Erschließung der Künste	Programme for Arts-based Research
QSR – Qualitätssicherungsrat	Quality Assurance Council of Teacher Education
R & D	Research and Development
RTI Strategy	Research, Technology and Innovation Strategy
SCI	Science Citation Index
SSCI	Social Sciences Citation Index
StEOP – Studieneingangs- und Orientierungsphase	orientation period
StudFG – Studienförderungsgesetzes 1992	Student Support Act
SDGs	Sustainable Development Goals
STEM	Science, Technology, Engineering, Mathematics
Uni-ImmoV – Verordnung über das Verfahren zur Planung und Abwicklung von Immobilienprojekten an Universitäten	Decree on the Planning Procedure and Realisation of Building Projects of Universities
uniko – Universitätenkonferenz	Universities Austria
UG – Universitätsgesetz 2002	Universities Act 2002
WBV 2016 – Wissensbilanz-Verordnung 2016	Decree on Intellectual Capital Reports 2016
WIFO – Österreichisches Institut für Wirtschaftsforschung	Austrian Institute of Economic Research



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