The future of tertiary education in Europe
This analysis focuses on six challenges facing tertiary education in the EU: the need to maintain relevance to current and future aspirations, the impact of digital and disruptive technologies, the way it collaborates with business, global and intra-EU collaboration, quality assurance, financing and barriers to inclusion. It also looks at trends in two of the largest higher education systems outside the European Higher Education Area, those in the United States and China. This provides the backdrop to discuss how the Multiannual Financial Framework, which is currently under negotiation, will put tools at the European Union’s disposal to exert some influence on the future trajectory of tertiary education, as well as the European Parliament’s role in these negotiations.

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Executive summary

Universities have a long history in Europe, and as institutions they have evolved with the societies in which they are embedded. Today, the scope of tertiary education covers a whole range of specialisations, from the strictly academic to the vocational. Other institutions such as colleges and universities of applied science complement the educational benefits provided by universities.

With the rapid pace of change in contemporary societies, the question arises as to whether tertiary education institutions have maintained their relevance to help societies respond to their needs. Higher education institutions provide both teaching and research functions with a clear impact on economies and the future of generations of young people. However, different stakeholders attempt to influence what these institutions prioritise as useful knowledge in both areas of activity, as well as who develops this knowledge, to whom it is transmitted and what resources can be used in this exercise.

Disruptive technologies may radically change how we will define tertiary education, as artificial intelligence and online platforms play an increasing role in research and teaching. The boundaries of fixed rooms and fixed timetables are blurring, which could significantly change curricula, pedagogies and subject matter, as well as research, teaching and learning roles.

The desire to be ahead of the competition in knowledge-based economies has encouraged an environment in which academic excellence is determined by rankings, with academic funding often being granted based on specific performance criteria. At the same time, the push for wider outreach and greater inclusivity within the enclaves of prestigious, international collaboration and the notion of education as a public good can put a different set of pressures on the financing of tertiary institutions.

Tertiary education in Europe is highly varied, reflecting the specificities of each state responsible for its own tertiary education provision. Through the Bologna process, there has been progress in increasing transparency and mutual recognition, allowing institutions from across the Higher Education Area to work together. The European Union has assumed a supporting role through a combination of funding and coordination, such as by providing a permanent secretariat to the Bologna process, as well as through monitoring and analysis in order to help policy-makers take evidence-based decisions.

The European Commission has sought to encourage modernisation through tools such as the European Semester, yet its input has also been the subject of criticism for lacking coherence or for promoting imported models rather than homegrown ones. Demographic, ecological, health, technological, economic and social issues all have a bearing on tertiary education in Europe, and policy decisions will determine its future course.
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1. The EU's tertiary education systems

1.1. Introduction and research questions

On 14 November 2017, the European Commission set out its vision for a European Education Area by 2025, selecting a network of European Universities as one of its flagship initiatives. The new impetus for implementation came with the college of Commissioners that took office in December 2019 and the new Multiannual Financial Framework (MFF) for the period 2021-2027. The vision is for:

'... a Europe in which learning, studying and doing research would not be hampered by borders. A continent, where spending time in another Member State – to study, to learn, or to work – has become the standard and where, in addition to one's mother tongue, speaking two other languages has become the norm. A continent in which people have a strong sense of their identity as Europeans, of Europe's cultural heritage and its diversity.'

The political guidelines set by the president of the European Commission, Ursula von der Leyen, also mention an update to the digital education action plan. Both initiatives feature in the European Commission work programme 2020; the first under 'Promoting our European way of life' and the second under 'Making Europe fit for the digital age'. The global coronavirus pandemic has also caused heavy disruptions in the tertiary education sector and forced the European Commission to reconsider its plans by reviewing its MFF proposal. The sudden transfer to remote and online education due to confinement measures will probably also influence the European Commission's proposal for an update of the digital education action plan.

A long process backs the European Universities initiative and the digital education action plan. The European Commission and the Member States are active members of the European Higher Education Area, which for the last twenty years has developed collaboration based on structural reforms and shared tools, known as the Bologna process, to make higher education systems more compatible across Europe. For the past ten years, the European Union also had a strategy to widen participation in higher education to at least 40% of its population. Tertiary education attainment is also an indicator on Eurostat's social scoreboard linked to the European pillar of social rights and the social

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1 For a presentation by the European Commission, see its pages Towards a European Education Area by 2025: European Education Area and European Universities Initiative.
4 For a complete presentation of the priorities identified by the President of the European Commission, see U. von der Leyen, Political guidelines for the next European Commission 2019-2024. For a presentation by the European Commission, see its page Digital education action plan.
5 See the relevant document of the 2020 Commission work programme.
6 For a discussion on the impact of the coronavirus pandemic on education in the EU, see D. Chircop, Education in isolation in the pandemic, following the path of Isaac Newton, EPRS, European Parliament, June 2020. For an update of the European Commission's MFF proposal due to the effects of the Coronavirus pandemic, see European Commission, The EU budget powering the recovery plan for Europe, COM(2020) 442, 27 May 2020.
7 For a more detailed presentation of the European higher education area and the Bologna process see the website and the publication D. Chircop Implementing the Bologna Process: the follow-up, EPRS, European Parliament, July 2019.
8 See D. Chircop Follow-up of the strategic framework for European cooperation in education and training, EPRS European Parliament, June 2016.
dimension of the United Nations' Sustainable Development Goals (SDGs). In 2016, the Commission published a new skills agenda for Europe with the aim of tackling the digital skills deficit in Europe, followed by a communication on the digital education action plan (see Figure 1), published in 2018.

The provision of tertiary education is the responsibility of Member States, whilst the European Union coordinates and supports the cooperation between them. In many ways, tertiary education systems in the EU are very diverse, but longstanding cooperation in the European Higher Education Area is making them increasingly compatible. Despite the variety, they also share a number of dimensions where policy decisions will have an important impact on the sector’s future. This analysis identifies six areas: (1) meeting environmental, societal and ICT challenges; (2) the impact of digital and disruptive technologies; (3) collaboration with business; (4) improving global collaboration and intra-EU mobility; (5) quality assurance; and (6) the financing of tertiary education, including fees and barriers to inclusion. This in-depth analysis raises the following research questions: What are the major challenges facing tertiary education in Europe? What are the European Union’s margins of manoeuvre and what tools does it have at its disposal? How does the EU address these challenges?

This analysis starts with a brief description of tertiary education systems in the EU, followed by the identification and analysis of six major challenges to tertiary education. Chapter 3 analyses the tertiary education systems of the United States (US) and China. Both countries are outside the European Higher Education Area and have large higher education systems with which European higher education institutions simultaneously collaborate and compete. Finally, we look at the European Parliament’s stance on the future of higher education in the EU.

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9 See Social Sustainability: Concepts and Benchmarks on the links between Eurostat indicators and UN SDG Goal 4: Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all.
1.2. The structure of tertiary education in the EU

Tertiary education in the EU is characterised by its variety. For instance, the number of higher education institutions ranges from over 200 in big countries such as France, Italy, Germany and Poland to less than ten in much smaller countries such as Luxembourg and Malta. In 2017, at one end of the spectrum the population of tertiary education students at ISCED levels totalled 3.1 million in Germany, whereas at the other end it totalled just 7 000 in Luxembourg. However, about 80% of students from Luxembourg enrol abroad, particularly in neighbouring countries such as Germany, Belgium and France. Overall, the increase in enrolment rates is slowing down in Member States such as Denmark, Germany and Malta and actually decreasing in Poland, Hungary and Estonia. This could be due to changes in cohort size, in the labour market and enrolment policies.

1.2.1. Organisation of studies

All Member States now have university programmes with three consecutive levels: Bachelor’s, Master’s and Doctoral degrees. However, these are not the only courses European universities offer. Many Member States also have shorter programmes (Short-cycle higher education or SCHE) which usually attract students who could be discouraged by a three-year Bachelor’s course. Some Member States offer long programmes that are not part of the three level degree system. These degrees lead directly to a qualification equivalent to a Master’s degree. There are also programmes at levels that do not necessarily link to national qualification frameworks. Not all degree levels are equally widespread. As Figure 2 shows, Bachelor’s degrees are by far the most popular. However, short cycle higher education is more common in Member States such as Latvia, Malta, Slovenia and Spain, whilst

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Figure 2 – Distribution of enrolments in tertiary education, 2017

Data source: Eurostat, [educ_uoe_enrt01].

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12 The International Standard Classification of Education (ISCED) is a statistical framework for organising information on education maintained by the United Nations Educational, Scientific and Cultural Organization (UNESCO).
13 Eurostat [educ_uoe_enrt02].
studies at Master’s level attract more students in Croatia, Cyprus, Czechia, Germany, Italy, Luxembourg, Portugal, Slovakia and Sweden. Both course levels are popular in Austria and France.

From 1990 onwards, various forms of higher vocational education and training (VET) at post-secondary and tertiary level have grown in importance, especially in Member States such as Austria, Denmark, Germany and the Netherlands. According to the European Centre for the Development of Vocational Training (Cedefop), the changes in VET at upper secondary level reflect the expansion in tertiary education, including the growing number of short programmes with a practical orientation and the emergence of private higher education institutions. As a trend, programmes such as nursing and social care moved from upper secondary to tertiary level. An array of educational institutions at post-secondary and tertiary levels increasingly mimic the academic model when it comes to programme titles and organisational structures. When it comes to substance, the content targets the specific needs of regions or sectors. Some VET programmes develop cooperation with employers and provide skills through work-based learning that supplements an academic education.

Engineering, Business, Administration and Law are consistently amongst the most popular courses in all Member States, accounting for 45 % of all male students and 29 % of all female students in the EU. Engineering alone attracts 25 % of all male students but only 7 % of female students. On the other hand, Business, Administration and Law attract 24 % of female students. Figure 3 shows that female students’ choices are spread more evenly than those of male students, across areas such as Health and Welfare (18 %), Arts and Humanities (13 %), Education (11 %) and Social Sciences, encompassing Journalism and Information (11 %).

Whatever the course of studies, credits defined by the European Credit Transfer System (ECTS) quantify studies at tertiary level to facilitate recognition by other institutions. ECTS units or credits specify the required hours of study and learning outcomes. Most Bachelor’s degree courses have a workload of 180 credits spread over three years but exceptions exist. In Cyprus and Spain, all Bachelor’s degrees require 240 ECTS, whilst in Bulgaria and Latvia most courses require 240 ECTS. In the Netherlands, there are fewer courses requiring 240 ECTS, however they tend to be the most popular courses. Within some Member States, courses at the same level but in different fields have different workloads.

Figure 3 – Students in Business, Administration, Law or Engineering, 2018*

* HR, IE, MT, SK, UK: 2017
Data source: Eurostat, [educ_uoe_enrt03].

17 See the relevant European Commission page on the European credit transfer and accumulation system for more details.
1.2.2. Academic staff

In most Member States, the number of academic staff increased between 2000 and 2015, most notably in Cyprus (171.4 %), Malta (176.5 %) and Slovenia (185.7 %). However, in the same period, staff numbers decreased in Bulgaria, Czechia, Estonia, Finland and Romania. Academic staff perform a number of functions, primarily research and teaching. These evolutions roughly follow changes in student numbers. Only in Belgium are there fewer than five main categories of academic staff in higher education institutions. In six other Member States there are between six to nine categories and in the other twenty Member States there are ten categories or more.18 In most Member States, student-to-staff ratios range from slightly below 10 % to above 20 %. However, these relatively homogeneous ratios mask the complex landscapes of teaching at tertiary level. In many Member States, staff in professional education dedicate more time to teaching than their colleagues in academia. In academic higher education, junior and middle-ranking staff carry out most of the teaching.

Doctoral candidates pursuing an academic career do not necessarily follow training to develop their teaching skills before they start teaching, nor do they do so later in their career. This aspect drew the attention of European ministers of higher education who declared that quality teaching deserves recognition in the progression of academic careers.19 Even within the academic milieu, the point is being made that doctoral candidates are not just early stage researchers but also early stage academics and as such need training and peer support to develop their teaching capabilities. Instead, some candidates reportedly found teaching intrinsically rewarding, but they often perceived it as a lonely activity that was not even considered in their evaluation.

From one academic’s perspective,20 this seems to be a missed opportunity, as the roles of teaching and research can mutually enrich each other when combined. As doctoral candidates are at the forefront of research, they are in a good position to make teaching more research oriented. At the same time, teaching helps the candidate master a topic more quickly and broadly. The interaction with undergraduate students, who are interested in the topic, may also bring in willing participants. Teaching and supervision are also useful in assisting the development of presentation, teamwork and leadership skills.

2. The EU’s response to six major challenges facing tertiary education

2.1. Maintaining relevance to current and future aspirations

The European Commission points out that Europe has the most equal and inclusive societies in the world, with high life expectancy and strong social protection systems. Yet the situation differs hugely between Member States and their regions. In 2018, 10.4 % of young people were neither in employment nor in education or training. Rates varied from 4.2 % in the Netherlands to 19.2 % in Italy.21 At the same time, European employers continue to have difficulty in finding people with the right skills. Europe’s resilience, innovation and competitiveness require improvements due to rapid

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19 See European Higher Education Area, Paris Communiqué, 25 May 2018, p.3.
20 S. te Pas, Why doctoral candidates should develop their teaching expertise, 6 March 2020, European University Association, Council for Doctoral Education.
21 Eurostat [lfsi_neet_a].
and profound changes induced by technological revolutions and globalisation. Figure 4 shows Member States’ skills index rankings in 2020 on the y-axis. Czechia ranks number 1 whilst Italy ranks 31, as the ranking includes four other countries. The index combines three pillars: skill development, skills activation and skills matching. Skills mismatch on the x-axis of the graphic is a component of the skills matching pillar.

The European Commission also indicates that there is a need for new skills that will help the economy become sustainable and green. Forecasts show there will be new jobs to help protect ecosystems and biodiversity; reduce the consumption of energy, materials, and water through high efficiency strategies; de-carbonise the economy; and avoid waste and pollution. These jobs would combine crosscutting competences with ‘specific’ skill sets. The main types of ‘green skills’ are in the domains of engineering, technology, science, operations management (e.g. cooperation with regulators and customers) and monitoring (observance of technical criteria and compliance with environmental laws and standards).

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22 The Commission adopted an education action plan in order to address challenges related to digital competences and technology. See also T.A. Madiega, Digital sovereignty for Europe, EPRS, European Parliament, July 2020.

There is also a gap between on the one hand the demand for a digital transformation of the economy, and on the other hand the level of digital knowledge, skills and competences within the workforce. According to the Digital Skills and Jobs Coalition, in the near future, 90% of jobs (especially in engineering, medicine, art and architecture) will require some level of digital skills. Figures from the 2018 Digital Economy and Society Index (DESI) show that about 43% of Europeans today still do not have a sufficient level of digital skills, whilst 17% have none at all.

Figure 5 shows the number of people employed as information and communication technologies (ICT) specialists in the EU. Figures from the ICT sector show that despite continued high levels of unemployment, due to skills gaps there will be 756,000 unfilled jobs for ICT professionals in Europe by 2020. In the current economic climate, a successful policy to foster skills for a digital transformation could secure a technological advantage and resilience in the face of global competition. The EU does not excel in delivering high quality skills, and some advanced Asian countries outperform it. This is currently a challenge for tertiary education in Europe, and one that will remain a challenge in the future.

EU leaders have also called on educators, including those in higher education institutions, to strengthen media literacy, a European sense of identity and democratic values. These calls come in the wake of a rise in populism, xenophobia, violent radicalisation and phenomena exacerbated by social media, such as the increased prevalence of fake news.

As well as this, higher education needs to address demographic challenges such as an ageing workforce and an increasing old-age dependency ratio, given that the proportion of working age people compared to people over 65 years old continues to decline. Tertiary education can provide

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25 For further details, see the dedicated European Commission page The Digital Skills and Job Coalition.
young people with the necessary skills to enable them to avoid delays in entering the labour market. There are also societal challenges, such as the social inclusion of groups such as migrant populations and other disadvantaged groups and the need to promote greater equality, including gender, racial and ethnic equality.

To promote and enhance the skills required to tackle some of the environmental, societal and skills related challenges, the EU promotes a number of research and innovation framework programmes, such as Horizon 2020. For instance, the EU is co-funding investment of €3.1 billion in areas such as climate action, the environment, resource efficiency and raw materials. The idea is to invest now in innovation to support a green economy in which waste and water are particular priorities. Waste is currently responsible for 2% of the EU's greenhouse gas emissions, whilst boosting growth in the water industry by just 1% could create up to 20,000 new jobs.

According to 2018 figures, some 112 million people (including the former Member State the United Kingdom) were at risk of poverty in Europe. Significant numbers of young people – on whom our future depends – are not in education, work or training. To this end, Horizon 2020 is co-funding an investment of €1.3 billion for research on new strategies and governance structures to overcome prevailing economic instability and ensure that Europe is resilient to future downturns, demographic changes and migration patterns. Funding also supports new forms of innovation such as open innovation, business model innovation and public sector and social innovation to meet social needs.

2.2. Impact of digital and disruptive technologies

Added to the economic, ecological and demographic mutations, the digital transformation, which changes all aspects of the world around us with increasing force, has far-reaching consequences for the future of universities. In fact, due to their pivotal role in society, higher education institutions are placed at the very centre of this profound transition, which brings with it both extraordinary opportunities and risks.

2.2.1. Impact on academic research

Two of the concepts often mentioned in the context of this ongoing digital revolution are artificial intelligence (AI) and big data. Although the use of AI-powered applications in research is still in a nascent stage, it is growing throughout the scientific community, advancing research in fields as distinct as medicine, climate models and even the virtual unwrapping of ancient papyrus scrolls. Whilst AI and data analytics can shorten research time, lead to new discoveries and bring down research costs, universities will need to nurture and maintain human talent, which is necessary to oversee the more automated research of the future. A diverse research community ensures wider perspectives, but few girls consider careers in the fields of science, technology, engineering and maths (STEM). In the digital sector there are also very few women, especially in the fields of artificial intelligence and cybersecurity. Racial minorities too are under-represented in the scientific community. This skews academic debate by reducing the number of perspectives from which it is

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30 For further information see the dedicate European Commission page on Horizon 2020.
32 For more information refer to the following briefings: V. Reillon, Understanding artificial intelligence EPRS, European Parliament, January 2018 and R. Davies, Big data and data analytics - the potential for innovation and growth, EPRS, European Parliament, September 2016.
approached, whereas a wider academic debate would be useful in addressing one of the fundamental weaknesses of algorithms and AI – their bias, which is also related to the profile of their creators.\(^{34}\) It is well known that AI models can include human and societal biases and deploy them at scale, leading to substandard results.

There are also other challenges for academic research stemming from the inherent characteristics of big data/AI based research. For example, to what extent can academics rely on analysis based on neural networks, which may be impossible to verify, as the AI system generates an answer without providing a clear picture of how it arrived to it?\(^{35}\) While results based on algorithms open new possibilities, there is also a risk of losing the element of creativity, which – whilst essential for science – has so far not been programmable into machines. It is unclear how to lower AI’s reliance on probability and to equip it with an ability to carry out causal reasoning, without which it will not deliver the expected revolutionary breakthrough in future scientific research. New technologies can also change what we perceive as research. For instance, will small-scale qualitative research still be valued if big-data based research becomes the new norm?

### 2.2.2. Impact on teaching in tertiary education

The other side of the coin is the impact that AI and big data will have on teaching processes and the functioning of tertiary education institutions in Europe.\(^{36}\) Figure 6 shows how contemporary classrooms can blur the boundaries of time and space by combining physical and virtual spaces.\(^{37}\) Trends, such as financial pressures created by the combination of unprecedented numbers of students pursuing higher education and austerity measures, are likely to incentivise universities to take up AI solutions to lower costs.\(^{38}\) The higher education sector is already in a period of historic disruption, as colleges and universities adapt to new operating models and find innovative ways to deliver educational services and engage students.

Those governing tertiary education institutions may be encouraged by the fact that AI systems can analyse large amounts of data and unveil patterns that are otherwise difficult to discover.\(^{39}\) Those selling the solutions suggest that by taking data-driven decisions, the educational offer can be adapted to address the needs of particular demographics, fields or even employers who will be increasingly interested in having universities designing tailored programmes for their needs. However, all this raises questions related to the right of individuals to their personal data.\(^{40}\) There is also a debate on the balance between the utilitarian function of tertiary education and its role in

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35 Artificial neural network is made of a large number of units (artificial neurons) which, after being fed an input, interact with each other at many layers creating an output. It can be trained and has an ability to learn. The problem of lack of transparency and difficulties with replication in scientific academic research exist even with regards to coding see: S. Bakers, *Pandemic response shines spotlight on coding in science*, THE World University Rankings, 16 June 2020.


38 See for example UNESCO policy paper, *Six ways to ensure higher education leaves no one behind*, 2017.

39 However, this is subject to what privacy and data ownership laws allow.

40 This involves issues related to the right to privacy, free consent, transparency and the right not to be manipulated or to be subjected to automated decisions, see for instance, S, Voronova with A, Nichols, *Understanding EU data protection policy*, EPRS, European Parliament, May 2020 and *Privacy and personal data protection* (European Parliament impact 2014-2019), blogpost, EPRS, European Parliament, 30 August 2019.
basic research, the cultivation of cultures and in promoting human agency. This debate became tangible as humanities disciplines that seemed of little practical value offered insights into how narratives shape crises such as the one caused by coronavirus.41

From a financial perspective, a continuous outlay is necessary in order to ensure that an adequate infrastructure is at the disposal of students and teachers. Teaching staff may need ongoing, relevant and up-to-date training to apply new technologies effectively. Commercially available solutions have the advantage of being ready made and easy to use, but they constrain users, are relatively expensive and raise serious ownership issues. Open source solutions, on the other hand, allow for the customisation of tools to fit a specific purpose, are cheaper and respect authors’ ownership, but they require users to develop skills in collaboratively designing the tools that they use. Faculties and students would have the possibility to develop, use and share open source tools based on their research, teaching and learning needs. This, however, presupposes continuously updating the right skills.42

There is a pervasive global trend in higher education towards the personalisation of learning.43 Algorithms can tailor a customised learning path that builds on the individuals’ strengths, pace and interests. As an alternative to the personalisation shift, higher education institutions can choose to undertake a shift towards more student-centred practices, which instead create the conditions for students to influence and take responsibility for their learning pathways and environments. These practices are still rather scattered and teacher-centred practices are still by far more common. Introducing new technologies holds the promise of an efficient, flexible, personalised and attractive educational offer. At the same time, an analytical report by NESET – a network of experts working on the social dimension of education and training – suggests that to contribute effectively towards student-centred learning, technology needs to reinforce and in turn be reinforced by nine other

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core elements, which include adequate pedagogies, curricula, assessment modes, learner and teacher support and quality assurance criteria to name but a few.\(^{44}\)

As humans are increasingly likely to be working alongside or be pitted against robots in the future job market, educational systems are encouraged to shift their focus on the very skills and competences that for the time being cannot be entirely automated: creativity, problem solving, negotiation, adaptability, critical thinking, working together, empathy, emotional intelligence and cross-cultural communication. Solutions offered by technology may be able to contribute to new ways of developing these skills, strengthening student engagement. However, as the aforementioned skills are relational in nature, the question is whether they are more effectively fostered in personalised or group contexts. Another question is whether a highly individualistic view of education risks isolating learners to some degree, and if so, whether this leaves humans in a weaker position compared to technologies where interconnectivity is their main strength.

There is also the issue of the extent to which automated and online teaching can replace human teachers. Educators have used the teacherbot concept as a helpful tool.\(^{45}\) Others predict that by 2027 robots could replace human teachers.\(^{46}\) Digitally supported learning spaces are set-up with the goal of supporting new teaching methodologies, yet there is a risk that artificial intelligence and other smart solutions serve to scale up bad pedagogical ideas.\(^{47}\) For the moment, human judgment still seems best placed to mitigate the risks connected with technology-based solutions to higher education. Without a clear vision of the purpose of using such technology, it can become a distraction.

Technology can serve to meet an increasing demand for lifelong learning, due to its flexibility and relative accessibility. For instance, digital tools open up classrooms to wider audiences making it easier to respond to a rising demand for tertiary education. Already for some time now, tertiary education institutions in Europe have explored the possibilities of online learning offered by Massive Open Online Courses (MOOCs). However, maintaining the quality of interaction and feedback is more challenging than with face-to-face scenarios. Unaddressed, this could threaten the quality of education and lead to an increase in dropout rates. While MOOCs have been relatively successful and have a growing number of users, there is still a digital divide that replicates the educational divide. Certain categories of potential learners are blocked either because they do not have access to the tools or because they lack the necessary skills.\(^{48}\)

An OECD study also suggested that distance solutions might not necessarily offer universities the cost saving solution they are looking for. It quoted the example of University of North Carolina, where it was discovered that developing distance courses is on average more expensive than on-campus courses, because they necessitated smaller group sizes.\(^{49}\) MOOCs on the other hand are more likely to offer micro-credentials than full degrees, and the latter represent a very small fraction of degrees offered. Online courses do not seem to have a profound effect on the structure and

\(^{44}\) For a discussion on student-centred learning in higher education and how technology can contribute towards achieving it see M. Klemenčič, M. Pupinis and G. Kirdulytė, Mapping and analysis of student-centred learning and teaching practices: usable knowledge to support more inclusive, high-quality higher education, NESET Analytical Report, 2020.


\(^{46}\) World Economic Forum, Why robots could replace teachers as soon as 2027, December 2017.


\(^{48}\) See for instance The inclusive internet index 2020, The Economist intelligence unit ranks 100 countries on indicators such as the available infrastructure and levels of usage, the cost of access relative to income, the existence of relevant content in the local language and the capacity to access the Internet, including skills, cultural acceptance, and supporting policy.

\(^{49}\) OECD, Resourcing Higher Education: challenges, choices and consequences, June 2020, p.45.
function of universities. On this basis, some claim that Open Education Resources (OERs) will not replace university education with online solutions, even so this is a growing sector in which the European Union is investing through funding and coordination.

2.2.3. The EU in the digitalisation of academic research and tertiary education

Funding

In 2018, the EU launched a digital education action plan (see Figure 7). The plan sets out three main priorities: to improve the use of digital technology for teaching and learning; to develop competences and skills relevant for the digital transformation and to improve education through better data analysis and foresight. Under the plan, the EU will create a platform for digital higher education to enhance cooperation with the support of the Erasmus+ programme. The platform will bring together relevant platforms and sites in Member States. The European Commission will also launch artificial intelligence and learning analytics pilots in education to better use available data in Europe, build predictive models for future skills and improve policymaking. The European Universities Initiative, another pillar of the European Education Area, will also aim to address the profound technological and structural changes affecting teaching and learning. It will seek to transform European universities, with a focus on spreading high-level digital competences and creating a much deeper level of cooperation between universities. The white paper on artificial intelligence launched by the Commission on 19 February 2020 offers further support through drawing from the digital Europe programme and Horizon Europe to establish networks of leading educational institutes, professors and scientists to offer masters programmes in AI.

Erasmus+ will support digital learning from early childhood to tertiary education. It will continue to focus on supporting the acquisition of digital skills through cross-border experiences. In the field of

Figure 7 – European Digital Competence Framework for Citizens (DigComp)

Source: European Commission.

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50 According to the European Parliament’s Committee on Culture and Education, the proposed cuts of the European Council to the European Commission’s draft proposal to the financial envelope of the Erasmus+ funding programme for education, training, youth and sport could seriously undermine this initiative. See the press release, Proposed Erasmus+ MFF budget — hopelessly short of citizens’ expectations, say MEPs Verheyen and Zver, 18 February 2020. As part of the recovery stimulus, the European Commission proposed new figures for the Multiannual Financial Framework on 27 May 2020. It proposes that Erasmus is allocated almost EUR 28 billion in current prices and €24.6 billion in constant 2018 prices. This still constitutes a cut on the original proposal.

digital skills, the digital Europe programme, with a proposed budget by the European Council of €6.8 billion for the period of 2021-2027, will complement Erasmus+ by supporting the development and acquisition of advanced digital skills in higher education, skills that are necessary for the utilisation of breakthrough technologies such as artificial intelligence or high-performance computing. This will be done in cooperation with interested industries. The programme aims to widen the digital talent pool with around 256 000 beneficiaries who will be able to utilise the latest technology in businesses throughout the EU. It will also focus on developing Master's programmes and short-term specialised training courses in frontline and advanced digital technologies, as well as on offering job placements in companies or research centres where such technologies are developed or used. The European MOOC Consortium, co-funded by the Erasmus+ programme, supports the development of MOOCs and OERs in the EU. The Commission also established the OpenEdu framework, which aims to modernise and innovate the tertiary education systems in Europe through the use of digital technologies.

The European Social Fund Plus, which also covers tertiary education, will support EU Member States to enhance the quality, effectiveness and labour market relevance of national education and training systems. This will include the acquisition of key competences and digital skills. Digital skills will be fundamental in creating upskilling and reskilling opportunities. The European Social Fund Plus (ESF+) will have closer cooperation with Erasmus+ in order to create synergies. ESF+ will also finance the training of researchers, networking activities and partnerships between higher education institutions.

Horizon Europe will finance grants for Master’s, doctorate and post-doctorate research activities in the digital field, through the Marie Skłodowska-Curie actions and the European Institute of Innovation & Technology (EIT). The EIT also set up ICT labs to foster entrepreneurial ICT talent, which helps to orient higher education towards innovation and entrepreneurship. For the same purpose, it also set up knowledge and innovation communities, together with co-location centres and mobility programmes, to bring people from different countries, disciplines and organisations together.

In a broader context relevant to the future of Europe, a profound digital transformation of the Union is one of the key priorities of the May 2020 proposals for the revised Multiannual Financial Framework and the recovery plan. The MFF will be discussed further in a dedicated section.

Coordination

Policy change is supported by coordination as well as funding. The European Higher Education Area Ministerial Conference in Paris in May 2018 provided policy direction when it highlighted the creation of a ‘digital Bologna’ by 2020 as part of the Bologna process. The aim is order to improve the performance of higher education at all levels. The position paper provided several recommendations such as increasing the number of online study programmes, wider recognition of digital learning and development of digitally enhanced learning environments.

Cedefop – the European Centre for the Development of Vocational Training – supports the implementation of such policies as it systematically analyses the drivers of automation, robotics, artificial intelligence and other digital technologies in employment and their impact on the type of skills required for certain jobs. This is done with the aim of informing the debate on the future of vocational training,

52 The main new tools, under the Next Generation EU plan, include the Recovery and Resilience Facility with a budget of €560 billion to finance investments and reforms which support digital transition (including in education), and a Strategic Investment Facility, which aims to generate investments of up to €150 billion in the economic sectors fundamental to that process. Regarding the Digital Europe Programme, the Commission proposes to allocate €2.2 billion for Artificial Intelligence and €1.8 billion for cybersecurity.
including at higher education levels. Eurydice, a network gathering national education systems across Europe, prepared a report on digital education in Europe in 2019, in which it examined how higher education institutions approach the development of teacher-specific digital competences. It recognised that investment in digital infrastructure remains critical for many universities and underlined that digital competences need to form an important part of teacher training, with more harmonisation and mutual recognition at EU level being advantageous.

2.3. Collaboration with business

![Figure 8 – Expectations in industry and academia](image)

The European Commission claims that communities need to see that higher education institutions in Europe are beneficial to them. This is yet another aspect in the quest to maintain relevance and it is driving closer collaboration and partnerships between research institutions and business, as well as a debate on how research outputs can be shared and used. There are many examples of collaboration between universities, industrial partners and start-ups. Academia and industry can develop symbiotic relationships. Tertiary education graduates are absorbed by industry, and research work in universities is used by industry and transformed into products and services. Industry would like graduates whose skill-sets are aligned to industries’ requirements. Firms therefore fund focused research in universities, this includes setting up laboratories, designating industry chairs, or providing guest faculty and placement opportunities. This interaction also leads to the identification of new research topics. While the European students’ union agreed that links with industry are important, it warned that industry must cooperate with higher education institutions, respecting the value of freedom in teaching and research.

2.3.1. Knowledge application

In an ideal scenario, both the expectations of industry and those of academia are satisfied to a similar extent and an equal partnership develops. Surveys show that the most productive collaborations

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56 *World Economic Forum, 3 ways to nurture collaboration between universities and industry*, 23 November 2018.

57 *BM 76: Statement on countering commodification in higher education*, European Students Union, 24 May 2019.
are strategic and long-term.\textsuperscript{58} They are built around a shared research vision and may continue for a decade or beyond, establishing deep professional ties, trust and shared benefits, which can bridge the important cultural difference between academia and industry. Ideally, they are led by individuals who understand both the academic and business world.

The European Commission mentions the Quadruple Helix as an emerging model of innovation and cooperation amongst higher education institutions that addresses this concern. This model involves higher education institutions, government, business and civil society.\textsuperscript{59} It distinguishes itself with greater citizen and community involvement in promoting social innovation, environmental improvements and community cohesion, as well as more citizen and community involvement in the development of new products, services and processes in enterprises.

Very often university cooperation to promote regional economic development and smart specialisation strategies depends on the initiative of individual institutional leaders and academic staff, rather than being an institution-wide strategy. Higher education institutions lack strong incentives and local businesses can have limited capacity to cooperate effectively with academic partners. However, at European Union level there are a number of projects working to address this deficit. The three text boxes in the 'Collaboration with business' section contain examples of projects funded by Erasmus+ aimed at reinforcing collaboration between educational institutions, businesses and public administration. The first textbox exemplifies a sector skills alliance, the second a strategic partnership in higher education and the third a knowledge alliance.\textsuperscript{60} The Commission developed a self-assessment tool in cooperation with the OECD for higher education institutions interested in exploring their innovative potential.\textsuperscript{61} Similarly, the Joint Research Centre’s Hess project focuses on the way higher education can contribute towards smart specialisation strategies. The European Association of Institutions in Higher Education (EURASHE) has launched an Erasmus+ project which will map and support further regional engagement activities, especially by Universities of Applied Science.\textsuperscript{62} Another Erasmus+ project is developing a European framework for community engagement in higher education.\textsuperscript{63}


\textsuperscript{59} See for instance A renewed EU agenda for higher education, COM(2017) 247 final.

\textsuperscript{60} Sector skills alliances are geared towards vocational education and knowledge alliances towards academic education, strategic partnerships include public entities among the partners. For more details, see D. Chircop and S.E. Jędziejewska, Erasmus+, EPRS, European Parliament, November 2016.

\textsuperscript{61} For further details see on the self-assessment tool see the relevant HEInnovate web page.

\textsuperscript{62} For further details see the dedicated page to the UASiMap project on the Eurasishe website.

\textsuperscript{63} For further details see the TEFCE project page.
2.3.2. Combining studies and work experience

Some 97% of Europeans think that it is useful for students to work on innovative projects with researchers and companies from different countries.\(^{64}\) EU graduates who underwent some work-based experiences during their studies also reported better prospects in a graduate tracking survey conducted by the European Commission.\(^{65}\) The EU runs a number of actions that align with these perceptions by developing cooperation between education or training establishments and firms. One strand of action draws on intergovernmental agreements. The process began with the Copenhagen Declaration, which led to the emergence of an EU policy on vocational education and training (VET) that includes cooperation between education and training providers and firms.\(^{66}\) The latest round, the Riga conclusions, made work-based learning a top priority.\(^{67}\) Following in this direction is the blueprint for sectorial cooperation on skills under the new skills agenda, collaboration between the European Commission and the European Business Network for Corporate Social Responsibility (CSR Europe) on the European pact for youth, the European alliance for apprenticeships and European vocational skills week, which is an awareness raising effort.\(^{68}\) Erasmus+ develops joint qualifications in VET with strong work-based learning and mobility components.\(^{69}\)

Other EU actions have been introduced on the basis of Article 166 of the Treaty on the Functioning of the European Union (TFEU). These include the creation of the European Centre for the Development of Vocational Training (Cedefop) and its projects: the skills panorama and skills and jobs monitoring.\(^{70}\) The Council recommendation of March 2018 on a European framework for quality and effective apprenticeships and the Erasmus+ vocational education and training mobility

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64 See Flash Eurobarometer 466.
66 The full title is Declaration of the European ministers of vocational education and training, and the European Commission on enhanced European cooperation in vocational education and training.
67 For further information see the relevant European Commission page on developing skills for the labour market.
68 For further details see the European Commission page on Blueprint for sectorial cooperation on skills and A new skills agenda for Europe; working together to strengthen human capital, employability and competitiveness COM(2016) 381 final. See also the websites of the European pact for youth, the European vocational skills week and the Council declaration on the European alliance for apprenticeships for projects that have resulted from the collaboration between the European Commission and the business community.
69 See the relevant European Commission pages on strategic partnerships, sector skills alliances, knowledge alliances and joint qualifications in vocational education and training.
70 See 2016/0257(COD) for the position adopted by the European Parliament in establishing a new regulation for the Centre. See also the relevant pages for the Skills panorama and the European skills index.
The future of tertiary education in Europe

The European Credit system for vocational education and training (ECVET) allows learners to accumulate and transfer learning units. This is possible as the European Quality Assurance in Vocational Education and Training (EQAVET) builds transparency and trust. The Erasmus+ funding programme allows VET students to carry out apprenticeships or traineeships abroad. Staff working in a VET institution can also go to an enterprise abroad for job shadowing or a work placement. Staff from firms can, meanwhile, provide training in VET institutions in another Member State. Alongside learning mobility, Erasmus+ develops sector skills alliances (see textbox), strategic partnerships (see textbox), knowledge alliances (see textbox) and joint qualifications in VET with strong work-based learning and mobility components. The textboxes provide examples of a project chosen in higher education under Erasmus+. These projects help tertiary education institutions develop networks, in the following section the analysis will look at other interactions arising from internationalisation and intra-EU collaboration.

2.4. Improving global and intra-EU collaboration

Global university rankings are a worldwide trend that emerged with the internationalisation of higher education. Universities worldwide are now striving to become ‘world-class’ institutions and constantly aim to improve their ranking position. Rankings have an impact on the prestige of both the institution and the higher education system more generally, allowing them to attract funds and talent. This has pushed some countries such as Germany, China and Russia to develop specific initiatives to promote excellence within certain institutions. Such initiatives can have positive knock-on effects that raise the bar for the whole system, but they can also create growing disparities that ultimately become dysfunctional for the higher education ecosystem. Many see the global ranking of universities as the ultimate tool for assessing individual higher education institutions. Others

Knowledge alliance
Dynamic – Towards responsive engineering curricula through Europeanisation of dual higher education
EU Grant €697 989
The DYNAMIC project involves 16 partners from Bulgaria, Romania, Croatia, Germany and Austria. Together they are developing, implementing, testing and validating country-adapted models of dual education. Regular practical phases in enterprises are integrated into the academic curricula of three undergraduate programmes, one in mechatronics and robotics (Sibiu, Romania), another in shipbuilding and construction (Varna, Bulgaria) and another in mechanical engineering and production (Pula, Croatia). The project offers more flexible routes to acquiring current industry-related skills to boost and sustain innovation in these sectors. The knowledge and experience gained in the project will be synthesised in a report.

Source: Project ID 588378-EPP-1-2017-1-DE-EPPKA2-KA

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71 See the text of the Council recommendation of 15 March 2018 on a European framework for quality and effective apprenticeships. For further details on the mobility charter, see the European Commission pages.
72 See the recommendation on the establishment of a European credit system for vocational education and training.
73 See the recommendation on the establishment of a European quality assurance reference framework for vocational education and training.
74 See the regulation establishing Erasmus+: the Union programme for education, training, youth and sport.
75 See the relevant European Commission pages on strategic partnerships, sector skills alliances, knowledge alliances and joint qualifications in vocational education and training.
indicate that given their limited and predominantly quantitative orientation, rankings should not be seen as a means to improve quality in higher education.\textsuperscript{77}

The European Commission partly funds U-Multirank, which ranks universities on five dimensions – teaching and learning, research, knowledge transfer, international orientation and regional activity. According to the 2019 U-Multirank rating – the European multidimensional, user-driven approach to international ranking of higher education institutions – EU universities dominate the top ranks for their level of collaboration.\textsuperscript{78} This includes student mobility (22 out of the top 25 universities), their international orientation (20/27), offer of continued professional development (18/25), interdisciplinary research (17/26), joint publications with industrial partners (16/25) and contact with workplaces (15/25). On the other hand, US universities dominate in research and the number of publications they produce. This includes patents awarded (17/26) and top cited publications (14/25). China too has a research advantage over the European Union in the number of top universities for research publications (5/25) and patent awards (2/26). In spite of an erosion in its global share, the United States alone still attracts 17 % of international students; in comparison, the United Kingdom attracts 13 %, while France and Germany account for 6 % of global students each.

\textbf{2.4.1. Cooperation within the EU}

In this context, for the past 20 years, European tertiary education ministers have pursued an ambition to reinvigorate European higher education to make it more competitive and attractive globally. The European Union supports this goal by facilitating student and staff mobility, to increase contacts between higher education institutions. In fact, all the Member States and the European Commission itself are members of the European higher education area. In this area, 48 countries cooperate in an ongoing process that involves both political and institutional players. Together they undertake structural reforms and share tools that ultimately make their higher educational intitutions increasingly compatible. This ongoing process is known as the Bologna process, named after the city where four European ministers met in 1991 and agreed on this endeavour. Since then, whilst learning mobility is on the increase, the issue of removing burdensome recognition procedures remains open. The 2018 Bologna process implementation report also indicates that improvements in the implementation of degree structures and the quality of teaching will still require efforts in the future.\textsuperscript{79}

Figure 9 indicates the nationalities of visiting students in the Member States. Mobility in the European Union is also synonymous with the programme Erasmus+, a programme that supports the aims of the Bologna process. The European Commission estimates that Erasmus+ will have created mobility opportunities for over 4 million people, including 2 million higher education students, 650 000 vocational education and training students, 800 000 lecturers, teachers and other staff and over 25 000 joint master’s degree students from 2014 to 2020. The programme also dedicates 28 % of its budget to promote cooperation for innovation and the exchange of best practices. By 2020, around 25 000 strategic partnerships will have linked 125 000 educational institutions, youth organisations and enterprises. Projects implement innovative practices and partners learn from each other. An additional 3 500 institutions, organisations and enterprises will have set up more than 300 sector skills alliances or knowledge alliances. Sector skills alliances address skills gaps by adapting vocational education and training to sector-specific labour-market needs. Knowledge


\textsuperscript{78} See the website \textit{U-Multirank}.

\textsuperscript{79} \textit{Bologna Process implementation report 2018}. 
alliances foster the capacity for innovation and entrepreneurship in higher education institutions. More recently, the Commission decided to prioritise the establishment of networks of European universities, as mentioned in section 2.2.3, as well as the automatic mutual recognition of diplomas and a European student card. European universities are university networks created to push for quality, excellence and innovation by integrating curricula and fully embracing mobility. The automatic mutual recognition of higher education and school-leaving diplomas is intended to remove barriers to student mobility anywhere in the EU, while the European student card will facilitate the secure exchange of information and reduce administrative burdens.

2.4.2. Cooperation beyond the EU

Besides cooperation between Member States, the European Union values international cooperation in the field of higher education to advance its position as a centre of excellence and to support efforts in the internationalisation of systems in Member States and beyond. This cooperation also works to improve education quality in the EU and beyond through mutual learning, comparison and the exchange of best practices. Another 1.9% of the Erasmus+ budget finances activities under the Jean Monnet sub-programme. These activities promote excellence in European integration studies in higher education worldwide, by supporting academic institutions, research and teaching activities.

The EU has also established a number of opportunities for dialogue on higher education policy with other countries and regions. EU programmes which are open to worldwide participation and complementary initiatives support cooperation with countries like the US and China. Examples include mobility between the EU and China, which reached over 4,000 students and staff between 2015 and 2017. China is also the top beneficiary among partner countries in the Erasmus+ programme for capacity building projects. With the United States, a bilateral branch of the Fulbright Programme for cooperation with the EU called the Fulbright-Schuman Programme, funds graduate and postgraduate studies, research and lecture proposals on topics related to US-EU relations, EU policy or EU institutions. It is open for interested EU and US citizens. The EU-US young leaders seminar is a platform that periodically brings together young leaders to discuss topical issues. In the

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80 See the relevant European Commission pages dedicated to the European universities initiative, the European student card initiative as well as the Council recommendation on promoting automatic mutual recognition of higher education and upper secondary education and training qualifications and the outcomes of learning periods abroad.

81 See EU priorities for higher education.

82 See the Commission’s webpage dedicated to policy dialogue with specific regions and countries around the world.

83 See the Commission press release EU and China strengthen cooperation on education, culture, youth, gender equality and sport 15 November 2017.
context of the modernisation of higher education, a comparative Tuning study\(^\text{84}\) for the EU and US, which is part of the Bologna process reform, develops instruments that improve the way students prepare for entry into the labour market. The Tuning initiative between the EU and China aims to strengthen compatibility between the two educational systems and improve outcome-based education.

Horizon 2020 also strengthens international cooperation in research and innovation. It will invest over €550 million in 2020 in flagship cooperation projects in areas of mutual benefit. Examples include working with Africa on global health, food and nutrition security, with the US, Canada and Japan on clean energy and with China on food production, biotech, energy, natural resources and urbanisation.

2.5. Quality assurance

International rankings, as discussed in section 2.4, identify and rank excellent higher education institutions. Typically, they do so based on institutions’ research activities and their publications in English language journals. In turn, higher education institutions implement bibliometric measures and peer review techniques to verify the quality of research outputs. They pay less attention to measure education, outreach and engagement activities.\(^\text{85}\) Quality assurance, on the other hand, seeks to improve teaching in higher education institutions through external evaluation. However, supervisory models are more common than improvement-oriented external quality assurance models.

2.5.1. European tools

The European Quality Assurance Register for Higher Education (EQAR)

Higher education institutions and programmes in the European Higher Education Area (EHEA) are subject to regular external review by quality assurance agencies. Agreed standards and guidelines for quality assurance provide a common framework for this exercise. The European Quality Assurance Register for Higher Education (EQAR) is the official register of quality assurance agencies, listing the ones that substantially comply with these standards and guidelines. EQAR provides a register of agencies, a database of higher education institutions and programmes that have been subject to external quality assurance and information on external quality assurance systems and activities in Europe.

Source: [https://www.eqar.eu/](https://www.eqar.eu/)

Within the European Higher Education Area, quality assurance mechanisms are streamlined to improve mobility and the recognition of qualifications, thereby promoting the internationalisation of higher education in Europe. The Bologna process is an important driver of quality assurance in Europe. The 2018 implementation report\(^\text{86}\) indicates that there is room for improvement in the implementation of quality assurance within the area. In some countries, students are not yet fully involved as equal partners in all quality assurance processes. Many countries still use only national quality assurance agencies for external quality assurance and the European approach is rare, even in the case of joint programmes. In some countries, there are errors in the way quality assurance processes apply guidelines on the European credit transfer and accumulation system (ECTS).

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\(^{84}\) Tuning educational structures in Europe started as a project in 2000 to link the political objectives of the Bologna process and the Lisbon strategy to higher education institutions. This became a process to develop and evaluate quality in degree programmes. As a term, tuning indicates that the end is not uniform programmes or prescribed curricula but that universities identify common points of reference and understanding.


\(^{86}\) The European Higher Education Area in 2018, pp. 127-151.
A report written by the European Quality Assurance Register for Higher Education (see text box) claims that cross-border quality assurance is useful to improve the match between compatible higher education institutions and quality assurance agencies. Cross-border quality assurance also strengthens the international profile of higher education institutions and improves the recognition of their qualifications. It also benefits the agencies by widening their horizons and providing opportunities to improve their own methodologies. However, a set of recommendations drawn up on cross-border quality assurance also suggest that higher education institutions should think carefully about their reasons for taking this option. They are also advised to consider the real compatibility of the agency chosen, as well as other practicalities such as legal and linguistic requirements and communication amongst all parties to ensure that the exercise addresses real needs and is sensitive to cultural and contextual differences.

A study carried out on behalf of the European Parliament highlighted the difficulty in establishing the real impact of either rankings or quality assurance. Each, however, seem to have had both a negative and a positive influence. Whilst quality insurance aims at ensuring compliance with minimum standards, excessive bureaucracy hinders the development of a culture of quality. On the other hand, rankings may serve to buttress the reputation of some higher education institutions and boost their attractiveness to students. However, they also generate practices where the sole value is to improve ranking positions, therefore resulting in less variety within the sector as many institutions try to imitate the 'winning model'. The study made a long list of recommendations. It suggests, for instance, the promotion of a European dimension of quality assurance that supports a culture of quality in higher education institutions. It also suggests that quality assurance agencies should be encouraged to make the results of their exercises more visible and understandable. Finally, it suggests modifications to U-Multirank to improve its viability and its visibility.

### 2.5.2. Effectiveness of quality assurance

The European Union supports the Bologna process, a key driver of quality assurance in the European Union, by providing a permanent secretariat that ensures continuity alongside the rotating secretariats. In this capacity, it monitors the effectiveness of quality assurance through its agencies. Eurydice, a network under the European Commission's Education, Audiovisual and Culture Executive Agency (EACEA), provides information on how quality assurance is carried out in each of the countries participating in the European Higher Education Area. Together with Cedefop, it keeps a mobility scoreboard with indicators such as the provision of information and guidance, the recognition of qualifications and the portability of grants and loans to monitor the extent to which European countries are removing obstacles to learning mobility. The second report of the mobility scoreboard (2020) noted that following its first report, several Member States had started to require external quality assurance agencies to monitor the use of ECTSs.

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90 See the official Eurydice website, the dedicated page of the Directorate-General Education, Youth, Sport and Culture and an example of a country report on quality assurance in higher education in one of the Member States (Austria).
systematically.\textsuperscript{91} The EU Erasmus+ programme supports projects aimed at improving transparency and recognition of skills and qualifications through quality assurance.\textsuperscript{92}

Another aspect of quality assurance is graduate tracking to establish the relevance and value of studies undertaken by graduates. A report published by the Commission indicates that while graduate tracking is established in a significant number of Member States, there are still some Member States that do not carry out graduate tracking and others that could extend the exercise to reach out to the entire graduate population. The lack of uniformity in graduate tracking exercises in different Member States limits their value in peer learning exercises for policy makers.\textsuperscript{93}

A study\textsuperscript{94} on quality assurance managers in higher education institutions in Germany identified a link between the motives for carrying out quality assurance and the efficacy experienced by the managers who carry it out. Managers who thought that their work only served to satisfy the Bologna requirements also claimed to have little impact on improving the functioning of higher education institutions. On the other hand, those that claimed to have the backing of higher management, as well as those who said that quality assurance is internally driven by strategic considerations, did consider themselves effective.

2.6. Financing of tertiary education, fees and barriers to inclusion

2.6.1. Public contribution

Financing backs quality research and quality teaching. Public sources provide around two thirds of the funding for tertiary education in the EU. Public expenditure on tertiary education covers payments from all levels of government and finances all types of institutions and entities that provide tertiary education or supporting services. It also includes transfers such as subsidies to households. The European Tertiary Education Registry, the first comprehensive database on European higher education, identifies a growing trend to link the attribution of public funds with performance criteria.\textsuperscript{95}

Figure 10 shows the expenditure on tertiary education both as a percentage of gross domestic product (GDP) and as a percentage of the spend across education levels.\textsuperscript{96} The public expenditure on tertiary education as a proportion of GDP stood at 1.18\% for the European Union. This percentage indicates the level of public effort in support of both academic and professional tertiary education compared to the strength of the economy. Expenditure on tertiary education covers 28\% of expenditure in education taking all levels into account. Public expenditure on tertiary education also represents 2.5\% of the total public expenditure.\textsuperscript{97} This percentage indicates the relative priority of the sector as a policy area. In Portugal, research and development accounts for more than half of the tertiary education expenditure.

\begin{footnotesize}
\begin{enumerate}
\item \textsuperscript{91} Mobility scoreboard. Higher education background report 2018/19, Eurydice (Education, Audiovisual and Culture Executive Agency), February 2020.
\item \textsuperscript{92} For an example, see the dedicated European Commission call notice and results page.
\item \textsuperscript{93} P. Vale, A. Zaidi, S. Beadle, C. Abdallah, A. Hannah, A. Kottmann, S. Manssberger-Nindl, Mapping the state of graduate tracking policies and practices in the EU Member States and EEA countries: Final report, Directorate-General for Education, Youth, Sport and Culture (European Commission), ICF Consulting, June 2020.
\item \textsuperscript{95} How are European higher education institutions funded? New evidence from ETER microdata, Analytical Report No.2/2019, European Tertiary Education Register.
\item \textsuperscript{96} The latest data available for Member States is from 2016. However to obtain aggregate percentages for the EU, the calculations were made over 25 Member States as Denmark and Croatia do not provide any figures. The aggregate percentages are based on 2015, as data for 2016 is still incomplete.
\item \textsuperscript{97} Eurostat [educ_uoe_fine08].
\end{enumerate}
\end{footnotesize}
In 2015, there were four Member States (Estonia, Finland, the Netherlands and Sweden) that dedicated more than or close to half of their tertiary education expenditure to research and development.98

Figure 10 – Expenditure on tertiary education, 2016

Data source: Eurostat[educ_uoe_fine01], [educ_uoe_fine06]

2.6.2. Remuneration of academic staff

In most Member States, top-level regulations or civil service scales define remuneration of academic staff.99 In almost all Member States, remuneration also reflects achievement, but with scarce resources, academics are experiencing increasing performance pressures. Higher education institutions have created new staff categories to cope with increasing demands. One example is postdoctoral fellows discussed in the textbox. Precarious working conditions have professionalised researchers by turning their attention towards funding, fragmenting academic endeavours with frequent shifts in research focus, methods, environment and priorities depending on funding strands.100 The standard career path, which starts from a junior position and moves through an intermediary stage and then onto a senior position, is not necessarily accessible to all academic staff.

98 Germany is investing very heavily in research and development but not all of this investment benefits tertiary education institutions D. Matthews, Germany widens R&D lead over US and UK, Times Higher Education, 17 May 2020.
Fixed-term and part-time contracts are on the rise, especially amongst the junior grades. An OECD study indicated that this had negative consequences on the quality of teaching and learning and reduced the institutions’ ability to attract and retain talented academics.\textsuperscript{101} Sabbaticals are usually restricted to medium and senior ranked academics. Men are more likely to occupy senior grades while women are more likely to work under precarious conditions. Academics from ethnic minorities are also less likely to achieve central roles. The proportion of academics under the age of 35 years is low and this could lead to difficulties in the future due to a lack of generational renewal. Crises such as the period following the financial fallout of 2008 and the lockdown due to the coronavirus pandemic have led to job losses amongst those with precarious contracts. However, the impact often varies, with universities that depend heavily on fees, especially on international student fees, seeing the most drastic job cuts.\textsuperscript{102}

### Postdoctoral fellows - The case of highly qualified researchers with precarious contracts

One phenomenon is the rise in ‘Postdocs’, professionals with a doctoral degree who mainly contribute to research carried out in higher education institutions but who enjoy very low prospects of achieving a tenure contract. One study claimed that while 85\% of these professionals would like an academic career, fewer than 3\% are offered the opportunity. On average respondents were 34 years old and the average duration of their contract was 31 months. While they were all keenly aware of the importance of networking, 40\% of them had not participated in any training and only 13\% had participated in any management skills development experience. Lack of career prospects, publication and grant pressures, work-life imbalance and lack of support resulted in a significant number of these researchers reporting a negative impact on their mental health.

On 31 March 2020, the European Commission announced that it expected to create around 1 800 new jobs for the duration of the grants for post-doctoral fellows, doctoral students and other research staff as the European Research Council (ERC) awarded grants to 185 researchers, who received €450 million. The ERC is part of the EU research and innovation programme, Horizon 2020, and the new research projects will enrich Europe’s knowledge base but they do not offer postdoctoral fellows a way out of precarity.

Sources: C. Teelken and I. van der Weijden point out in \textit{Precarious careers: post-doctoral researchers in the Netherlands}, 18 March 2020 and the \textit{European Research Council}.

### 2.6.3. Private contribution

Private contributions, such as the sponsorship of research projects by private businesses, complement public spending. According to the European Tertiary Education Registry, the median share of total revenues from third parties is 7\% and despite efforts to increase private contributions, only 41 higher education institutions in the register made more than 10\% of their revenues from private-third party entities. Exceptionally, some technical universities, medical schools and top-ranked international universities are able to raise up to 40\% of their total revenue in this way.

Another source of contributions is fees, but the level of tuition fees and the categories of students that pay them vary widely among Member States. Eurydice identified four main approaches to fees for Bachelors’ degree students.\textsuperscript{103} The first approach is not to charge any fees at all, the second is to charge only a minority of students for reasons such as under-performing, the third is to exempt some students on grounds such as low-income or disability, and the fourth is to charge all students. The levels of fees is also very variable by Member State and in some cases, fees even depend on the study field or the

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\textsuperscript{103} National student fee and support systems in European higher education 2018/2019, European Commission/EACEA/Eurydice, 2019.
language of study. Part-time students are more likely to pay fees than full-time students. It is also common for international students to pay different fees from national students. Some countries have bilateral and multilateral agreements to apply specific fees for in-coming international students.

A 2018 survey by the European students’ union (ESU) indicated that in many of the participating countries, students in tertiary education face increasing costs but grants are either frozen or dwindling. According to the survey, students turn to their families, work or take out loans to compensate. The report raised the contingent issue of ‘commodification’ in higher education, claiming that the shortage of public funds threatens inclusivity and undermines academic independence as academia becomes more dependent on business funding and business interests. ESU also issued a statement in which it pointed out that education is a human right and higher education is a common good. It expressed its disapproval of higher fees for international students as it argued that they jeopardised the real benefit of internationalisation, which lies in increased cooperation.

2.6.4. EU contribution

The funding of tertiary education will continue to provide challenges in the future and European policies have so far had a mixed impact. On the one hand, following the financial crisis, European semester recommendations to cut public spending had adverse effects on public financial support of tertiary education institutions. On the other, European Structural and Investment Funds 2014-2020 introduced ex ante conditionalities aimed at strengthening tertiary and vocational education.

The European Union supports tertiary education with its programme Erasmus+, which mainly funds learning mobility of both students and staff to improve internationalisation. A new pilot guarantee facility will make it possible for students to receive loans, deferred payments and income-linked loans. Higher education institutions also access cohesion policy funds for the period 2014-2020 under the thematic objective of education and training, the European Social fund and the European regional development fund to support modernisation efforts, including investments in infrastructure, to promote better access to good quality education for all and to enhance lifelong learning. The European Investment Bank finances projects to improve the quality and capacity of education facilities and to support student loan schemes or pan-European student mobility programmes.

Researchers in higher education institutions turn to two programmes. The Marie Skłodowska-Curie actions, a research fellowship programme that supports researchers working across all disciplines irrespective of age, nationality or stage in the career and Horizon 2020, another important fund for research projects. In the run up to the next multiannual financial framework, the European Universities Association (EUA) called for a significant increase in the funding of

104 **Bologna with student eyes 2018, the final countdown**, The European Students Union, May 2018. See the website for information on the European Students Union.

105 **BM 76: Statement on countering commodification in higher education**, European Students Union, 24 May 2019.

106 See **Social Sustainability: concepts and benchmarks**, Policy Department for Economic, Scientific and Quality of Life Policies, Directorate-General for Internal Policies, European Parliament, April 2020, p.55. Under the social objective of investing in education and training for skills and lifelong learning there is an ex ante conditionality for a national or regional strategic policy framework for increasing tertiary education attainment, quality and efficiency and another one for increasing the quality and efficiency of vocational education and training systems.


109 See the dedicated Commission webpage on how the EU Cohesion policy contributes to education and training.

110 See the dedicated page on how the European investment bank invests in education and training.


112 See the dedicated pages on the **Marie Skłodowska-Curie Actions** and A. Zygierewicz, **Horizon 2020 EU framework programme for research and innovation, European implementation study**, EPRS, European Parliament, February 2017.
Horizon Europe, the upcoming generation of the Horizon programme that will run from 2021 to 2027. The EUA claimed that the current situation is leading to low success rates. Some institutions are discouraged from even applying, as indirect costs are not sufficiently covered. The association also criticised gaps and inconsistencies between regimes that prevent synergies with other funds. It recommends simplification to achieve a coherent set of rules that are mindful of the variety of actions, and the diversity of beneficiaries that use the programme.

Besides financial support, the European Union also supports policy making on issues related to tertiary education thanks to a number of initiatives. In the context of the European Semester, the European Commission issues a number of country specific recommendations related to the contribution of tertiary education towards labour market skills. In drawing these recommendations, the Commission considers the advice of a number of agencies and networks. Cedefop develops a number of tools such as the skills forecast and the European skills index. Eurydice keeps track of the mobility scoreboard. The European Expert Network on Economics of Education (EENEE) brings together European centres and experts on the economics of education and is coordinated by the Centre for European Policy Studies (CEPS) and the IFO institute. EENEE advises the Commission on the economic aspects of educational policies and reforms. The network of experts working on the social dimension of education and training (NESET) is an international advisory network focused on the potential of education and training systems in reducing poverty, as well as in enhancing equity and social inclusion.

3. Comparison with the United States and China

Tertiary education systems in the EU interact with other systems and this section will focus on the United States and China. Unlike Russia, neither is in the Higher Education Area. They comprise two of the biggest higher education systems, encompassing enormous student populations and investments and therefore, both are highly influential players in global higher education developments. The challenges mentioned above also affect tertiary education in both these counties.

3.1. Higher education in the United States

The US higher education system is defined by a large diversity of institutions, a high level of decentralisation and independence from federal government regulations. There are both public

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114 The European Semester is a framework for the coordination of economic policies across the European Union that was established after the European sovereign debt crisis. For an indepth analysis see A. Delivorias and C. Scheinert, Introduction to the European Semester: Coordinating and monitoring economic and fiscal policies in the EU, EPRS, European Parliament, December 2019.

115 As background information for this process, the European Commission also published the European Semester thematic factsheet Tertiary education attainment.

116 See the dedicated webpages on Cedefop and two of its activities, the skills forecast and the European skills index. Besides the EU Member States, the index includes the Iceland, Norway, Switzerland, and United, Kingdom.

117 See the dedicated webpages on Eurydice and one of its activities the mobility scoreboard.

118 See the website of the European Expert Network on Economics of Education.

119 See the NESET website for further information.

120 Understanding U.S. Higher Education, United States Department of State.
and private institutions, some of which are private, non-profit or private for-profit institutions. Prestigious elite universities like the Ivy League colleges regularly score high in international rankings and shape the image of US higher education around the globe.\textsuperscript{121} At the same time, criticism of the increasing tuition fees and sprawling student debt is growing louder.\textsuperscript{122} Overall, the US system is organised in undergraduate degrees (bachelor's), masters and doctoral degrees, with the peculiarity that undergraduate programmes are divided into two year and four-year programmes.\textsuperscript{123} The two-year programmes are mostly taught at junior or community colleges and provide a broad base in general education, concentrating in a specific area. The two-year programmes prepare students to transfer to a four-year university to finish their bachelor's degree in a certain field.

Table 1 – Degrees conferred in the United States by postsecondary institutions in 2016-2017

<table>
<thead>
<tr>
<th></th>
<th>Total</th>
<th>Female</th>
<th>Male</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bachelors</td>
<td>1 956 032</td>
<td>1 119 987 (57%)</td>
<td>836 045 (43%)</td>
</tr>
<tr>
<td>Masters</td>
<td>804 684</td>
<td>477 792 (59%)</td>
<td>326 892 (41%)</td>
</tr>
<tr>
<td>Doctorate</td>
<td>181 352</td>
<td>96 706 (53%)</td>
<td>84 648 (46%)</td>
</tr>
</tbody>
</table>

Table 1 reproduces statistics published by the National Centre for Education Statistics of the US department of education, which give the total number of graduates in 2016-2017 by degree level and by gender.\textsuperscript{124} On this basis, the ratio between female and male students was calculated. At all three levels, graduates are in their majority female but the narrowest gap is at the doctorate level. US scholars report that the student body is shrinking but it is also becoming more diverse.\textsuperscript{125} Low graduation rates, a drop in world rankings and cuts in state and federal financial support accompany these trends.\textsuperscript{126} In 2012, the discourse around MOOCs (Massive Open Online Courses) was booming, with the hypothesis that online learning platforms might disrupt conventional higher education programmes.\textsuperscript{127} MOOCs promised to enable students to build on existing skills and competencies and to be awarded credits based on their individual profile. This seemed particularly interesting for adult learners who needed to upskill in their area of work. Some scholars predicted that a major share of universities would become bankrupt and close down due to an increase of online learning platforms.\textsuperscript{128} According to the US department of education, by 2018, the number of institutions nationwide had indeed dropped to its lowest level since 1998.\textsuperscript{129} However, opinions are split about the effect of online learning platforms on higher education institutions, especially as the institutions that closed down were mostly for-profit institutions, while established public and private non-profit

\textsuperscript{121} 2020 List of Ivy League Schools, Ranked and Reviewed, Niche, consulted on 17 March 2020.
\textsuperscript{122} Fast facts: Tuition costs of colleges and universities, National Centre for Education Statistics.
\textsuperscript{123} Higher Education in the United States, \url{https://education.stateuniversity.com/pages/2043/Higher-Education-in-United-States-SYSTEM.html}.
\textsuperscript{124} Digest of Education Statistics; 2018, National Centre for Education Statistics.
\textsuperscript{128} See D. Lederman, Clay Christensen, Doubling Down, Inside Higher Ed, 28 April 2017.
universities do not seem to be heavily affected. For the time being, it seems that MOOCs largely complement traditional higher education rather than replace it.

The debate focus has now shifted onto the impact of collaboration with businesses such as Amazon, Google and IBM, which already provide educational programmes tailored to meet their own needs. The emergence of these programmes addresses issues of skills mismatch and the rising costs of higher education. With programmes such as the Amazon Machine Learning University or many of the tech companies’ partnerships with US colleges, there could be potential to create competition for the traditional higher education sector. Another concern for US tertiary education institutions is how political conditions around the world might affect international students coming to the United States. This impact has been seen more recently, with the percentage of all international students enrolled in US colleges and universities decreasing slightly over the last few years. This trend is likely to continue, especially given the allegations of espionage against Chinese students by the United States presidency, as well as due to reduced mobility post Covid-19.

3.2. Higher education in China

The Chinese higher education sector evolved very differently compared to the US higher education sector. Higher education in China is divided into two categories: four-year or five-year undergraduate degrees that lead to academic colleges that offer three-year diplomas or certificate courses on academic and vocational subjects. Only universities offer postgraduate and doctoral degrees. Even though China’s tertiary education sector developed in compliance with Soviet standards and was highly centralised, there has been a strong shift towards privatisation in the past decades. Since the 1980s, China has made significant efforts to expand its higher education sector in response to the state’s economic transition. Table 3 reproduces statistics published by UNESCO showing the growth in the gross enrolment ratio in tertiary education between 2010 and 2018. Figure 11 compares enrolment trends in China with those in the US.

In 2017, 11.2% of all students from abroad studying in the EU were Chinese, making them the largest group of international students. China wanted to improve the profile of excellent universities to counter the enduring brain drain of young graduates and professionals. The government in Beijing increased its spending on higher education and research drastically and it is now only second to the US. This development reflects China’s ambitious agenda for academic development and global competitiveness. However, some researchers state that China’s heavy investments only benefit the top-performing universities, while the pressure of higher education massification mostly affects the

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133 See Amazon Pledges to Upskill 100,000 U.S. Employees for In-Demand Jobs by 2025, Press release, 11 July 2019.
134 See E. Redden, Number of Enrolled International Students Drops, Inside Higher Ed, 18 November 2019.
136 Q. Kan, A brief introduction to the Chinese education system, The Open University, Updated Friday 30 August 2019.
140 Learning mobility statistics, Eurostat statistics explained, Eurostat, data extracted in October 2019.
lower ends of the tertiary education system.\textsuperscript{142} This trend, in turn, leads to burgeoning numbers of unemployed graduates. The tense political atmosphere between the Chinese and the US governments affects China's tertiary education system.\textsuperscript{143} While fewer Chinese students enter the US due to travel bans or the accusation of espionage, there is also a decline in incoming students to China, which might be due to a decreasingly liberal higher education system. Recently, the shift towards a more ideology-centered type of education became apparent with significant restrictions on academic freedom, strict censorship of academic papers and a slowing down of international collaborations.\textsuperscript{144} This development reflects the strongly intertwined relationship between the Chinese state and its universities, a relationship that would be considered unusual in the US and European university environment.

\begin{table}[h]
\centering
\begin{tabular}{|c|c|c|c|c|c|c|c|c|}
\hline
\hline
Total & 24.2 & 25.65 & 28.73 & 32.43 & 42.43 & 46.40 & 48.02 & 49.07 & 50.6 \\
Female & 24.96 & 26.78 & 30.26 & 34.56 & 45.76 & 50.18 & 52.74 & 53.98 & 55.88 \\
Male & 23.49 & 24.6 & 27.32 & 30.5 & 39.43 & 42.34 & 43.81 & 44.72 & 45.93 \\
\hline
\end{tabular}
\caption{Gross enrolment ratio (%) in tertiary education in China}
\end{table}

China appears to be in the forefront in responding to the challenges of digital and disruptive technologies. The 'Made in China 2025' and 'Internet+' government programmes entail investments in research and development as well as investments to encourage the modernisation of the educational system.\textsuperscript{145} This is taking place alongside investments in broadband connectivity to reach 98% of the population, in addition to high-speed connections for larger cities. The strong investment in the digital transformation of education is one of China's key responses to the challenges that its tertiary education sector is facing. However, it remains a balancing act for China to handle domestic demands whilst pushing forward its aspirations to be a global player.


The analysis looked at the structure of tertiary education in Europe and six challenges where policy is likely to shape its future. For each of the challenges, the analysis focused on the current state of affairs and the tools that the EU has at its disposal to support tertiary education, finding that there is more than one way to prepare for the future. The examples of the US and China highlight the
extent to which the approaches policy makers adopt are integral to the cultural and political context. This insight applies to the European Union, which is obliged by the Treaties to respect the autonomy of its Member States and to support modernisation through greater contacts and exchanges. This came into greater focus when a new college of Commissioners outlined its priorities for the rest of its mandate, as well as during the negotiations for the new Multiannual Financial Framework for 2021-2027. The European Parliament has also started a new mandate and, at this point, it is interesting to note the positions that it has adopted and discern the similarities and differences that exist within Parliament in terms of shaping the future direction.

4.1. Digital and disruptive technologies

Regarding the impact of digital and disruptive technologies on higher education and the labour force, Parliament expressed the opinion that the Digital Education Action Plan, as part of the framework to establish a European Education Area, represents the first step towards a comprehensive EU strategy on digital education and skills. This strategy is to provide a more coordinated policy framework and, at the same time, be adaptable to changing future realities. Parliament stressed the importance of neurological research to investigate the effects of digital technologies on brain development and education and called for investment in unbiased and interdisciplinary research. Additionally, Parliament advocated a gender-balanced approach to the promotion of ICT and digital careers to the agenda. Parliament identified the preparation and training of teachers for the digital transformation as another priority. While this is not stated, it would also be useful for lecturers in tertiary education. Members welcomed the introduction of the Digital Opportunity Traineeships under Erasmus+ and Horizon 2020 and called for a fresh impulse in this direction. Following an evaluation of the measures included in the Digital Education Action Plan, Members pointed out that one of the major shortcomings of the programme was the lack of action to strengthen digital skills amongst the adult population.

In 2017, Parliament adopted a resolution, which highlighted the potential of new information and communication technologies (ICT) as instruments to offer new opportunities in education. Members pointed out that the digital transformation and the development of educational platforms could modernise our way of teaching and learning. In line with the New Skills Agenda, Parliament supported the Commission’s proposal to urge Member States to set up national strategies for digital skills, with a special focus on closing the digital divide.

4.2. Societal challenges

Concerning societal challenges, Parliament addressed the importance of measures promoting inclusion in the Erasmus+ programme by creating a dedicated chapter on inclusion and asking the Commission to draw up a framework of inclusion measures and guidelines for their implementation. Members pushed for a first draft of measures by 31 March 2021 at the latest and a multiannual national inclusion strategy by 30 June 2021. Parliament is also pressing for a budget increase and the creation of useful synergies with other European funding programmes for the same purpose. It further states that a simplification of the application procedures could enhance mobility and cooperation between Erasmus+ partners. In 2017, Parliament further urged Member States to begin implementing the principles of the European Pillar of Social Rights in order to decrease

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146 Education in the digital era: challenges, opportunities and lessons for EU policy design, European Parliament, (2018/2090(INI)).
147 Modernisation of education in the EU, European Parliament, (2017/2224(INI)).
149 Erasmus programme for education, training, youth and sport 2021–2027, European Parliament, (2018/0191(COD)).
inequalities in Europe through education, training and lifelong learning.\textsuperscript{150} Parliament also noted that the segmentation of the labour market along gendered lines should be addressed by investing in formal, non-formal and informal education for women to facilitate their access to high-quality employment.\textsuperscript{151} It wants to promote women’s careers in STEM areas and digital education in order to counter existing educational stereotypes.

Parliament strongly supported the establishment of a European Education Area.\textsuperscript{152} This initiative is the next step towards the compatibility of academic qualifications and mutual cross-border recognition to uphold quality education for everyone. Therefore, Members called on Member States to invest at least 2\% of their respective GDPs in higher education. They further stressed cooperation between higher education institutions, the labour market, industry, research communities and society as a whole.

In a resolution approving the Council’s position on a draft budget amendment for the financial year 2019, Parliament stressed the importance of mobility activities in the Erasmus+ and Horizon 2020 programmes, in particular in the fields of higher education and vocational education and training. Parliament supported a strong European universities initiative to promote excellence, innovation and inclusion in higher education. This initiative offers a response to several of the challenges discussed above, such as global collaboration and intra-EU mobility, quality assurance, financing and barriers to inclusion. Parliament’s Committee on Culture and Education (CULT) has tabled its position on the ‘greening’ of Erasmus+ for a vote in plenary.\textsuperscript{153}

\textbf{4.3. Developing the right skills}

The European Parliament agreed with the assessment in the Commission’s communication that the EU’s education sectors need to adapt to a fast changing economic, technological and societal environment.\textsuperscript{154} In discussing the New Skills Agenda, Members recommended close collaboration with the European Centre for the Development of Vocational Training (Cedefop) not just to assess skills needs but also to develop a pan European skills needs forecasting tool and measures to respond to the needs identified. Parliament called on the Member States to implement a holistic approach to education and skills development, which does not focus narrowly on employability skills, but extends to other skills that are equally useful to society as a whole.

On a practical level, Parliament significantly increased the appropriations allocated to Horizon 2020 above the Commission proposal of €737.8 million in commitment appropriations for the financial year 2020.\textsuperscript{155} For Erasmus+, Parliament agreed on an increase of €123.4 million in commitment appropriations, above the Commission proposal. It also recommended ensuring a smooth transition to the European Social Fund Plus (ESF+) in the next MFF. Moreover, Parliament proposed to reinforce budget lines relating to Parliament’s priorities, in areas such as digitalisation and artificial intelligence.

Overall, Parliament has supported the Commission’s ambitions to strengthen the European higher education area as well as other initiatives that supported this project over previous terms. Moreover, Parliament often challenged the Commission as well as Member States to increase and expand their efforts to ensure an inclusive, gender-balanced and accessible education area. Parliament also

\textsuperscript{150} Modernisation of education in the EU, European Parliament, (2017/2224(INI)).
\textsuperscript{151} Resolution on the gender pay gap, European Parliament, (2019/2870(RSP)).
\textsuperscript{152} Modernisation of education in the EU, European Parliament, (2017/2224(INI)).
\textsuperscript{153} Effective measures to ‘green’ Erasmus+, Creative Europe and the European Solidarity Corps, European Parliament, (2019/2195(INI)).
\textsuperscript{154} New skills agenda for Europe, European Parliament, (2017/2002(INI)).
\textsuperscript{155} 2020 general budget: all sections, European Parliament, (2019/2028(BUD)).
relentlessly pushed for a higher budget for the programmes that respond to the future challenges identified in this analysis.

5. Outlook

This analysis has identified six different challenges and opportunities where policy decisions could potentially have an impact on the way in which tertiary education institutions evolve in the future. A new Multiannual Financial Framework is under negotiation and the outcomes will provide the tools and means that will enable the European Union to support Member States in this sector.

Tertiary education institutions face questions about how to maintain their relevance to current and future needs and aspirations. As institutions that create and transmit knowledge, they can play a key role in developing knowledge that different players in European societies can use to achieve greater coherence, redress an ecological mess, set their own mark on technological developments and provide groups of citizens with opportunities to fully participate in society and the economy.

One of the factors that is pushing the struggle for relevance in tertiary education to the fore is digitalisation. It provides both the means to scale up the activities of tertiary education institutions to heights that were previously unimaginable, as well as challenging old and trusted methods of researching, teaching and learning. Universities are often labelled as ivory towers, completely disconnected with realities outside their environments. However, some tertiary institutions have very practical and vocational orientations, and even ‘traditional’ universities find that they need links with business to help fund research. Outreach to local communities may still be weak, yet this too could change as tertiary institutions reconsider their capacity to provide lifelong learning opportunities.

Following the market logic of global trading, tertiary education institutions in the EU, as those in the US, Russia and China, seek to consolidate their relevance by aiming to obtain and maintain a strong international reputation that can boost their access to resources such as funding and talent. Institutions and the public authorities that support them invest time and money to achieve and maintain recognition as world-class institutions. This can have both positive and negative consequences, as the excellence achieved by some institutions may be a drain on the working conditions and consequently the quality of work of other academic institutions. Policy makers increasingly use funding to nudge tertiary education institutions in certain directions. Funding models also determine whether tertiary education is closer to a public good or a commodity. The working conditions of academics are increasingly precarious due to certain institutions’ desire to cut costs. This leads to potential losses in institutional loyalty and autonomy.

There is no single way to be a tertiary education institution. This is amply evident in the variety seen within the European Higher Education Area, and is even more evident when making the comparison to the systems in the US and China. In the US, tertiary education is characterised by a high level of decentralisation and independence from central government regulation, whereas in China there is an increasingly close relationship between tertiary education and central government. Policy choices reflect priorities and views regarding the place of tertiary education in a given society at a particular point in time.

The European Commission is not responsible for the provision of tertiary education in Member States, but it is expected to support and coordinate policies in the area. It does so by deploying funding to support tertiary education institutions in the creation, diffusion and practical application of knowledge. It supports the European Higher Education Area, which provides tertiary education institutions in the EU with opportunities to affirm their position on the international scene. The Commission also seeks cohesion by promoting policies that give access to higher education to cohorts of young people who would otherwise be excluded. This is achieved through programmes
such as Erasmus+, the European Regional Development Fund and the Cohesion Fund, the European Social Fund+, Horizon Europe and Digital Europe. The funding of these programmes for the next seven years is currently the subject of interinstitutional negotiations.

5.1. The Multiannual Financial Framework 2021-2027

The Commission published its initial MFF proposals in May 2018, standing at 1.11 % of EU gross national income (GNI). Subsequently, the European Parliament adopted its interim position on the single programmes and the MFF as a whole, which its negotiators used during the trilogues. The European Council President, Charles Michel, also formulated a proposal in February 2020, which represented an overall level of 1.07 % of EU’s GNI taking into account the post-Brexit European Union of 27 Member States. He used this as a basis on which to negotiate a compromise position with the Member States. However, no agreement was reached at the European Council convened on 20 February 2020. Due to the exceptional circumstances induced by the coronavirus pandemic and its impact on European societies and economies, in May 2020, the European Commission issued in May a second version of its proposals for the MFF integrating a new recovery instrument known as ‘Next Generation EU’ to take new realities into account. The European Council reached political agreement during its meeting of July 2020 but Parliament also needs to give its approval. There is no programme that supports tertiary education exclusively, though much of the Erasmus+ budget goes to tertiary education. This section contains a brief description of the figures for the six spending programmes already quoted, which play a crucial role in supporting tertiary education in Europe.

5.1.1. Erasmus+

The new Erasmus+ programme intends to contribute towards the establishment of a European Education Area by 2025, which would work to promote learning mobility in order to consolidate European identity and awareness of the Union’s common values. The Commission also sees this as an opportunity to deliver on the declarations of EU leaders and the wishes of the European Parliament, to implement fully the right inscribed in the European Pillar of Social Rights that everyone receives inclusive, quality education. The European Parliament wants concrete measures to secure inclusion. It wants Erasmus+ to contain a chapter dedicated to it and it wants the European Commission to draw up a framework of inclusion measures and guidelines for their implementation by 31 March 2021. The Commission originally proposed a budget of €26.4 billion but in its recovery proposal came down to €24 billion. The European Parliament proposes an envelope of €41.1 billion to ensure better inclusion, with 83 % allocated to education and training. The

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157 Trilogues are the negotiations between the institutions on legislative proposals which generally take the form of tripartite meetings between Parliament, the Council and the Commission.
158 Special meeting of the European Council, draft conclusions, Council of the European Union, 14 February 2020.
159 Some of the figures for individual programmes for the Council’s President proposal are according to a European Parliament simulation and refer to the February 2020 proposal.
163 Erasmus programme for education, training, youth and sport 2021–2027, 2018/0191(COD), Legislative Observatory, European Parliament.
164 All values are cited in 2018 constant prices unless stated differently, respecting the choice of the European Parliament as this allows for comparisons with figures from the last framework.
European Council agreed during its July summit on an allocation of €21.2 billion.\textsuperscript{165} This cuts Erasmus+ by 19.6\% of the Commission’s proposal and 48.4\% of the European Parliament’s proposal. The European Commission has communicated that such a cut would mean that the number of participants would have to be reduced.

5.1.2. European Regional and Development Fund and the Cohesion Fund

The Commission used this MFF to publish a single proposal for the regulation of the European Regional Development Fund (ERDF) and the Cohesion Fund (CF). Previously, there had been two separate regulations.\textsuperscript{166} These programmes aim to reduce the gaps between different areas of the EU and will focus mostly on smart growth and a green economy. Education and training are still among the areas mentioned for possible funding. The Commission believes that the ERDF will work to complement the work of Horizon Europe. While the latter supports excellence in the generation and exploitation of new knowledge, the ERDF brings regional relevance by supporting structural reforms to education and disseminating existing knowledge and technology to places that need it.\textsuperscript{167} Funds go directly to Member States who establish their own priorities within the parameters of the regulation. The initial Commission proposal earmarked €242.2 billion. ERDF was allocated €200.6 billion and CF €41.4 billion. The European Parliament proposed a total amount of €272.4 billion. The revised Commission proposal amounted to €237.7 billion, but also added €50 billion through the Next Generation EU instrument, in turn reaching €287.7 billion in total. The July European Council meeting reached a political agreement allocating a total of €242.9 billion of which, €200.4 billion are allocated to ERDF and €42.6 billion to CF and a further €47.5 billion through the Next Generation EU instrument.

5.1.3. The European Social Fund Plus

The European Social Fund Plus (ESF+) is the EU’s main instrument for investing in people and for implementing the European Pillar of Social Rights.\textsuperscript{168} The proposed ESF+ is a merger of the existing European Social Fund (ESF), the Youth Employment Initiative (YEI), the Fund for European Aid to the most Deprived (FEAD) and the Employment and Social Innovation Programme (EaSI) and a child guarantee. The European Commission intends for this fund to invest in people, including in their education and training so that the EU remains competitive in the global economy, with high levels of employment, health, social inclusion and active participation.\textsuperscript{169} The European Parliament suggests concrete measures to fight child poverty, most notably it wants Member States to dedicate 5\% of their ESF+ resources under shared management to the European child guarantee alongside other measures that fight poverty and lower the number of young people not in employment, education or training.\textsuperscript{170} This is significant as socio-economic disadvantage is an important barrier to entry in tertiary education. For the coming 2021–2027 period, the Commission originally proposed to allocate €89.7 billion. Parliament proposed a total amount of €106.8 billion. The new

\textsuperscript{165} A. D’Alfonso and N. Kresnichka-Nikolchova, \textit{Future financing of the Union: MFF, Own Resources and Next Generation EU}, EPRS, European Parliament, July 2020.


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Commission proposal provides a budget of €86.3 billion. The July European Council meeting reached a political agreement allocating €88 billion.

5.1.4. Horizon Europe

On 7 June 2018, the European Commission presented its budgetary plan for Horizon Europe, which builds on the current programme Horizon 2020. This programme provides funding for researchers and the Commission intends to strengthen the Union’s scientific and technological base to tackle major global challenges through this programme. It should also contribute to the achievement of the Sustainable Development Goals. The Commission claims that research and innovation are needed to address challenges in a systemic way to enable solutions that sustain the EU’s socio-economic model, its values, boost productivity and competitiveness and in this way deliver on what it interprets as being citizens’ priorities. The European Parliament wants to dedicate 27.42% of this funding to Pillar 1, which is dedicated to excellent and open science and comprises the European Research Council and the Marie Skłodowska-Curie Actions. The Commission proposed a total amount of €83.5 billion for the 2021-2027 period. Parliament proposed a much higher financial package of €120 billion. The Commission adopted this latter figure in its second proposal but allocated an additional €13.5 billion through ‘Next Generation EU’, bringing the total to €94.4 billion. The July European Council meeting reached a political agreement allocating €75.9 billion to Horizon Europe with a further allocation of €5 billion through the Next Generation EU instrument.

5.1.5. Digital Europe

As part of the next MFF, the European Commission proposed a new funding programme entitled ‘Digital Europe Programme’, which is part of the ‘Single Market, Innovation and Digital’ chapter. Its main objective is to boost Europe’s digital transformation to the benefit of citizens and businesses. The Commission intends to focus on reinforcing Europe’s capacity in high performance computing, artificial intelligence, cybersecurity and advanced digital skills, in order to enhance its digital autonomy and to protect its digital sovereignty. Additionally, the European Parliament wants the programme to give a central role to European Digital Innovation Hubs, which should stimulate a broad adoption of advanced technologies by a number of entities and stakeholders, including academia. These hubs should have substantial overall autonomy to define their organisation, composition and working methods. The Commission’s proposal included an amount of €8.2 billion, which was supported in the Parliament’s interim position. The July European Council meeting reached a political agreement allocating €6.8 billion, representing a cut of €1.4 billion from the initial proposal of the Commission and Parliament.

A review of the positions the European Parliament adopted in a number of own-initiative reports and in its interim position for the MFF indicates that Parliament believes that tertiary education institutions should further update their ability to foster the knowledge, skills and capabilities required for active citizenship and market participation in the 21st century. It wants to see tertiary education institutions harnessing digital technologies, in order to improve the quality of their

173 Horizon Europe framework programme for research and innovation 2021–2027, 2018/0224(COD), Legislative Observatory, European Parliament.
research and of the education that they provide. It wants to see the closing of digital divides along gender, socio-economic and regional lines. In fact, it wants education, training and lifelong learning to work to decrease inequalities. It wants more girls and women engaged in science, technology, engineering and mathematics, as well as a better socio-economic representation in learning mobility. Parliament supports the aims expressed by the Commission through its proposals for the MFF, but it also considers that such ambitions need a bigger financial backing, as well as refinement of some of the measures, to achieve a real impact on the future of tertiary education in Europe.

Further reading
This analysis focuses on six challenges facing tertiary education in the EU: the need to maintain relevance to current and future aspirations, the impact of digital and disruptive technologies, the way it collaborates with business, global and intra-EU collaboration, quality assurance, financing and barriers to inclusion. It also looks at trends in two of the largest higher education systems outside the European Higher Education Area, those in the United States and China. This provides the backdrop to discuss how the next Multiannual Financial Framework, which is currently under negotiation, will put tools at the EU's disposal to exert some influence on the future trajectory of tertiary education, as well as the European Parliament's role in these negotiations.