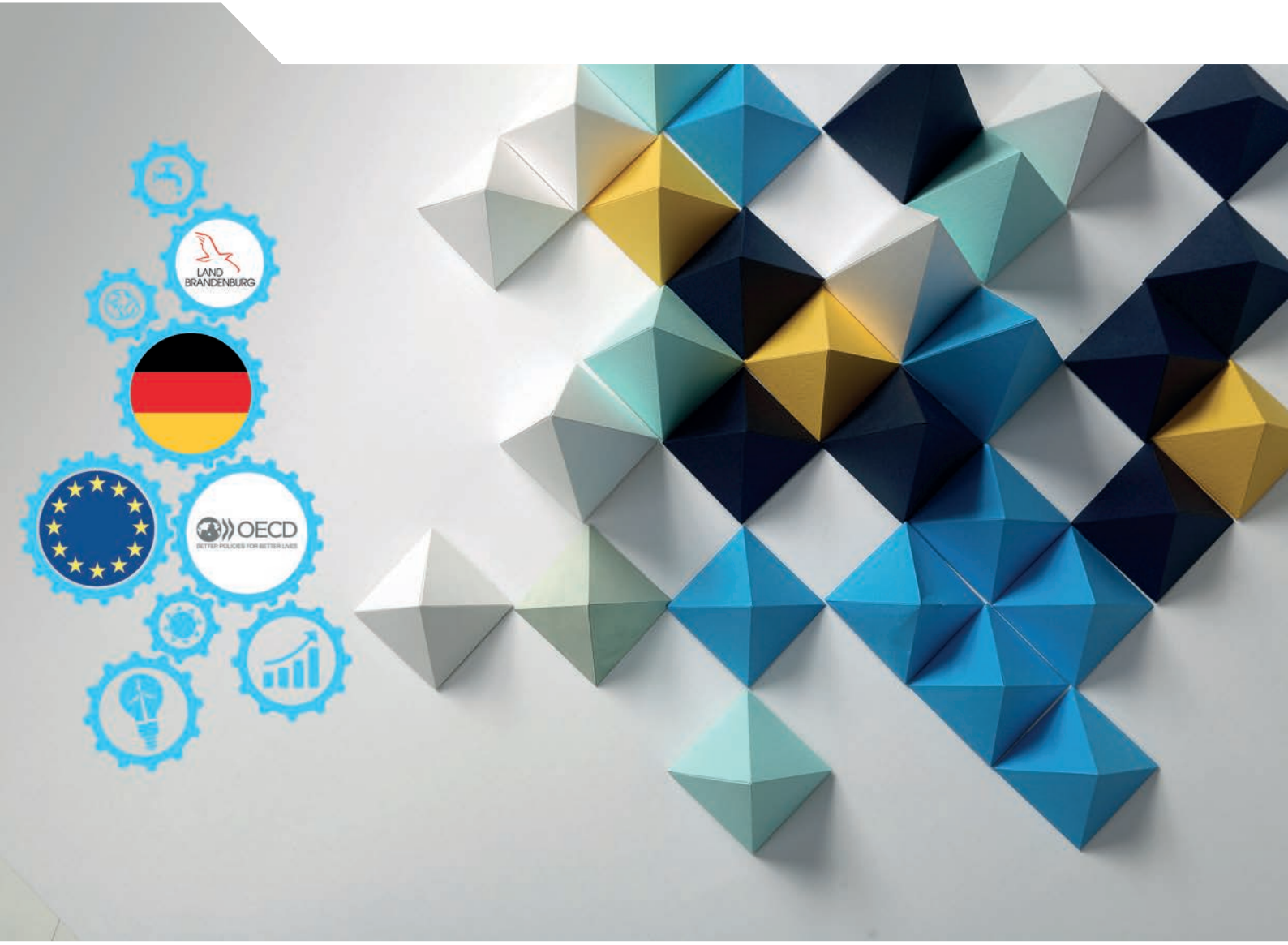
Higher Education

Accessing Higher Education in the German State of Brandenburg



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Accessing Higher Education in the German State of Brandenburg

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Foreword

The economy of Brandenburg, one of 16 states of the Federal Republic of Germany, is undergoing major structural change, which opens new prospects for highly skilled workers. As part of this process, the state has intensified efforts to diversify the economy towards cleaner and more knowledge-intensive industries. This includes developing advanced manufacturing, exploiting spill-over effects from the start-up scene in Berlin, fostering entrepreneurial activities at its own higher education institutions (HEIs), promoting innovative places for working and living, and transitioning from coal production to next-generation technologies. As the driver of skills development and research in the state, the higher education sector will play an important role in building human capital and innovation capacity to help the state unleash these opportunities for economic and social development.

Brandenburg's higher education sector is developing a strong human capital and research base for the state's economy. This involves offering specialties that provide skills for the labour market; attracting international students, especially in the area of science, technology, engineering and mathematics (STEM); and making studies more attractive both through greater support for students and more flexibility.

Despite its many strengths, Brandenburg's higher education sector also faces challenges. These range from projections of declining enrolment and low participation of youth to financial issues affecting both students and the institutions themselves.

This report offers an assessment of the current policy landscape related to higher education and skills development, including particularly access paths into higher education, student profiles and graduate trajectories in the state of Brandenburg, identifies recommendations to the state government on how to strengthen the policy framework and to higher education stakeholders on how to improve their practices in favour of stronger development and retention of human capital in the state.

The analysis and recommendations contained in the report are underpinned by analyses of the Brandenburg higher education system, international examples of policies and practices of relevance to Brandenburg, and engagement with a wide range of stakeholders. Engagement included interviews, group discussions and workshops with state ministries, public agencies, higher education institutions, state schools and business representatives.

The report is an output of the project "Analysis and advice for a renewed tertiary education strategy for Brandenburg and guidance on categorisation of scientific continuing education", funded by the European Commission through the Structural Reform Support Programme. It was conducted in close collaboration with the Ministry for Science, Research, and Culture of the State of Brandenburg (*Ministerium für Wissenschaft, Forschung, und Kultur*, MWFK), the state's HEIs and the Directorate-General for Structural Reform Support of the European Commission.

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Warm thanks go also to Dr. Katja Böhler, Dr. Sonja Rademacher, Dr. Jan-Hauke Plaßmann, Dr. Matthias Kandziora, Marlen Lünsdorf, Falk-Florian Hoene, Bettina Bauer, Susanne Voß, and Volker Herrmann, senior officials at MWFK, all of whom shared their time and insights during the project's interviews, workshops and consultation rounds of written feedback. Their expertise provided the OECD project team with valuable information that contributed to the analysis and recommendations contained in this report.

This report also benefitted immensely from interviews conducted with other state ministries, public agencies, and schools from Brandenburg. The OECD project team would like to thank the state's Ministry for Education, Youth and Sports (*Ministerium für Bildung, Jugend und Sport, MBJS*), Ministry for Economic Affairs (*Ministerium für Wirtschaft und Energie, MWAE*) and Economic Development Agency (*Wirtschaftsförderung Brandenburg GmbH, WFBB*), and the Regional Directorate Berlin-Brandenburg of the Federal Employment Agency (*Bundesagentur für Arbeit, BA*). The OECD project team thanks also to the headmasters, teachers responsible for study and career orientation and their colleagues and students from eight academic (Gymnasium) and comprehensive schools (Gesamtschule) in Brandenburg: Albert-Schweitzer Gymnasium Eisenhüttenstadt, Bertold-Brecht-Gymnasium Brandenburg an der Havel, Flämig-Gymnasium Bad Belzig, Gesamtschule Zossen, Leonardo-da-Vinci-Campus Nauen Gesamtschule und Gymnasium, Marie-Curie-Gymnasium Wittenberge, Niedersorbisches Gymnasium Cottbus, and Theodor-Fontane-Gymnasium Strausberg. All interviews with schools have been granted by MBJS and convened by the Network Study Orientation (*Netzwerk Studienorientierung*) Brandenburg, to whom the OECD project team is deeply thankful.

Special thanks go also to the Presidents and Vice-presidents of Brandenburg's eight public higher education institutions – Brandenburg University of Technology Cottbus-Senftenberg, European University Viadrina Frankfurt/Oder, Film University Babelsberg Konrad Wolf, University of Potsdam, Brandenburg University of Applied Sciences, University for Sustainable Development Eberswalde, University of Applied

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This report was prepared by the OECD's Directorate for Education and Skills with contributions from external experts (Roger Smyth and Manuela Wehrle). Margarita Kalamova was the project leader responsible for co-ordinating the review and its main author. Colleagues from the Directorate for Education and Skills, Hannah Ulferts and Mila Staneva, contributed to Chapters 3 and 5, and 4 and 6, respectively, Clara Krämer provided initial research assistance, and Shizuka Kato compiled a comparative study of policy measures and institutional initiatives of relevance to Brandenburg's higher education system. Manuela Wehrle contributed to Chapters 2 and 7, while Roger Smyth provided valuable insights and feedback to the overall publication. The authors also wish to thank Andrea-Rosalinde Hofer and Nora Brüning (Directorate for Education and Skills) for their input and advice.

Thomas Weko, Senior Analyst and Team Leader, Higher Education Policy team, Paulo Santiago, Head of the Policy Advice and Implementation Division in the Directorate of Education and Skills, and Andreas Schleicher, Director for Education and Skills, reviewed the publication.

Mark Foss edited the report; Anne-Kathrin Ende translated the report from English into German; Cécile Bily, Cassandra Morley, Marika Prince and Stephen Flynn provided administrative support to the project. Cassandra Morley and Rachel Linden assisted with the editorial and publication processes.

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Executive summary

The economy of Brandenburg, one of 16 states of the Federal Republic of Germany, is undergoing major structural change, which opens new prospects for highly skilled workers. As part of this process, the state has intensified efforts to diversify the economy towards cleaner and more knowledge-intensive industries. This includes developing advanced manufacturing, exploiting spill-over effects from the start-up scene in Berlin, fostering entrepreneurial activities at its own higher education institutions (HEIs), promoting innovative places for working and living, and transitioning from coal production to next-generation technologies. As the driver of skills development and research in the state, the higher education sector will play an important role in building human capital and innovation capacity to help the state unleash these opportunities for economic and social development.

Brandenburg's higher education sector is developing a strong human capital and research base for the state's economy. This involves offering specialties that provide skills for the labour market; attracting international students, especially in the area of science, technology, engineering and mathematics (STEM); and making studies more attractive both through greater support for students and more flexibility. Strengths of Brandenburg's higher education sector are highlighted below:

- The teaching and research profiles of Brandenburg's eight public HEIs are complementary. Each HEI has specialties that it performs especially well and for which it has gained a reputation for excellence. As a result, Brandenburg's higher education graduates enjoy strong employment outcomes at entry into the labour market in the state and beyond.
- HEIs have attracted a growing number of international students to programmes in demand by the state's labour market, particularly in STEM and business fields. These students have strong potential to contribute to economic development of the state upon graduation.
- HEIs are laying the groundwork for greater success for students through better guidance and support systems, and more flexibility in entry requirements. They have introduced more orientation programmes to support completion of studies, and students appear to be making good use of them. HEIs have also become more flexible, allowing students with less conventional schooling background and people who are working to participate in higher education.
- The state government is also making efforts to attract students and meet their needs more effectively. The ministry responsible for higher education, *Ministerium für Wissenschaft, Forschung und Kultur* (MWFK) has established two structures that play a prominent role in attracting students to Brandenburg's HEIs. *Netzwerk Studienorientierung* (Study Orientation Network) – an independent association of the eight public HEIs – is the largest provider of career and study guidance in Brandenburg. With offices at each HEI and coverage of all in-state schools, it organises about 1 000 events per year; many events have become virtual since COVID-related closures. *Präsenzstellen* (presence centres) bring HEIs closer to prospective students and companies in remote areas of Brandenburg.
- Improving education opportunities in STEM has been high on both governmental and HEI agendas, especially for engineering, which is in great demand in Brandenburg. To become more attractive to students and better connected to the economy, Brandenburg's technical HEIs have restructured

their study offer and refocused their research. In addition, dual study programmes, combining academic studies with work experience in a company and vocational training, are increasingly offered. They appear to be a promising way of attracting more youth to higher education and retaining a skilled workforce in Brandenburg's business sector.

Despite its many strengths, Brandenburg's higher education sector also faces challenges. These range from projections of declining enrolment and low participation of youth to financial issues affecting both students and the institutions themselves. These challenges are highlighted below:

- The state population is forecast both to fall and age over the next two decades, which will likely translate into lower enrolment in higher education.
- The rate of direct transition from secondary school to higher education in Brandenburg is the lowest among all German states. Of those who left Brandenburg secondary schools with a qualification to enter higher education, only two-thirds made the transition.
- Several factors hinder participation of Brandenburg's youth in higher education. The perceived high costs of higher education and strong returns on vocational education and training deter students, especially girls and disadvantaged students, from entering higher education. Relatively low expectations of Brandenburg's school leavers and their parents about prospects for higher education completion pose another barrier. Finally, distance to regional HEIs due both to the largely rural character of the state and the locations of institutions creates an obstacle to higher education enrolment.
- The perceived high costs of higher education in Brandenburg result from several factors. First, schools do not offer enough guidance about financial options for studies. In addition, many schools are not using their right to nominate prospective students to the *Studienstiftung des deutschen Volkes* (German National Merit Foundation).
- The Federal Training Assistance Act (*BAföG*) is rigid, hindering both participation and completion of higher education in Brandenburg. In-state students are older and take longer to complete their studies than elsewhere in Germany, which decreases their eligibility for federal financial assistance. Students from low socio-economic backgrounds are in an especially difficult position: 41% of these students in Brandenburg (versus only 16% in Germany) do not qualify for *BAföG*, because they have been enrolled longer than the regular study time of their programme.
- Uncertainty among public HEIs about the constraints imposed by state-aid law limits their offer of continuing education and training.
- Several state ministries are involved in skills development, but their efforts are not fully aligned. A high-performing higher education system helps develop the skills and build the research and innovation capacity needed for a more knowledge-intensive economy in the state. However, strategies for skills and economic development contain limited reference to higher education.

Brandenburg could build on the recommendations laid out in this OECD report to enhance the visibility of its HEI programme offer, improve its alignment with skills and innovation demand in the state, and make it more attractive to prospective students from the state and beyond. The recommendations include:

- **Maintain diversity and foster excellence in teaching and research** by investing in HEIs' areas of excellence so they can perform at a high level in teaching, research, study conditions, student support and labour market outcomes, by ensuring that HEIs maintain capability and quality as they grow (e.g. through hiring teachers as student numbers increase), and by attracting top international researchers.
- **Encourage reskilling and upskilling** through improving study offerings and pathways, securing public funding for HEIs; and considering revival of *Bildungsscheck* programme to support continued education and training.
- **Ensure strong study and career orientation support:**

- **By the higher education sector**: by advertising the areas of excellence in teaching and research to draw the interest of prospective students and leading researchers, further lift the performance of those research groups and encourage the exploration of opportunities for knowledge transfer; engaging student ambassadors and alumni in spreading the word about their alma mater via own social media channels; improving visibility of the information and counselling offer at HEIs; and targeting students beyond state borders (particularly in Berlin) to motivate them to study, work and live in Brandenburg.
- **At all secondary schools**: by providing comprehensive information about study and career paths, programme options, and financing options (including scholarships) for the various education pathways and non-financial support mechanisms available to students; providing individual counselling for students and parents; and actively nominating gifted students for scholarships of excellence by the *Studienstiftung des deutschen Volkes*.

- **Ensure inclusive access to and participation in higher education** by offering individual guidance and peer support, particularly to disadvantaged students via *Netzwerk Studienorientierung* and *Präsenzstellen*; introducing a student mentorship programme between school students and HEI students; enhancing peer support programmes at HEIs and increasing their visibility; advocating for a comprehensive and principle-based review of federal student financial aid; maintaining flexible teaching formats that combine virtual and in-person classes; and exploring *Präsenzstellen* as study sites.
- **Strengthen collaboration between HEIs and local employers** by maintaining the Innovation Expert support programme for both graduate and working student employment; offering more practical learning opportunities in the state government sector for students; encouraging small and medium-sized enterprises (SMEs) to share their administrative burden and co-operate with HEIs on internships and research projects; maintaining HEIs' capacity to provide tailored advice to local SMEs via transfer offices and *Präsenzstellen;* providing matching opportunities to more researcher-entrepreneur couples via the *PerspektivWechsel* programme; enhancing financial support for HEIs' entrepreneurial activities via the transfer strategy, state innovation strategies and regional economic structures, and the performance-based funding model.
- **Co-ordinate skills development across the state government** through the establishment of a State Skills Council in which MWFK and other relevant ministries and stakeholders participate. The Skills Council would be responsible for developing a long-term vision for Brandenburg as a location for research and innovation, and advise the state government on how to realise this vision. It would also maintain strong links to public agencies and social partners to address the distinct skills and economic challenges of different regions within the state.

1 Introduction

This chapter situates the review in the context of the state of Brandenburg within the Federal Republic of Germany. It explains the rationale behind the review, outlining the collaborative relationship between the OECD, the European Commission, and the state government. It lays out the organisation of the review, highlighting the themes of subsequent chapters. Finally, the chapter offers an extensive summary of findings and recommendations.

Context of the review

Brandenburg is one of 16 states of the Federal Republic of Germany, bordering Poland in the east, surrounding the federal state of Berlin and bordering the states of Mecklenburg-Vorpommern (in the north), Saxony (in the south) and Saxony-Anhalt (in the west). Brandenburg is one of the former East German states (the new *Länder*). The state capital, Potsdam, borders Berlin to the southwest.

The proximity of Brandenburg to the federal capital is both an asset and a liability. On the positive side, the state provides a home for firms, entrepreneurs and professionals who wish to share in the economic strength of Berlin, while avoiding some of the costs of locating in the federal capital. On the negative side, Berlin acts as a magnet for the talent that Brandenburg has grown, leading to the outward migration of higher education students and skilled professionals. The challenge for Brandenburg is to capitalise on the asset, while creating an environment that encourages homegrown skills to remain in the state.

Brandenburg's population of 2.5 million, which represents 3% of the total German population, is forecast to fall over the next two decades. Brandenburg already has one of the oldest populations among the German states and the average age is forecast to grow even older. These demographic shifts have implications for the skill profile of the population and, hence, for the region's labour market.

At the same time, Brandenburg's economy is undergoing structural change, which opens exciting new prospects for highly skilled workers: The state has intensified efforts to diversify the economy towards cleaner and more knowledge-intensive industries, including the development of advanced manufacturing, spill-over effects from the start-up scene in Berlin, fostering entrepreneurial activities at its own higher education institutions, promoting innovative places for working and living, and the programmed closure of coal production and its replacement with next-generation technologies.

As the engine of skills development and research, the higher education system will play an important role in helping the state unleash economic opportunities and overcome its skills challenges.

This report

This review aims to support the authorities and HEIs of the state of Brandenburg in improving education outcomes and skills levels of the state's young people, and in reskilling and upskilling mature learners, which ultimately aims to promote economic development and social inclusion in the state. Key authorities involved include the Ministry of Science, Research and Culture (*Ministerium für Wissenschaft, Forschung und Kultur* (*MWFK*)) of Brandenburg.

The OECD was asked to conduct analyses, collect good practice examples from other jurisdictions and countries, and provide recommendations to support MWFK in developing a new state strategy on higher education. This would better align the higher education offer to current and future needs of the state economy. For this purpose, the OECD:

- analysed and diagnosed the policy landscape related to higher education and skills development, access paths into higher education, student profiles and graduate trajectories in the state of Brandenburg, using a wide range of available documents, comparable international data and German-specific micro-level data;
- analysed and selected international and national examples of good practice to underpin the review's recommendations for action to public authorities, HEIs and other relevant stakeholders such as schools and businesses in Brandenburg;
- consulted via video conferences relevant stakeholders from Brandenburg – public agencies, HEIs, students, schools and businesses – to gain a better understanding of the project context and discuss pointers for action.

The review was part of the project "Analysis and advice for a renewed tertiary education strategy for Brandenburg and guidance on categorisation of scientific continuing education", funded by the European Union through the Structural Reform Support Programme. It was conducted in close collaboration with MWFK, the state's HEIs and the Directorate-General for Structural Reform Support of the European Commission.

The process resulted in this report, which Brandenburg authorities and HEIs will use to develop an updated, coherent and effective policy framework for higher education in the state. This will serve as the basis for a new higher education strategy.

- **Chapter 2** sets the context of the review for the higher education system in Brandenburg, and examines the *economic and demographic challenges* facing Brandenburg, describing the demographic trends and how the economy is expected to change. As coal mining is phased out and knowledge-based industries (like advanced manufacturing and health) assume greater importance in the state's economy, the skill needs in the labour market will continue to evolve. That change will have important implications for the state's higher education system. The chapter also sets out how the higher education system can contribute to the opportunities for further economic development in the state.
- **Chapter 3** looks at the *organisation of the higher education system*, including the legislation that determines how the system is governed, the state government's arrangements for the steering and the funding of the system and the institutions' governance and management approaches. The chapter also lays out the types of programmes offered and identifies issues the system must overcome.
- **Chapter 4** discusses the *performance of the Brandenburg higher education system* in ensuring *access* for young people. It focuses on the transition from secondary schools to higher education, career and study advice and orientation for secondary students, and the trend among Brandenburg's school leavers to take up higher education. It explores the decision making of school leavers and sets out factors that influence the choice of study destination.
- **Chapter 5** looks at the *performance of students in Brandenburg's higher education systems*, and discusses the profile of the student population, including its international component. It looks at success measures for students in the system – in particular, completion rates and the time taken to complete a qualification – and compares them with systems in other German states. The system of student financial aid that supports higher education students is also examined.
- **Chapter 6** looks at the performance of the Brandenburg higher education system in delivering *labour market outcomes* for its graduates; its graduates have high employment rates compared with those from other regions but that many find their careers outside the state. This chapter also looks at how Brandenburg's success in enrolling and graduating international students could help fill skill gaps in the state's labour market.
- **Chapter 7** sets out the government's strategies and policies on higher education and discusses how the higher education system might shape the government's skills strategy.

Chapters 2 to 7 undertake a situational analysis, describing arrangements and trends, then assess performance, looking at approaches to similar challenges from other OECD countries. Chapters 3 to 7 also give pointers for how Brandenburg's higher education system might address these challenges in the future.

Summary of the findings

Brandenburg's higher education sector is developing a strong human capital and research base for the state's economy. This involves offering specialties that provide skills for the labour market; attracting international students, especially in the area of science, technology, engineering and mathematics (STEM);

and making studies more attractive both through greater support for students and more flexibility. These strengths are highlighted below:

- The teaching and research profiles of Brandenburg's eight public HEIs are complementary. Each HEI has specialties that perform especially well and that have gained a reputation for excellence. As a result, Brandenburg's higher education graduates enjoy comparatively strong employment outcomes at entry into the labour market in the state and beyond.
- HEIs have attracted a growing number of international students to programmes in demand by the state labour market, particularly in STEM and business fields. These students have strong potential to contribute to economic development of the state upon graduation.
- HEIs are laying the groundwork for greater success for students through better guidance and support systems, and more flexibility. They have introduced more orientation programmes to support completion of studies, and students appear to be making relatively good use of them. They have also become more flexible, allowing students with less conventional schooling background and people who are working to participate in higher education.
- The state government is also making efforts to attract students and meet their needs more effectively. The ministry responsible for higher education, *Ministerium für Wissenschaft, Forschung und Kultur* (MWFK) has established two structures that play a prominent role in attracting students to Brandenburg's HEIs. *Netzwerk Studienorientierung* (Study Orientation Network) – an independent association of the eight public HEIs – is the largest provider of career and study guidance in Brandenburg. With offices at each HEI and coverage of all in-state schools, it organises about 1 000 events per year; many events have become virtual since COVID-19-related closures. *Präsenzstellen* bring HEIs closer to prospective students and companies in remote areas of Brandenburg.
- Improving education opportunities in STEM has been high on both governmental and HEI agendas, especially for engineering which is in great demand in Brandenburg. To become more attractive to students and better connected to the economy, Brandenburg's technical HEIs have restructured their study offer and refocused their research. In addition, dual study programmes, combining academic studies with work experience in a company and vocational training, are increasingly offered. They appear to be a promising way of attracting more youth to higher education and retaining a skilled workforce in Brandenburg's business sector.

Despite its many strengths, Brandenburg's higher education sector also faces challenges. These range from projections of declining enrolment and low participation of youth to financial issues affecting both students and the institutions themselves. These challenges are highlighted below:

- The state population is forecast both to fall and age over the next two decades, which would inevitably translate into lower enrolment in higher education.
- Direct transition from secondary school to higher education in Brandenburg is the lowest among all German states. Of those who left Brandenburg schools with a qualification to enter higher education, only two-thirds made the transition.
- Several factors hinder participation of Brandenburg's youth in higher education. The perceived high costs of higher education and returns of vocational education and training deter students, especially girls and disadvantaged students, from entering higher education. Relatively low expectations of Brandenburg's school leavers and their parents for students to complete higher education pose another barrier. Finally, distance to regional HEIs due both to the largely rural character of the state and the locations of institutions creates an obstacle to higher education.
- The perceived high costs of higher education in Brandenburg are aggravated by several factors. First, schools do not offer enough guidance about financial options for studies. In addition, many schools are not using their right to nominate prospective students to the *Studienstiftung des deutschen Volkes* (German National Merit Foundation).

- The Federal Training Assistance Act (*BAföG*) is rigid, hindering both participation and completion of higher education in Brandenburg. In-state students are older and take longer to complete their studies than elsewhere in Germany, which decreases their eligibility for federal financial assistance. Students from low socio-economic backgrounds are in an especially difficult position: 41% of these students in Brandenburg (versus only 16% in Germany) do not qualify for BAföG, because they have been enrolled longer than the regular study time of their programme.
- Uncertainty about funding options for the eight public HEIs limits their offer of continuing education and training.
- Several state ministries are involved in skills development, but their efforts are not fully aligned. A high-performing higher education system helps develop the skills and build the research and innovation capacity needed for a more knowledge-intensive economy in the state. However, strategies for skills and economic development contain limited reference to higher education.

Summary of the recommendations

Ensure the system offers a broad range of qualifications and encourage re-/upskilling

Diversity and excellence

- Maintain the system of institutional specialisation and invest in areas of excellence through the framework contracts with HEIs underpinned by continuous dialogue between the rectors' conference, MWFK, other government agencies and employer groups.
- Advertise areas of excellence extensively, including via online marketing, to draw the interest of prospective students and leading researchers, further lift the performance of those research groups and encourage the exploration of opportunities for knowledge transfer.

Study offerings, pathways and accreditation

- Ensure that programme delivery is structured (e.g. offering hybrid teaching and using blended learning) and timetabled (e.g. with evening tutorials) to reduce disadvantages for part-time enrolment and to increase the compatibility of study schedules with work. This would respond to the projected increase in demand for upskilling and reskilling among working adults and the reality that many students discontinue their studies to pursue employment or for financial reasons.
- Investigate mechanisms for improving access to study programmes, including bachelor's degrees to be studied in parallel with full-time employment.
- Review the structure of continuing education and training (CET) programmes, considering new developments such as the advent of micro-credentials.
- Review the processes for initial programme approval and accreditation, balancing the need for high standards of integrity and credibility (through assessment of the quality of programme design and institutional capability) with the need to be responsive to the needs of employers and industry groups. Introduce better systems of follow-up audits of approved programmes, (such as checking the performance of new programmes in attracting enrolments, producing graduates, delivering good outcomes for graduates and meeting employer/industry needs).

Public funding for HEIs

- Secure available funding and infrastructure for dual study programmes.
- Secure funding for bachelor's degree programmes, which can be studied in parallel with full-time employment
- Review options for CET, recognising the importance of compliance with European Union rules on state aid.

Financial assistance for participation in CET

- Monitor the effectiveness of federal financial assistance to participants in CET; potentially reintroduce a state-specific measure to provide targeted support for uptake of CET at HEIs (similar to the recently discontinued support measure *Bildungsscheck*).

Ensure prospective students have structured information to make informed choices and ensure strong study orientation support

Study and career orientation at schools

- Study and career orientation at schools should be comprehensive and include i) information about study and career paths and programme options; ii) information about financing options for the various education pathways, including higher education and vocational education and training (VET), and non-financial support mechanisms available to students; and iii) individual counselling for students and parents. Career orientation should be appropriately funded across all public schools and peer learning should be encouraged among all schools – public and private.
- Brandenburg's schools should more actively use their right to nominate gifted school students for scholarships of excellence offered by *Studienstiftung des deutschen Volkes* (German National Merit Foundation) and provide better information and support for scholarship applications.

Study and career orientation at HEIs

- MWFK should ensure sustainable funding for the (currently temporary) structures of study and career orientation at HEIs, particularly *Netzwerk Studienorientierung* (Study Orientation Network) and *Präsenzstellen* (presence centres) and consider extending the mandate of *Präsenzstellen* to also use them as study sites.
- HEIs should continue to reach out to schools, including vocational schools, via *Netzwerk Studienorientierung* and *Präsenzstellen* and offer individual guidance and peer support, particularly to disadvantaged school students.
- MWFK and *Ministerium für Bildung, Jugend und Sport – MBJS* (Ministry for Education, Youth and Sports) should take steps to introduce a student-mentorship programme between school students and HEI students, particularly for disadvantaged students.

HEI digital marketing

- HEIs and *Netzwerk Studienorientierung* should maintain the recently developed digital information and counselling offer and continue to invest in digital marketing and to leverage social media platforms, as this is where they increasingly meet (prospective) students.

- HEIs should consider employing student ambassadors to manage social media channels, informing about life on campus and engaging alumni in student recruitment.

Career orientation information and tools

- MWFK should advocate among German states and also with the federal government for career advice tools that integrate all forms of relevant data, and for a one-stop national career and study guidance website that would provide impartial, objective and factual information in a structured way and that would give access to interactive tools to aid the decision-making process, ensuring:
  - that the site is designed to help young people, their families and advisers by reducing uncertainties (for instance, about labour market needs), by providing tools that help them clarify their career and study interests, and by helping them navigate the myriad study and career options and their funding;
  - that the website explains the benefits of lifelong learning and provides information and tools to help mature learners and workers who are seeking help to deepen their skills or to shift their career trajectories.
- The state government should maintain and expand the use of tailored information channels to target learners in Brandenburg (and other German states, notably, neighbouring Berlin), with the two Brandenburg advisory websites *studieren-in-brandenburg.de* and *fachkraefteportal-brandenburg.de* via social media, targeted online ads, billboard ads, etc.
- *Netzwerk Studienorientierung* should regularly update the *studieren-in-brandenburg.de* website, which is already well structured, to include new useful features and relevant information.

Increase student preparedness for higher education and ensure students complete their study programmes

Study offerings

- Maintain opportunities for students – especially those who are working – to tailor their studies to their learning preferences by, for instance, offering more flexibility in teaching and learning formats (particularly building on the pandemic experience to offer more teaching in hybrid models, which combine virtual and in-person classes, and to use blended learning).

Non-financial support and information

- Enhance peer support programmes at HEIs to provide individual advice to disadvantaged students during their studies and help them develop a network at the HEI.
- Take steps to increase the visibility of the information and counselling offer at HEIs and consider potentially offering these services from a single office.
- Provide information to students about life on campus and in the city where HEI sites are located to motivate some to relocate.
- Use the framework contracts with HEIs to collect data on student engagement, such as academic challenge, learning with peers, teaching methods, and experiences with faculty. A survey on student engagement could be managed state-wide by MWFK, with the results provided to HEIs to feed into their quality improvement work.
- Monitor the *College* programmes in place.

Financial support

- The Brandenburg state government (and MWFK in particular) should advocate for a comprehensive, principle-based review of student financial aid systems, in particular to assess alignment of the federal assistance for continuing education and training (*Aufstiegsfortbildungsförderungsgesetz, AFBG*) and the *BAföG* schemes in light of the newly adopted Federal Strategy for Lifelong Learning, and to ensure that rules for their use are transparent, and that application procedures are user-friendly and efficient.

Public funding to HEIs

- Consider including an indicator related to student study progression rates (such as the number of "examination-active students" based on obtained European Credit Transfer and Accumulation System credits, for example) or qualification completion rates along with the number of graduates in the performance funding model.
- Assess the institutional funding model to ensure it appropriately increases in line with student numbers, enabling HEIs to maintain capability and quality as they grow (e.g. through hiring new teaching staff with increasing student numbers).

Enhance practice-oriented learning and entrepreneurship in the system and optimise framework conditions for internationalisation of the system

Practice-oriented learning

- *Ministerium für Wirtschaft, Arbeit und Energie – MWAE* (Ministry of Economic Affairs of Brandenburg) should ensure the continuation of the "Innovation Expert" support programme for both graduate and working student employment.
- The state government sector should establish more practice-oriented learning opportunities for higher education students, including voluntary paid internships.
- The Chambers of Commerce and Industry and *Wirtschaftsförderung Brandenburg GmbH* (Economic Development Agency Brandenburg) should continue to actively promote co-operation between small and medium-sized enterprises (SMEs) so they can share administrative expenses and work collectively with HEIs to increase (joint) offers of internships, and research projects, and bring SMEs and HEIs together.

Entrepreneurial activities and transfer of knowledge and technology

- Maintain HEIs' capacity to provide tailored advice and consulting to local SMEs via transfer offices and *Präsenzstellen*.
- Enhance financial support for HEIs' entrepreneurial activities via the transfer strategy. Consider introduction of an explicit performance indicator with regard to entrepreneurial activities in the funding model.
- Support joint initiatives of HEIs and local stakeholders to promote entrepreneurial activities through the state innovation strategy and regional economic structures, such as the clusters.
- Maintain the *PerspektivWechsel* programme and provide matching opportunities to more researcher-entrepreneur couples per year state-wide if possible.

Improve the conditions for internationalisation

- Work towards establishing and maintaining a welcoming culture and anti-discriminatory social climate across the broader state government, within the school and higher education systems. Ensure that anti-discrimination officers at HEIs are given sufficient resources and authority to issue complaints and sanctions.
- Encourage HEIs, Chambers of Commerce and *Wirtschaftsförderung Brandenburg GmbH* (Economic Development Agency Brandenburg) to collaborate with the aim to connect international students to local employers via internships and other forms of practice-oriented learning.
- Assess whether the funding model and institutional framework contracts are effective in promoting outward student mobility. Encourage HEIs and particularly universities of applied sciences, through the framework contracts, to integrate intercultural and international knowledge and skills into the curriculum, including foreign language skills for domestic students.
- Develop ambitious research projects; offer guidance on potential visa sponsorships; provide clear information related to the potential relocation package and career prospects; create detailed job descriptions that spark a candidate's interest, despite the location; offer training in language, communication, teaching and management skills; and advertise the offer among the right scientific audience to help Brandenburg's HEIs attract top international researchers.

Co-ordinate skills development across the state government and build policy evaluation strategies

Co-ordinate skills development across the state government

- *Staatskanzlei des Landes Brandenburg* (State Chancellery of Brandenburg) should nominate a multi-partite committee, including MWFK and all other relevant ministries and stakeholders, and entrust them with the establishment of a State Skills Council, including its structure, mandate and financing. That council should develop a long-term vision for Brandenburg as a location for research and innovation and advise the state government on how to develop the skills needed to realise this vision.
- Maintain strong links to public agencies and social partners to address the distinct skills and economic challenges of different regions. Ensure the sustainability of the HEIs' *Präsenzstellen* (which have pioneered innovative forms of co-operation between HEIs and local social and business partners).

Build policy evaluation strategies

- MWFK should build monitoring and evaluation strategies into the design of state policy initiatives and commission independent evaluations of policies and programmes.
- MWFK should consider establishing a working group on the federal fund for Lausitz and reviving the state working group on continuing education and training, as HEI demand for dialogue and clarification on these future-determining topics is strong.

2 The economy and labour market in Brandenburg

This chapter examines the demography, economy and labour market of the federal state of Brandenburg in Germany. First, the economic context is explored, including challenges related to economic imbalances and infrastructure. Economic opportunities emerging from the shift from coal to cleaner energy, including the impact of a Tesla factory to build electric vehicles, are examined. This chapter also examines how the labour market is adding jobs and improving living standards, noting differences within local economies. It then analyses challenges in the labour market, including a growing skills shortage and a stagnating supply of graduates with higher degrees, and the impact of demographic shifts, declining completion rates in higher education institutions and low participation in lifelong learning on these trends. Finally, proposals for unleashing opportunities for economic development via greater investment in higher education are offered.

Demographic context

Brandenburg is situated in the northeast of the Federal Republic of Germany and, together with Saxony, Thuringia, Saxony-Anhalt and Mecklenburg-Vorpommern, belongs to the former East German states (the new *Länder*). It surrounds the capital city of Berlin and borders on Poland to the east. Brandenburg's capital Potsdam borders Berlin to the southwest.

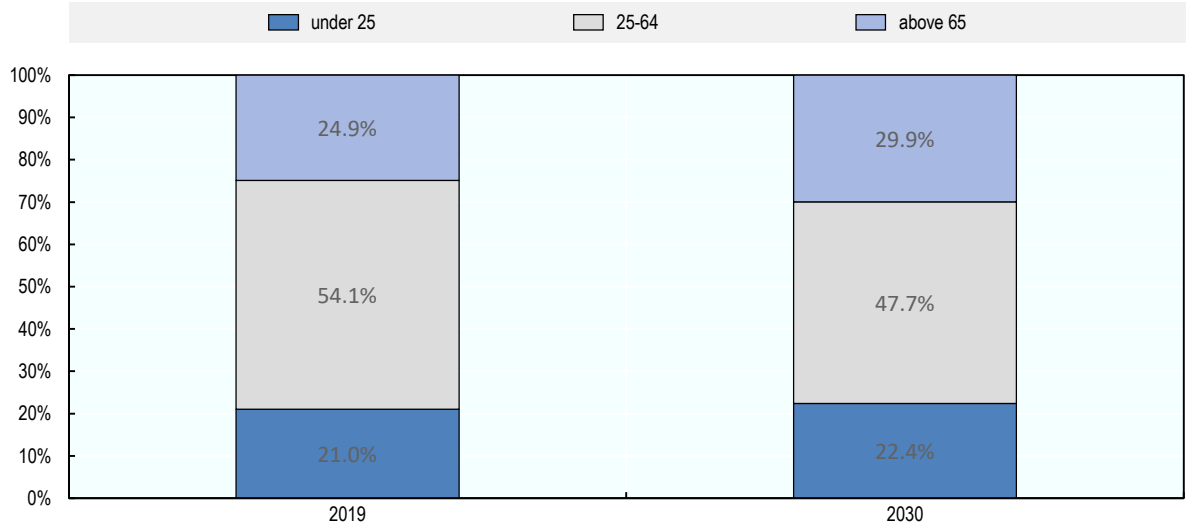
Brandenburg's population (2.5 million in 2019) represents 3% of the total German population. The median age is 50 years, older than the German average (46). This makes Brandenburg's population the fourth-oldest of Germany's 16 states.

Despite significant population growth in the Berlin area and in Potsdam, Brandenburg is the state with the second-lowest population density (86 persons per square kilometre) and with a significant rural population.

The population growth rate is also low, a consequence of a low birth rate (7.6% – 15th of 16 states) and an above-average death rate (sixth among the states). Between 2010 and 2015, refugees from Syria, Afghanistan and Iraq boosted inward migration. This mostly affected the regions directly surrounding Berlin and the city of Cottbus in the south of the state. However, net migration over the next decade is forecast to be low (Statistik Berlin-Brandenburg, 2021[1]).

A stable population is forecast for 2020-30, with a decline of around 3% over the following decade. However, the age distribution of the region's population is forecast to change. Many young adults are expected to leave the region, leading to a decline of 11% in the population aged 25-65 between 2019 and 2030. Meanwhile, those aged over 65 are forecast to rise by more than 20%. People aged 65 and over are expected to make up nearly 30% of the state's population in 2030, compared with almost 25% in 2019 (Figure 2.1).

Figure 2.1. Age distribution of the population of Brandenburg, 2019 and 2030



Source: Statistik Berlin-Brandenburg (2021[1]), „Bevölkerungsvorausberechnung für das Land Brandenburg 2020 bis 2030" [Population projection for the state of Brandenburg from 2020 to 2030], https://download.statistik-berlin-brandenburg.de/2d433971f996bdf4/ec5cead7539c/SB_A01-08_2021_BB.pdf (accessed on 2 November 2021).

StatLink https://stat.link/h42q9l

This demographic outlook sees the working age population shrinking, even as it has to support a greater number of children and older adults. The demographic shift also has implications for the skill profile of the

population, with the departure of many working age (and, presumably, highly skilled) people. This raises questions about how well the region's higher education system can support the labour market and hence, the prosperity of the region over the coming decade.

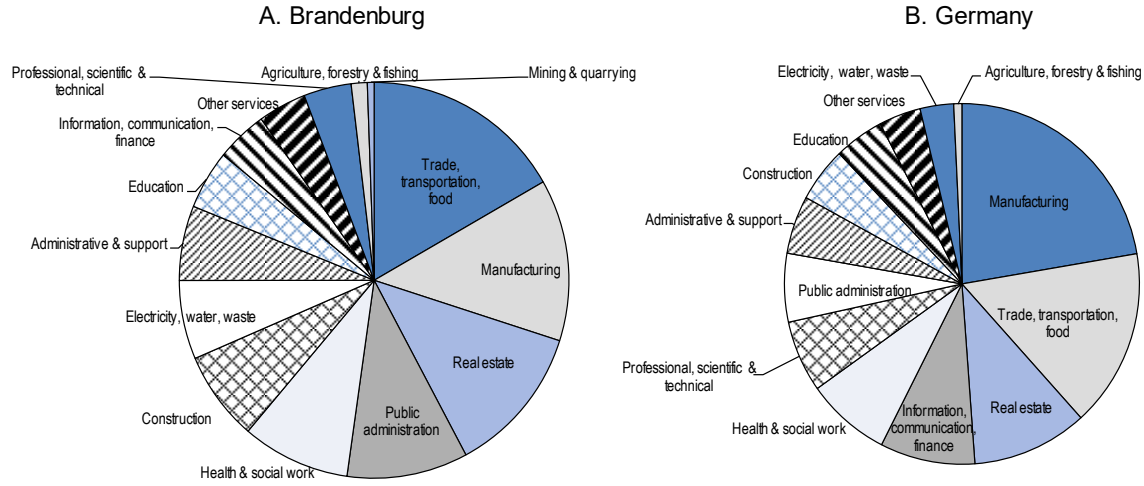
Economic context

Brandenburg's economy is not structurally strong, but it is on the transformation path

Measured by its gross domestic product (GDP) of EUR 75 billion, Brandenburg is the sixth smallest economy among the German states. However, among the new *Länder,* Brandenburg ranked second largest (after Saxony) (Eurostat, 2019[2]) and was the most productive (measured in gross value added per worker) in 2019 (OECD, 2019[3]). In the context of the wider OECD, Brandenburg's productivity is similar to the Central Bohemian region surrounding the capital city of Prague in the Czech Republic; Silesia and Lower Silesia in Poland; Northern and Western Ireland; and the eastern Dutch regions of Overijssel and Drenthe. Brandenburg's GDP per capita (EUR 29 700) is the third-lowest among German states and is much lower than Germany as a whole (EUR 41 500 per capita); by contrast, neighbouring Berlin's GDP per capita (EUR 42 300) ranks sixth (Eurostat, 2019[2]). Brandenburg exports are valued at EUR 13.3 billion, which represents 1% of Germany's total exports (Statistisches Bundesamt, 2019[4]).

From 2010 to 2019, Brandenburg's GDP increased by almost 20% in real terms, driven to a large extent (as in the rest of Germany) by growth in business services. Real estate services, wholesale trade, transportation, accommodation and food are the most important service industries in Brandenburg (amounting to 18% of GDP). Information and communication technology, financial services, and professional, scientific and technical services make a relatively small contribution to Brandenburg's economy – 8% combined compared to 15% for the rest of Germany (Figure 2.2). Similarly, the manufacturing sector in Brandenburg (13%) has played a smaller role than in the rest of Germany (22%). However, its contribution has been increasing; manufacturing contributed 14% of real growth in Brandenburg's GDP over the last decade.

Figure 2.2. Contribution to gross domestic product, by industry, 2018



Source: Statistisches Bundesamt (2021[5]), *VGR der Länder (Entstehungsrechnung) – Bruttowertschöpfung* https://www.destatis.de/DE/Themen/Wirtschaft/Volkswirtschaftliche-Gesamtrechnungen-Inlandsprodukt/_inhalt.htmlStatistisches (accessed on 15 April 2021).

StatLink https://stat.link/rti7ny

Brandenburg's public services sector plays a major role in the state's economy. Public administration, education, and the health and social services sectors account for one-quarter of GDP and have been growing significantly in recent years. However, agriculture and mining, traditionally important sectors, have been declining (accounting for less than 2% of Brandenburg's GDP). This decline is partly attributable to the gradual phase-out of the coal mining industry in Germany (Staatskanzlei Brandenburg, 2020[6]).

Brandenburg has nearly 100 000 companies. The great majority are small and medium-sized enterprises (SMEs), with nearly 90% having fewer than ten employees (Statistisches Bundesamt, 2020[7]).

Some SMEs have been successful beyond the national border. Ortrander Eisenhütte, for example, manufactures iron-carbon cast alloys for the automotive industry and for stove and furnace construction; Flamm Sys Com in Hennigsdorf supplies the automotive industry; and Reuther STC in Fürstenwalde produces steel components for wind turbines (MWAE, n.d.[8]).

Large international firms operating in Brandenburg include the Riva-Stahl Group, Mercedes-Benz and Rolls Royce Germany. Other international companies such as Amazon and Zalando have recently settled in Brandenburg (MWAE, n.d.[8]) and Tesla's Gigafactory is scheduled to start operation soon. This leads to hopes for economic development and stronger regional integration (see section on economic opportunities).

Spillover effects from the start-up scene in Berlin and exposure to entrepreneurial activities in the state higher education sector (see section on economic opportunities) might help more SMEs increase their capacity to grow and compete in global markets.

Economic imbalances

Different regions of Brandenburg make a varying contribution to GDP, based on the structure of their economies. The region of Havelland-Fläming accounts for one-third of Brandenburg's GDP; this region includes the capital city of Potsdam, which is the most populated region and a hub for government, services and business. The Lausitz region is home to the coal mining sector and Cottbus, the second largest city of Brandenburg; this region contributes around one-quarter of Brandenburg's GDP, but its importance has been declining due to the phasing out (and upcoming closure) of coal-pit mines. Today 8 600 people are employed in coal mining and power plants in the region. LEAG, the second largest German electricity producer, with a workforce of 7 800, will be affected by the closure of coal production. Economic sectors that benefit from mining – and thus affected by the closure – comprise construction, business services and manufacturing (MWAE, 2020[9]).

Brandenburg's infrastructure is underdeveloped, but solutions are looming

The transport infrastructure of Brandenburg is closely interrelated with, and geared towards, the capital city of Berlin. Daily, more than 200 000 people commute from Brandenburg to Berlin and more than 100 000 in the other direction (Berlin-Brandenburg, n.d.[10]).These numbers are expected to rise in the next decade (VBB, 2020[11]). Since many commute by car, a number of roads are congested, particularly in the areas surrounding Berlin. While railway and public transportation links with Berlin are well developed, Brandenburg's rural and remote regions lack proper transport infrastructure. Among challenges facing Brandenburg are the absence of a railway link with Poland, and shortages of canals that carry freight.

The Mobility Strategy Brandenburg 2030 recognises these challenges and has set three goals to address them: i) intensifying co-operation on mobility policy with Berlin and with neighbouring Polish provinces by extending cross-border rail links; ii) addressing mobility challenges in rural areas; and iii) adapting, maintaining and developing infrastructure according to need, e.g. by setting priorities for planning and investment funds according to the road network plan (MIL, 2017[12]).

The worldwide trend towards digitalisation will undoubtedly accelerate, not least due to the COVID-19 pandemic, and Brandenburg's infrastructure will need to keep pace. The availability of broadband in Brandenburg is not as good as the overall German average but better than in the other East German states (Table 2.1): Brandenburg's households have reasonable take-up of Internet connection (rates of up to 50 Mb/sec) when compared with other East German states but are below the German average. However, the share of households with an Internet connection of up to 100, 200, 400 or 1 000 megabits per second (mbps) is the lowest in Germany (BMDV, 2021[13]).

Table 2.1. Broadband access in the new *Länder* (in percentage of households), 2020

Federal state	Up to 50 mbps	Up to 100 mbps	Up to 200 mbps	Up to 400 mbps	Up to 1 000 mbps
Brandenburg	89.0	71.6	56.3	36.9	22.1
Mecklenburg-Vorpommern	77.8	71.1	63.5	51.9	43.2
Saxony	87.3	79.0	66.1	52.8	42.5
Saxony-Anhalt	82.9	73.7	57.3	31.8	12.0
Thuringia	89.2	78.1	61.3	41.1	25.7
Germany	93.3	85.7	77.4	67.9	55.9

Source: BMDV (2021[13]), *Aktuelle Breitbandverfügbarkeit in Deutschland (Stand Mitte 2021)* [Current broadband availability in Germany (as of mid-2021)], *Bundesministerium für Digitales und Verkehr*, https://www.bmvi.de/SharedDocs/DE/Publikationen/DG/breitband-verfuegbarkeit-mitte-2021.pdf?__blob=publicationFile.

While availability of broadband increased in the first half of 2020, growth was low in Brandenburg compared with the rest of Germany. Only 83% of households report using the Internet at least sometimes, a much smaller share than Berlin (89%) and the German average but still higher than the other East German states. The same applies to the use of Internet for mobile services (Initiative 21, 2021[14]; Gefak, 2019[15]).

As with transport infrastructure, there are regional variations for broadband within Brandenburg. In particular, the quality of connection in peripheral and rural areas is low. Brandenburg needs to tackle this challenge to attract more young people and companies that cannot find development sites in the Berlin-Brandenburg metropolitan area.

Economic opportunities

Intensified efforts to diversify the economy towards cleaner and more knowledge-intensive industries

The state has increased its efforts to promote innovation, digitalisation and entrepreneurship to ensure transition towards cleaner and more advanced industries. Through several strategies, developed solely or jointly with Berlin, Brandenburg aims to enhance capacity for research, development and innovation in technology (Box 2.1).

However, the research and development (R&D) and innovation sector in Brandenburg remains underdeveloped in comparison with other German regions. The state's gross expenditure on R&D was 1.8% in 2019, about half of the German average (Eurostat, 2021[16]). The share of regional business expenditure on R&D amounts to only 36% of the total R&D spend (compared to the national average of 69%) (Eurostat, 2021[16]). Most public expenditure on research comes from the government, which contributes to 44% of the total.

Box 2.1. Brandenburg's policy for innovation and sustainability

In June 2011, Brandenburg and Berlin developed a joint innovation strategy, updated in 2020, (innoBB 2025) that aims to develop clusters in both states.

The regional innovation strategy sets out the framework for five common clusters of specialisation for the Berlin-Brandenburg region: i) health care industries; ii) energy technology; iii) transport, mobility and logistics; iv) information and communications technology (ICT), media and creative industries; and v) photonics. Brandenburg itself has four state-specific clusters: i) food; ii) materials and chemicals; iii) metal; and iv) tourism. Four objectives are common to all these domains of specialisation: digitalisation, development of testbeds, labour for the Fourth Industrial Revolution (Industry 4.0) and the development of start-ups.

In addition, the state government updated the Regional Strategy for Sustainability in 2019. The strategy sets out 33 goals and includes several measures with a focus on the 17 Sustainable Development Goals of the United Nations. Many measures refer directly to innovation in environment-related technologies and environment-friendly consumer behaviour.

Sources: Berlin-Brandenburg (2019[17]), *innoBB 2025: Joint Innovation Strategy of the States of Berlin and Brandenburg*, Land Brandenburg and Land Berlin, https://innobb.de/sites/default/files/2020-01/innobb_2025_-_joint_innovation_strategy_of_the_states_of_berlin_and_brandenburg_0.pdf; MLUL (2019[18]) *Nachhaltigkeitsstrategie für das Land Brandenburg: Fortschreibung 2019*, https://mluk.brandenburg.de/sixcms/media.php/9/Fortschreibung-Nachhaltigkeitsstrategie-BB.pdf.

In 2020, Brandenburg submitted 294 patents to the German Patent and Trademark Office (DPMA) and Patent Co-operation Treaty applications, 0.7% of Germany's share. The number of patent applications to the DPMA per 100 000 inhabitants (12) was less than one-quarter of the German average[1] (51) (DPMA, 2021[19]).

Many of the patents filed by Brandenburg have a focus on environment-related technologies related to engines, pumps and turbines; electrical machinery, apparatus and energy; and transport (DPMA, 2021[19]). Brandenburg is a pioneer in renewable energies with the capital region, jointly with Lausitz, offering test fields for the production and use of hydrogen (Cluster Energy Technology, n.d.[20]). In addition, the state actively supports innovation in biopolymers, plastics recycling and lightweight design (WFBB, n.d.[21]).

The state government has also recognised constraints facing SMEs. It has focused on creating better conditions for growth and innovation in this sector by helping them digitalise production and business processes. To this end, the *Innovationszentrum Moderne Industrie Brandenburg* – (Innovation Centre of Modern Industry – IMI) was set up in 2015. Located at the Brandenburg Technology University Cottbus-Senftenberg, the IMI helps SMEs handle challenges in automation technology, digital factories and Industry 4.0. The project is financed with support from the European Regional Development Fund.

Spillover effects from the start-up scene in Berlin and strong entrepreneurial activities at Brandenburg's higher education institutions

Enterprise birth rates (i.e. the number of start-up businesses per 10 000 persons aged 18-64) have decreased for years in Germany. The same is true in Brandenburg, where the rate decreased by about 20% between 2011 and 2020.[2] However, over the same period, Brandenburg improved its ranking among the German federal states. While Brandenburg ranked 15th among German states in enterprise birth rates in 2014-16, it is now behind only Berlin (KFW, 2020[22]). This development can be traced to the fact that Brandenburg surrounds Berlin where the enterprise birth rate is notably above average. Brandenburg

obviously benefits from this proximity since many young entrepreneurs tend to relocate their homes and their business headquarters to Berlin's commuter belt where rents are lower.

Brandenburg has a high uptake of the *EXIST Gründerstipendium* (EGS) funding, which supports students, graduates and scientists in starting a business. Nearly two-thirds of projects funded by EGS in Brandenburg between 2007 and 2019 led to the formation of businesses (Kulicke, 2017[23]; Lübbers, T. et al., 2021[24]).

Bottom-up initiatives in Brandenburg are creating and promoting innovative places for working and living

In recent years, Brandenburg has created a number of locations for innovators and creatives to test new modes of working and living. These locations can be particularly interesting for the young and qualified workforce. Examples include: i) the SAP Innovation Centre in Potsdam, established in 2011; ii) a newly planned digital centre next to the former RAW hall in Potsdam; iii) Coconat in Klein-Glien in the District Potsdam-Mittelmark; and iv) Thinkfarm Co-working Space in Eberswalde.

Several other networks aim to help make locations more attractive. Silicon Sanssouci, for example, is a network that focuses on strengthening Potsdam as a location for IT and media. For its part, Havel Valley, an initiative in the city of Brandenburg an der Havel, aims to establish a sustainable local start-up culture.

Federal funding for the structural change in the Lausitz region offers a unique opportunity to foster innovation and economic development in the region

With the planned closure of coal production in the Lausitz region by 2038, the Federal Republic of Germany is providing significant funds to support structural change. This offers a unique opportunity for the Lausitz region to transition towards a greener and more modern economy and to provide better prospects for its population to thrive in the region. According to *Strukturstärkungsgesetz* (federal Structural Consolidation Law) for German coal-mining regions, Brandenburg is entitled to about EUR 10 billion, which is about 25% of the overall federal structural funds provided under this law (Staatskanzlei Brandenburg, 2020[6]). The state government is developing a strategic agenda to guide use of the funds (Box 2.2). All the initiatives aim to strengthen Lausitz as a science and research centre, as well as to increase the attractiveness of the region, especially for young people.

The development of a "Model Region for Health Lausitz" is based around the "Innovation-Centre University Medicine Cottbus" (IUC). The IUC will comprise a university medical faculty (to be established at Brandenburg Technical University Cottbus-Senftenberg) and a next-generation hospital linked to a digitally supported network of health care providers in the region. The IUC will focus its research on health systems and digitalisation in health care.

Through the IUC, physicians and researchers will be able to develop, test and evaluate innovative health care models under real life conditions. This is expected to lead to best practice models. The goal is to create a Germany-wide hub for research on health systems and their further development. The IUC will offer master's level programmes, such as medical data science, advanced nursing practice and health systems science. The Carl-Thiem-Hospital Cottbus will be expanded into a highly digitalised university hospital and form the anchor of the regionwide digital network.

In the future, about 200 new students per year are expected to be trained in medicine, plus additional students enrolled in the master´s level programmes, and around 1 600 new jobs will be created for research and teaching, including 80 professorships. The total cost of the IUC is estimated at EUR 1.9 billion over the period to 2038. It is expected to secure skilled labour for the region, educate professionals for the medicine of tomorrow, strengthen Lausitz as a science and research location and ensure comprehensive, high-quality medical and nursing care.

Box 2.2. Brandenburg's strategic goals for structural development in Lausitz

Brandenburg has adopted strategic goals for structural development in Lausitz in the "Lausitz Programme 2038". The programme contains the following fields of action and priorities:

- Strengthen regional competitiveness by establishing and upgrading science and research institutions, developing innovation, attracting businesses, and strengthening innovative capacity and digitalisation.
- Educate and train a skilled labour force to continue diversifying the regional economy and to develop and future-proof existing capacities and business models.
- Strengthen and develop quality of life and diversity in the region, including urban development, social infrastructure, culture, arts and sports.

Ministerium für Wissenschaft, Forschung und Kultur – MWFK (Ministry of Science, Research and Culture) has formulated its own Lausitz strategy, in keeping with those priorities. The MWFK strategy contains four pillars: i) expanding higher education by introducing programmes that complement the profiles of HEIs; ii) developing a "Model Region for Health Lausitz"; iii) strengthening applied research particularly in co-operation with non-academic institutions; and iv) upgrading knowledge and technology transfer. Several new institutes will be established and financed by the federal government, including:

- Fraunhofer Institute for geothermal energy and energy infrastructure in Brandenburg, Saxony and North Rhine -Westphalia
- DLR (*Deutsches Zentrum für Luft- und Raumfahrt*, the German Space Agency) Institute for CO2-low industrial processes in Cottbus (Brandenburg) and in Zittau/Görlitz (Saxony) with a focus on the steel, petrochemistry and cement industries, as well as high-temperature heat pumps for heat storage stations
- DLR Institute for alternative drive systems for research on aircraft engines of the next generation
- Lausitz Centre for artificial intelligence at the BTU Cottbus-Senftenberg
- Model Region for Health Lausitz, including university medical faculty and a next-generation hospital.

Sources: MWFK (2019[25]), *Umsetzungsplan für die Lausitz-Strategie des Ministeriums für Wissenschaft, Forschung und Kultur, Ministerium für Wissenschaft, Forschung und Kultur*; Staatskanzlei Brandenburg (2020[6]), *Das Lausitzprogramm 2038, Prozesspapier zum Aufbau von Entscheidungs- und Begleitstrukturen im Transformationsprozess, Lausitz-Beauftragter des Ministerpräsidenten*.

Interviewed stakeholders acknowledged the great potential of the Lausitz fund for revitalising the local economy and strengthening the regional research infrastructure. However, they also raised concerns about transparency of the planning process and long-term costs. Specifically, they pointed to the expected graduate numbers of medical professionals and the potential difficulty in retaining them in Brandenburg, which is one of the IUC's expected outcomes. A structured dialogue with all state HEIs (and not only direct beneficiaries of federal funding) seems needed to consider any pressing concerns raised throughout the process.

The region around the Berlin-Brandenburg airport is likely to thrive despite the COVID-19-related slowdown

Before the COVID-19 pandemic, the region around the Berlin-Brandenburg airport prospered, which led to the creation of businesses and jobs. In 2013-20, 870 settlement and expansion projects creating more than 39 000 jobs were implemented in the region (Airport Region Berlin Brandenburg, 2020[26]). Studies

and forecasts compiled before the pandemic projected the creation of up to 70 000 jobs in conjunction with the airport (Unternehmensverbände Berlin-Brandenburg, 2020[27]). Furthermore, demand for industrial and commercial sites for development in the airport region was expected to exceed availability (Agiplan, 2019[28]).

Disregarding the uncertainties resulting from the pandemic, regional stakeholders argue the airport will foster development in the region in the long term. While the airport has been the major driving factor in economic growth, the region's proximity to urban centres, skills supply and a network of businesses also play an important role. Some bottlenecks are, however, still to be addressed. These comprise the low number of long-distance flights; inadequate railway and motorway connections to the airport and its surrounding region; and the lack of available industrial and commercial development space (Gefak, 2019[15]).

The establishment of the Tesla factory in Brandenburg creates hope for economic development and stronger regional integration

In the spring of 2020, the US automobile maker, Tesla, began building its new Gigafactory in Grünheide, around 30 km east of the Berlin airport. The factory will have an area of 300 hectares. Tesla is planning to produce up to 500 000 electric cars per year beginning in early 2022. It also wants to produce batteries for electric cars in another factory to be built in Grünheide. The investment volume amounts to more than one billion EUR. At full capacity, the company intends to employ up to 12 000 people (Land Brandenburg, 2021[29]). In the final expansion phase, 40 000 employees could work at the factory. The demand for professionals will be high – from engineering and information technology, manufacturing and human resources to legal and government affairs, supply chain, and service and energy installation (Meyer, 2020[30]; Tesla, 2021[31]).

To meet the high demand for a skilled workforce at the factory, Tesla has worked with the Employment Agency Berlin-Brandenburg, particularly the agency's branch in Frankfurt (Oder) (Land Brandenburg, 2021[29]).

The creation of the Tesla factory will likely lead to positive outcomes: highly skilled jobs; spillover effects such as the establishment of other factories, suppliers and service providers; and co-operation with the higher education/research sector. Indeed, Microvast, a US-American producer of battery systems, has already established a new factory in Ludwigsfelde to serve as the company's new European headquarters. Others are likely to follow suit (Industrie- und Handelskammer Berlin, n.d.[32]).

Though acknowledging the great potential of Tesla's factory for stimulating economic development, social partners have expressed some concerns. SMEs, in particular, are worried about intensified competition for skilled labour. In addition, trade unions want to enforce good working conditions, as well as the right to employee participation in decision making at the Tesla factory. Furthermore, Brandenburg's HEIs and research institutions need to stand out from the multitude of German and European HEIs approaching Tesla for co-operation in research and education.

To assess the possible impacts of the Tesla factory on Brandenburg, it is helpful to look at the development around the first Tesla Gigafactory built in Reno, Nevada in 2014. Today, Tesla and Panasonic employ about 7 000 people there. Since 2014, Reno has become an attractive location, particularly for tech companies and young, highly skilled workers. Every fourth new resident in Reno is 20-29 years old – a much higher share of this age group than the American average of 14% (Heuer, 2020[33]).

The location of Tesla's new factory in Brandenburg raises a number of questions with regard to infrastructure: Can motorways handle increased demand for passenger and goods transport? Can the railway infrastructure absorb the increasing numbers of commuters? The train station in Grünheide is small – can it be upgraded and, if so, how will that be financed?

In March 2021, the Berlin-Brandenburg Joint Spatial Planning Department published a concept for development of the area that surrounds Tesla's Gigafactory (MIL; Stadtentwicklung Berlin; GL Berlin-Brandenburg, 2021[34]).

Proximity to the capital city of Berlin

Many of Brandenburg's challenges and opportunities are linked to its proximity to Berlin or have a direct impact on Berlin's economic development and vice versa. This implies the need for strong co-operation and co-ordination of efforts in various domains. In 2020, the governments of both states agreed to advance a broad joint agenda, the "Strategic General Framework for the Capital Region". This agreement aims to formulate guiding principles to develop the capital region and create a coherent framework for ongoing and future initiatives. It identified eight fields of action: i) settlement development and residential market; ii) mobility; iii) economy, skilled workforce, energy and climate protection; iv) volunteering, media and democracy promotion; v) conservation of nature and quality of life; vi) digital transformation; vii) science, research, culture and education; viii) cosmopolitanism, international networking and co-operation with Poland (Berlin-Brandenburg, n.d.[35]).

Examples of joint initiatives already underway include the project i2030 for the improvement of the railway infrastructure, the innovation strategy and health care provision (Berlin-Brandenburg, n.d.[10]). The two states also have a joint employment agency, *Bundesagentur für Arbeit, Berlin-Brandenburg*, which addresses their distinct economic and labour market challenges in an integrated approach.

The labour market

The labour market in Brandenburg has been steadily providing jobs

The state's employment rate of 78.1% in 2019 is impressive when considered alongside the labour market participation rate of 80.7%. One factor driving the employment rate is high female participation (Eurostat, 2018[36]). Part-time employment and the gender difference in the part-time employment rate are among the lowest in Germany. Relatively high levels of educational attainment among women, egalitarian social values and supportive child-care policies all play a role in high labour market participation among women in Brandenburg (and other Eastern German states).

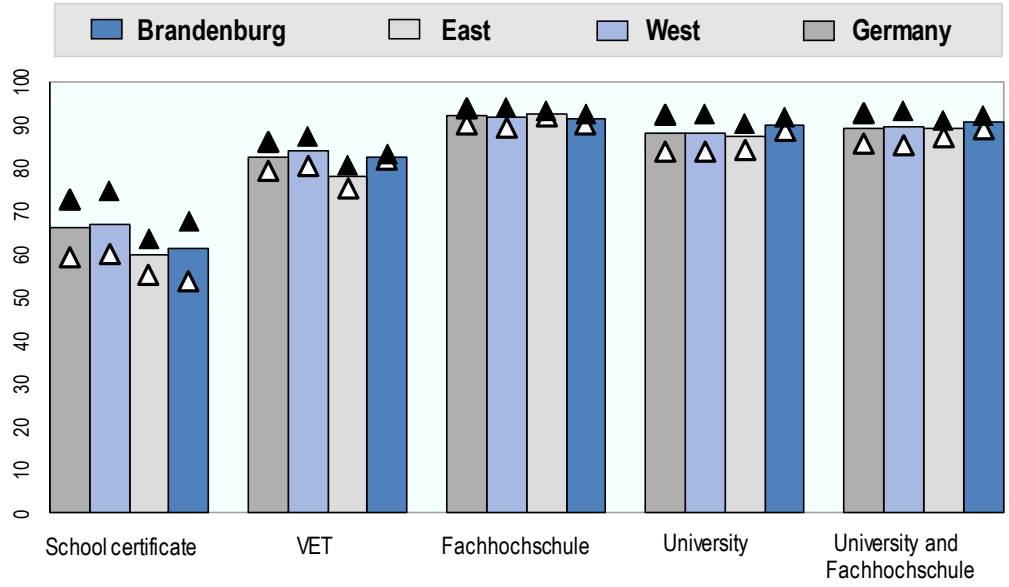
The employment prospects of educated people in Brandenburg are especially positive. In Brandenburg, around 90% of university degree holders, 92% of university of applied sciences (*Fachhochschule)* degree holders and 83% of vocational education and training (VET) degree holders aged 18-64 are employed (Figure 2.3). These employment rates are close to the averages for the whole of Germany, even slightly above for university degree holders. Furthermore, in Brandenburg, gender differences in employment among VET, *Fachhochschule* and university degree holders are smaller than the German average.

Brandenburg's unemployment rate has also fallen since 2005. By 2019, it was close (3.4%) to the national average (3.2%) (Eurostat, 2018[36]). The rate is the lowest among the former East German states and has been consistently lower than Berlin's since 2004.

Unemployment in Brandenburg is driven largely by youth unemployment and less so by long-term unemployment (Figure 2.4). As throughout the OECD, youth unemployment is higher than overall unemployment. It is also more volatile as the youth labour market is especially sensitive to macro-economic conditions, leading to spikes in youth unemployment during economic downturns (OECD, 2021[37]). In 2019, Brandenburg's youth unemployment rate of 7.3% compares with the German average of 5.8%. In addition, Brandenburg has the fifth-highest rate of youth who were neither in employment nor in education and training (NEET) (with 9.5%, compared to the German average of 7.7%) (OECD, 2021[38]). The rate of early leavers from education and training increased between 2001 and 2018. Brandenburg's rate of early

leavers is the fifth-highest of the German states (11.6% vs. 10.3% in Germany on average). In 2000, Brandenburg's rate was only 10.4% versus 14.6% in Germany on average (OECD, 2021[38]).

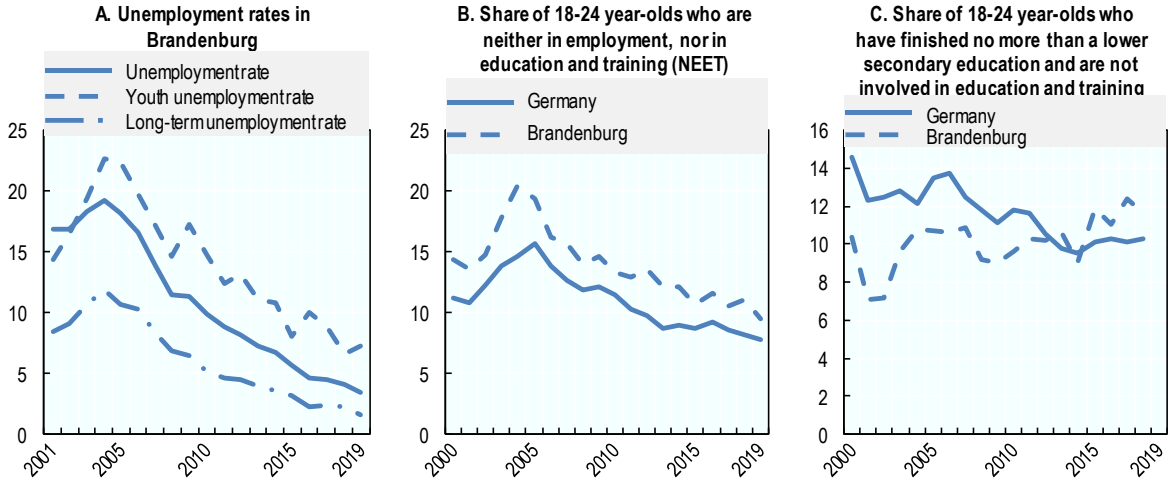
Figure 2.3. Employment rate, by educational attainment, 2018



Note: White triangles indicate employment rates of women and black triangles indicate those of men.
Source: OECD calculations based on data for Brandenburg from Statistik Berlin-Brandenburg and from the German Socio-economic Panel for East, West Germany and Germany.

StatLink https://stat.link/xlizhc

Figure 2.4. Unemployment indicators, 2000-19



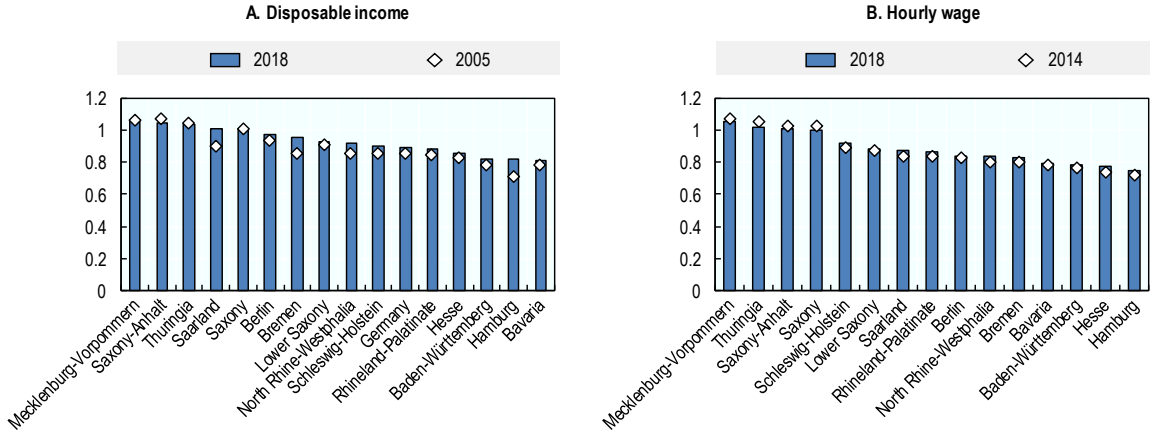
Source: OECD (2021[38]), Regional Statistics, https://www.oecd.org/regional/regional-statistics/ (accessed on 15 March 2021).

StatLink https://stat.link/tba3nd

The living standards of Brandenburg's population have been improving

Better employment outcomes have contributed to higher levels of disposable income in Brandenburg and the other East German states, approaching the German average (Figure 2.5). In 2005, average disposable income in Brandenburg was 86% of the national average; by 2018, the figure was 89% and disposable income in Brandenburg was very close to that of Berlin. This trend has been linked largely to increasing hourly wages relative to other states. The share of Brandenburg's population at risk of poverty or social exclusion (17%) has been decreasing as well, and was below the German average (17.4%) in 2019.

Figure 2.5. Disposable income per capita and hourly wage of Brandenburg compared to other German states



Note: A value higher than one means that Brandenburg has a higher disposable income or hourly wage than the respective state. An increasing value means that Brandenburg's disposable income or hourly wage is getting closer to the value of the respective state.
Source: (Statistisches Bundesamt, 2021[39]), VGR der Länder: Verfügbares Einkommen der privaten Haushalte, https://www.destatis.de/DE/Themen/Wirtschaft/Volkswirtschaftliche-Gesamtrechnungen-Inlandsprodukt/Glossar/verfuegbares-einkommen-private-hh.html (accessed on 15 April 2021); (Statistisches Bundesamt, 2021[40]), Verdienste und Verdiensunterschiede, https://www.destatis.de/DE/Themen/Arbeit/Verdienste/Verdienste-Verdienstunterschiede/_inhalt.html (accessed on 23 March 2021).

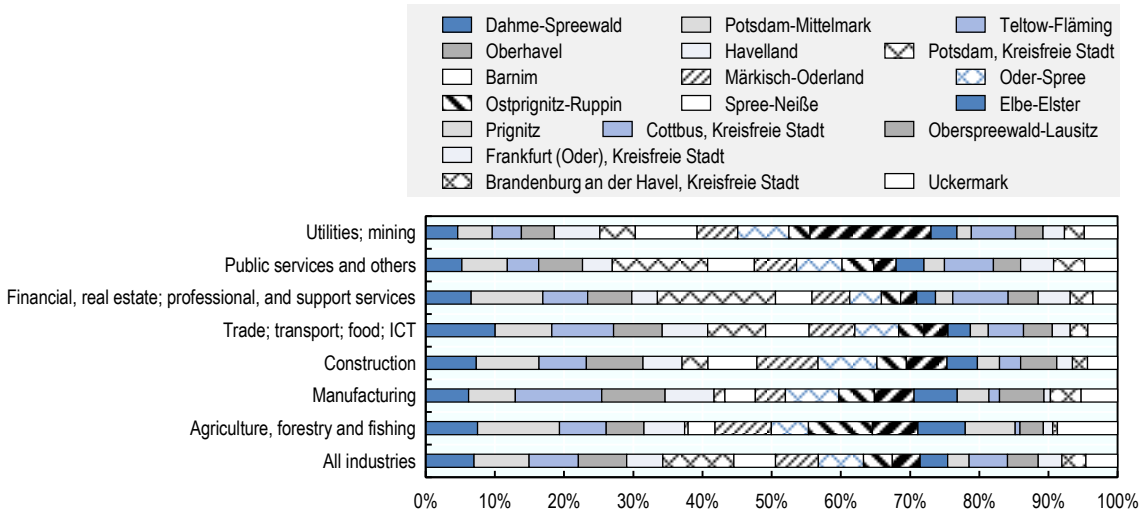
StatLink https://stat.link/9hl20u

Internal differences due to the varying industrial structures of the local economies

Macro-level indicators mask important internal variations. The relatively high unemployment rate in certain regions of Brandenburg reflects structural changes. All areas except the Havelland-Fläming region (which includes the state capital city of Potsdam and includes one-third of Brandenburg's labour force), have had above-average unemployment rates. In particular, Uckermark has had unemployment rates 1.7 times higher than the Brandenburg average and almost twice the German average.

The remaining three regions, Lausitz-Spreewald, Oderland-Spree and Prignitz-Oberhavel, and also the city of Brandenburg an der Havel (Havelland), have all experienced continuous above-average unemployment rates. Counties close to the greater Berlin area, and those home to Brandenburg's regional growth centres and their industrial structures have above-average employment prospects (Figure 2.7) (VBB, 2020[11]). These counties are particularly strong in the business services sector (Figure 2.6).

Figure 2.6. Counties' shares in Brandenburg's employment, by industry in 2018



Note: Counties are ordered by their 2018 unemployment rate in increasing order. The legend should be read in horizontal order from left to right.
Source: Eurostat (2018[36]), Regional Statistics (database), https://ec.europa.eu/eurostat/web/regions/data/database (accessed on 15 March 2021).

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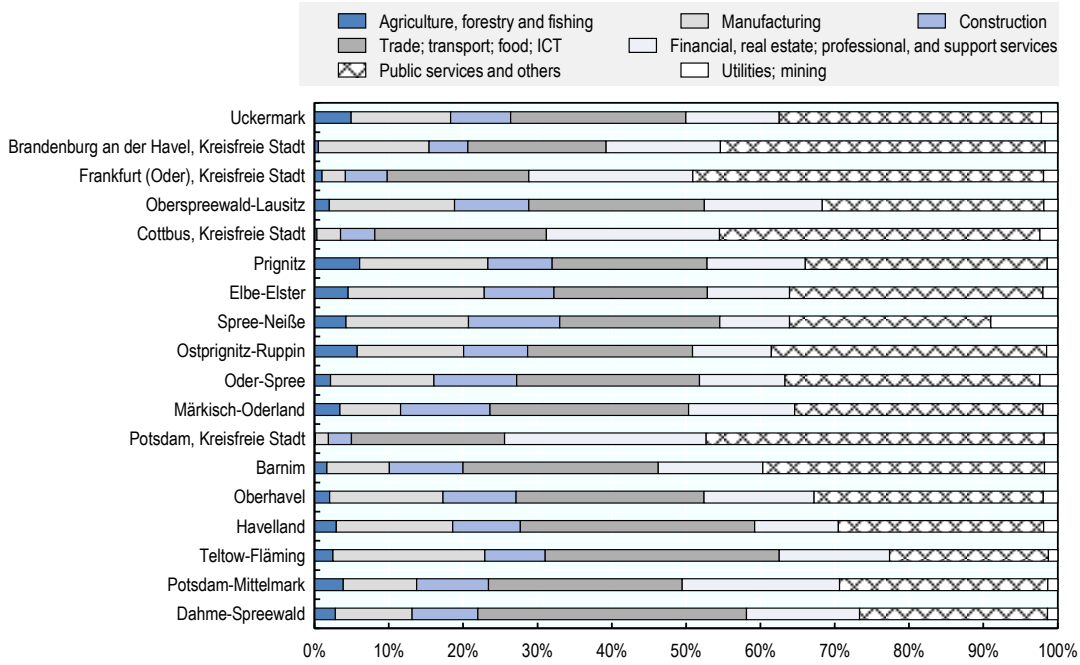
Figure 2.7. Employment in each county, by industry in 2018



Note: Counties are ordered by their 2018 unemployment rate in decreasing order.
Source: Eurostat (2018[36]), *Regional Statistics* (database), https://ec.europa.eu/eurostat/web/regions/data/database (accessed on 15 March 2021).

StatLink https://stat.link/htpqmn

Skills challenges

The demand for a skilled workforce in Brandenburg is expected to continue increasing; skills shortages are evident across the whole economy

Public authorities in Brandenburg can use projections of labour market needs produced by various public agencies to inform workforce planning. The *Institut für Arbeitsmarkt und Berufsforschung der Bundesagentur für Arbeit* – IAB (Institute for Employment Research) produces projections of jobs by industry, which are updated at regular intervals. The *Amt für Statistik Berlin-Brandenburg* (Statistics Office Berlin-Brandenburg) produces projections of demography and labour force development but not regularly. The various chambers of commerce survey their members and results are used to model the demand side of Brandenburg Skill Monitoring, which runs forecasts for Brandenburg and publishes its results through the online Skills Portal. The portal appears useful since it visualises the demand and supply side of skill levels in various industries and regions in the state and can easily identify pressing shortages. However, forecasts are run on available data and recent trends. Thus, they do not account well for structural change and other disruptions caused, for instance, by digitalisation.

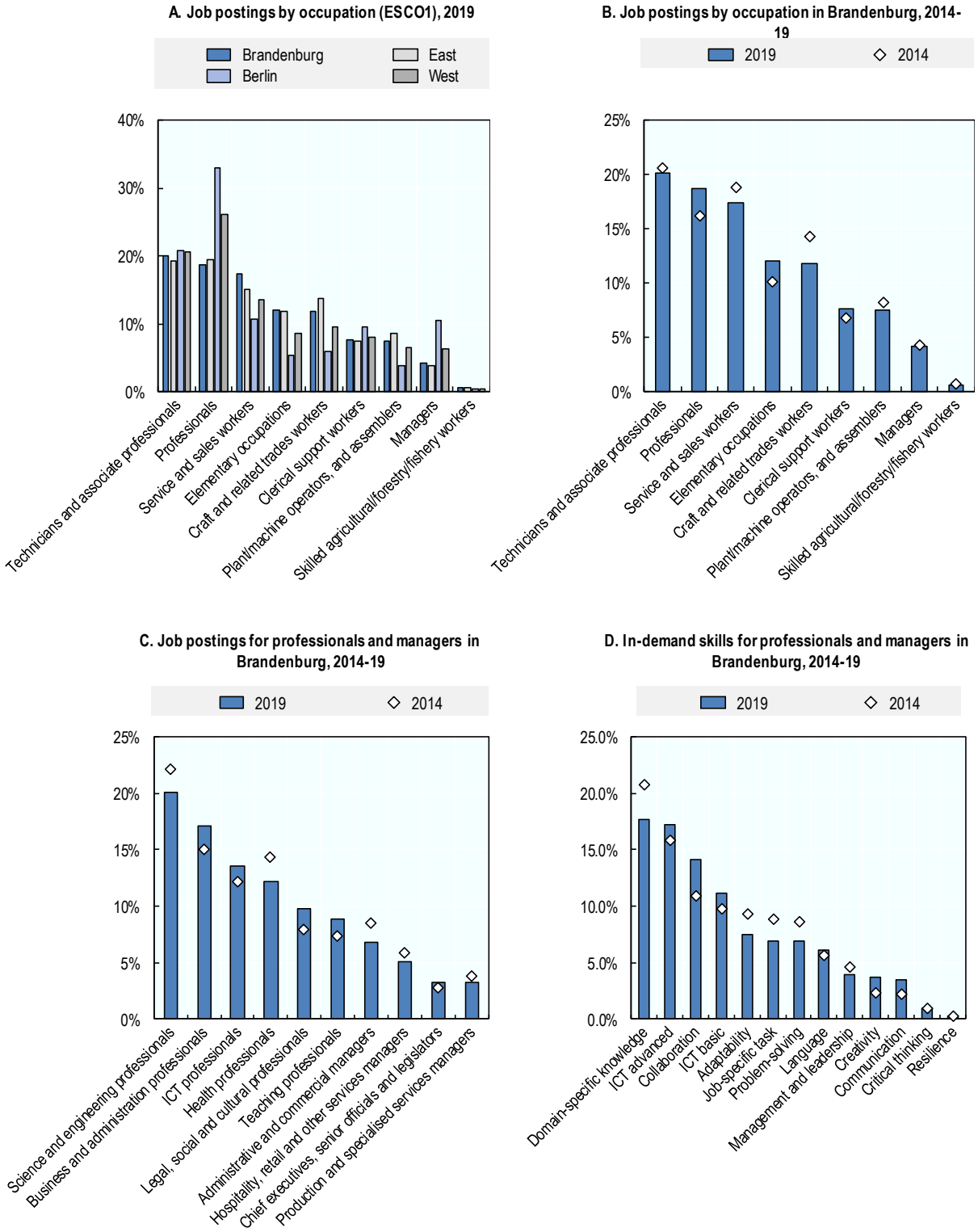
MWAE (2020[9]) forecasts that Brandenburg's manufacturing sector will decline to 17% of the workforce in 2040, compared to the German average of 20%. In addition, information and communications technology (ICT) in Brandenburg is expected to employ only 1.8% of the workforce in 2040, compared with 1.6% today. This will place the state in the second-to-last position among German states. These trends are concerns for Brandenburg's economic development agenda. A lower ICT penetration translates into a lower capacity to capitalise on the benefits of digitalisation. By contrast, public and private services are expected to continue adding more jobs.

The Skills Portal projects that only 16% of jobs will require an advanced qualification (academic and professional) by 2030, but that 61% will require a mid-level post-secondary/tertiary degree. These projections are likely to be overly conservative for several reasons. First, they are based on the minimum educational requirements for entry into an occupation. Second, they assume educational requirements will not change over time. Third, they may not adequately capture emerging jobs in rapidly evolving fields and the opportunities related to factors such as structural change in the Lausitz, the advancing innovation agenda and the settlement of Tesla in the Berlin-Brandenburg region.

Burning Glass Technologies[3] report that almost one-quarter of Brandenburg job advertisements call for an advanced qualification (professionals and managers), and this trend has been increasing (Figure 2.8, Panels A and B). The highest demand for these qualification levels in 2019 was for science and engineering, business and administration, and ICT professionals. Since 2014, demand for the latter two has particularly increased (Figure 2.8, Panel C). Burning Glass Technologies data show the top jobs at highly skilled occupations were for engineers and software developers, system analysts, social workers and counsellors, specialist medical and nursing practitioners, and also business development, marketing and accounting specialists. Employers increasingly look for ICT skills across all occupations and they value transversal skills, such as collaboration. Although domain-specific expertise remains key, its importance is declining (Figure 2.8, Panel D).

However, many of the top ten in-demand jobs pre-COVID-19 did not necessarily require a post-secondary qualification. For example, the highest identified demand was for sales assistants, labourers, freight handlers and cleaners, none of which specified a post-secondary requirement. In contrast, 32% of occupations on the list required a post-secondary qualification (nurses, life technicians and administrative assistants) and another 22% a higher education degree (engineering, social work professionals and system analysts).

Figure 2.8. Job postings by occupation in Brandenburg and Germany



Source: OECD calculations based on Burning Glass Technologies (2014, 2019) (database).

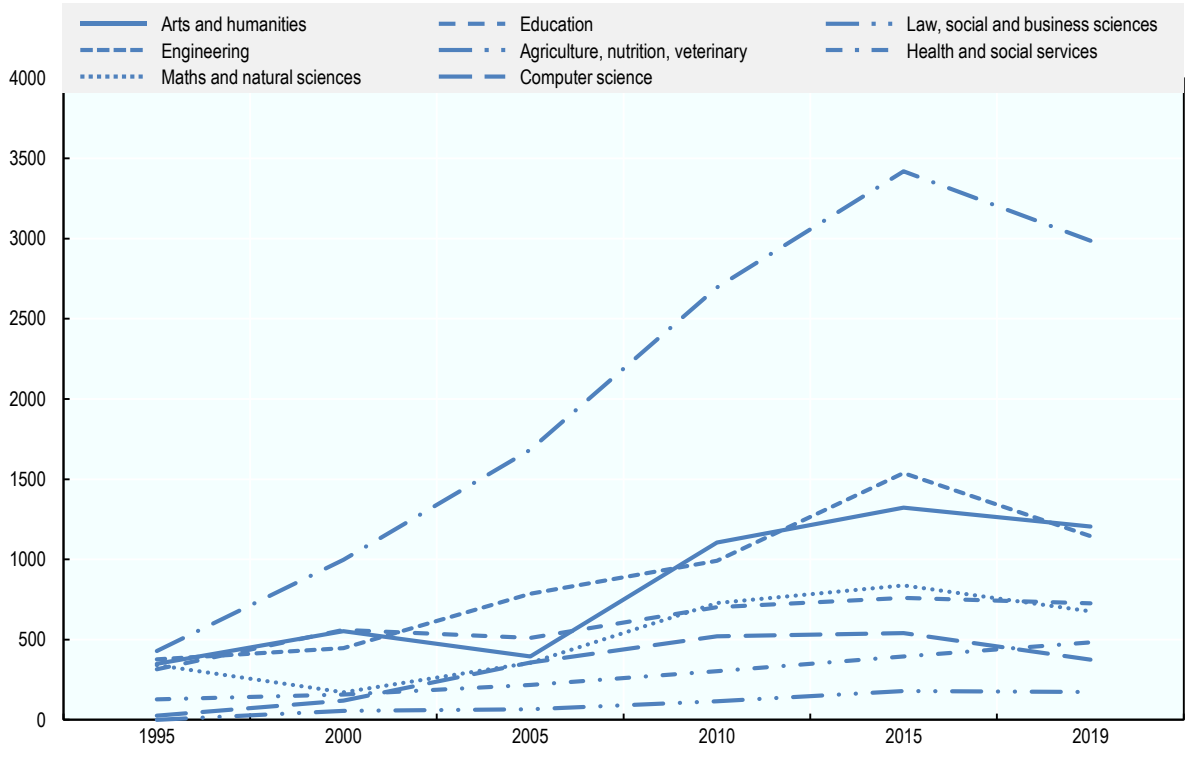
StatLink https://stat.link/b19vch

Unmet demand for highly skilled professionals is already evident in many sectors of the Brandenburg economy. The Skills Portal reports shortages of graduates with an advanced degree in many occupations. Such shortages are likely to increase. A shortage of around 9 200 engineering, science and advanced technical jobs was reported in 2019; this shortfall is forecast to exceed 10 000 by 2030. In addition, Brandenburg's economy was short of 13 700 business professionals and managers, a shortage expected to increase to 19 000 by 2030. Demand for ICT skills also exceeds supply. Finally, growing shortages are forecast for the medical, nursing and teaching professions.

These skills shortages create both economic and social risks across the state. On the economic side, stakeholders report shortages of qualified workers as the number one challenge hampering growth in Brandenburg. The social impact of skills shortages can also be acute, especially around health care. In 2018, the state had only 373 physicians per 100 000 inhabitants compared to the German average of 431 (OECD, 2021[38]). There are also disparities within the state. Regions with the highest number of day-care and school places are those directly surrounding Berlin. Meanwhile, regions on the outskirts of Brandenburg have less than half of approved day-care places and schools (Statistik Berlin-Brandenburg, 2021[41]).

At the same time, the supply of new higher education degrees to the labour market has recently stagnated or declined

Figure 2.9. Number of degrees awarded by Brandenburg's HEIs in 1995-2019, by field of study



Source: Statistisches Budesamt (2021[42]), *Hochschulstatistik*, https://www.destatis.de/DE/Themen/Gesellschaft-Umwelt/Bildung-Forschung-Kultur/Hochschulen/Methoden/Erlaeuterungen/hochschulen.html (accessed on 15 March 2021).

StatLink https://stat.link/mf14jc

While the number of people graduating from Brandenburg's HEIs increased steadily in 2005-15, graduation numbers in most degrees have been stagnating over the last five years (Figure 2.9). Graduate numbers in 2019 fell almost to their levels of a decade ago, with human medicine and health care as the only growing field. Despite significant drops in law, social and business sciences, and engineering, these fields remain the strongest in Brandenburg, along with arts and humanities. In 2019, 36% of graduate students in Brandenburg acquired a degree in law, social and business sciences, 14% in engineering and 14.6% in the arts and humanities.

Skills shortages are largely driven by demographic change: Brandenburg is one of the fastest ageing and least populated federal states in Germany

Ensuring enough skilled workers to meet current and future economic needs is an ongoing concern in Brandenburg. As noted, the population of Brandenburg is expected to decline by about 3% by 2040. The share of people older than 65 is forecast to reach 30% by 2030, up from 25% now. This increase is due in part to the expected reduction in the population aged 25-65, which is expected to fall by 11% between 2019 and 2030; that age cohort will drop, as a share of the whole from 54% to 48% in the same period.

The outward migration of people in the 25-65 age group will see a shrinking working age population supporting more older people. It will also see the departure of mid-career, highly skilled people. This will make it difficult for the labour market to capitalise on opportunities (Statistik Berlin-Brandenburg, 2021[1]; MWAE, 2020[9]).

But skill shortages are also due to declining attainment of higher education in Brandenburg, particularly among youth and women…

Advances in digital technology, climate change commitments and demographic change are transforming Brandenburg's economy, and, in turn, its skills needs. New economic sectors and jobs are emerging, while others, particularly the coal and related "brown" sectors, are shrinking. Even within existing occupations, the tasks performed by workers, and the skills needed to carry them out, are changing significantly. However, the trend in higher education attainment may pose a challenge to Brandenburg's economic transformation.

The educational attainment of Brandenburg's adult population has remained relatively stable over the last two decades. More than 90% of 25-64 year-olds hold at least an upper secondary qualification. In 2019, 29% of Brandenburg's adult population held a tertiary qualification (ISCED levels 5-8), close to the German average of 30%. However, this represents a decline over the last 20 years (Eurostat, 2018[36]). In 2000, 33% of women in Brandenburg held a tertiary degree compared to only 19% in Germany. In 2019, the figures showed a (slight) decline to 30% for women in Brandenburg but a significant increase (27%) in Germany overall (Eurostat, 2018[36]). At the same time, Brandenburg's men have had lower higher education attainment rates than the German average since 2009, yet have also had an increased and above-average attainment of upper secondary and non-tertiary post-secondary education, including VET (Eurostat, 2018[36]).

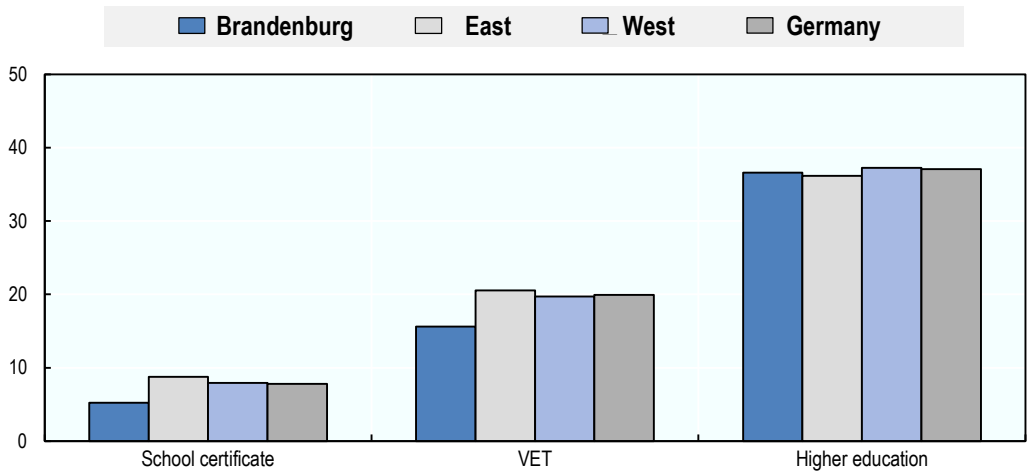
Brandenburg's youth is not keeping pace with educational attainment. In 2019, 12% of 25-34 year-olds had not attained even a secondary education certificate compared to only 6% two decades before. The young men of Brandenburg had a non-attainment rate of 15% compared with the German average of 14%. However, 20% of young people hold a higher education degree, a rate that has remained stable over the last two decades but remains well below the German average (34% in 2019). Young women's attainment rates have dropped below the German average since 2009 (Eurostat, 2018[36]).

…and due to low participation in lifelong learning

Rates of participation in continuing education programmes among mature learners are also low. This is a cause for concern for the future labour market performance of Brandenburg's workers, with marked differences by level of educational attainment. In Brandenburg, as well as in Germany on average, 37% of higher education degree holders take part in formal or informal further learning (Figure 2.10.). This share is much smaller among VET qualification holders and individuals with only a school certificate. For those groups, the participation rate in further learning is lower in Brandenburg than in Germany. The low rate of uptake of continuing education is a cause for concern. The pursuit of knowledge and skills throughout one's entire life and career is key to success in today's modern knowledge-driven economy. It helps individuals adapt to rapidly changing demands for skills and to increasing labour market flexibility. Moreover, in Brandenburg, the pool of young workers with up-to-date skills is continuously shrinking. Consequently, the upskilling and reskilling of the labour force appears essential for responding to emerging skills.

Figure 2.10. Participation in lifelong learning by educational level, 2014-18

Population aged 18-64



Note: Participation in formal or informal further training in the year prior to the interview. Latest available information of respondents with an interview between 2014 and 2018.
Source: OECD calculations based on data from the German Socio-economic Panel.

StatLink https://stat.link/wlvxkg

The structural change in Brandenburg due to an ageing society and sectoral change processes emerges as a central and future-oriented task for the state. The most important goal for the state's research and education policy would be to generate long-term growth, innovation and a skilled labour force. To achieve this, Brandenburg needs a nationally and internationally attractive higher education system. The state higher education policy is thus a decisive and important factor in shaping the future of Brandenburg.

Unleashing opportunities for economic development via higher education

Opportunities for Brandenburg are, in most cases, underpinned by research, innovation and skills. Exchange between the world of higher education and the world of work, including SMEs and the public

sector, is important for Brandenburg's economic transformation agenda. To grow and to connect their companies to international markets, SMEs and entrepreneurs largely rely on local labour markets; they need the education system to create a pool of highly skilled professionals. However, if the local economies are stuck in a low-skill trap and cannot put the skills of the available labour force to good use, SMEs and entrepreneurs will be unable to exploit growth and development opportunities.

Therefore, Brandenburg's higher education system, as the engine of skills development and research, will play an important part in helping the state realise those opportunities. A high-performing higher education sector could play a more active role in the state's economic development across many areas:

- *Proximity to Berlin*: The governments of Brandenburg and Berlin have a shared development agenda, the "Strategic general framework for the capital region". This agreement, which aims to create a coherent framework for initiatives, includes skills development, and research and innovation among its focus areas. That creates opportunities for Brandenburg's HEIs. For example, they can enhance co-operation with the large research and innovation sector in the capital – with Berlin's HEIs and, especially, the independent research institutes located there. By sharing expertise and research infrastructure, they can work together to attract international research talent. Berlin's high rate of start-up enterprises provides opportunities for Brandenburg's state government to attract those start-ups to the state. The provision of services (in training, research and innovation) to those new enterprises by the higher education sector is an important part of that offer.
- *Federal funding for structural change*: The federal government will invest substantially from structural funds to support the phase-out of the coal industry around Lausitz. The state government's agenda to guide use of the funds focuses on strengthening Lausitz as a science and research centre. Building on the short-term transition funding, the state could harness the expertise of the state's entire higher education sector (not simply the HEIs in the Lausitz region) to create centres of excellence in higher education and research in the region.
- *New ways of working and learning*: The COVID-19 pandemic led to new ways of working, enabling businesses (and HEIs) to operate more flexibly. People had less need to be physically present in their places of work (and study). This, in turn, enables HEIs to offer hybrid teaching, making it easier for out-of-state students to study at Brandenburg HEIs. Meanwhile, employees of Berlin-based firms who are residents in Brandenburg will likely no longer have to commute daily (and vice versa). However, the quality of broadband Internet connection would need to be enhanced for HEIs to fully benefit from this trend.
- *Tesla development*: The scale of the Tesla investment in its new plant in Grünheide is expected to have great benefits for the economy, labour market and infrastructure in that area of the state. As a company at the leading edge of a new technology, Tesla will likely draw associated companies to the region. That could create more demand for advanced engineering, analytical and research services, and other services to which HEIs are well placed to contribute. As German HEIs position themselves as preferred suppliers to Tesla and its associates, Brandenburg's HEIs could differentiate themselves from other German HEIs in their relationships with Tesla. Specifically, they could present themselves as a higher education system (supported by state government ministries, rather than as individual disconnected institutions) that can provide bundled services in research and talent development.
- *Federal government's strategy of encouraging lifelong learning:* Continuing education and training (CET)/lifelong learning is essential to the progress of firms throughout the world. It can allow firms to respond to advanced technologies that are changing the nature of work and increasing the complexity of work processes and required skills. CET/lifelong learning also enables people to stay longer in the workforce. This is vital as life expectancy grows, as the health and mobility of older people improves and as the traditional working age population shrinks as a proportion of the whole.

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Notes

[1] Note that patenting rates tend to be higher in areas with high population density, in large cities and cities where large, high-performing research establishments are headquartered. Compared with other federal states of Germany, Brandenburg lags on some of those criteria.

[2] The Brandenburg enterprise birth rate increased between 2016 and 2019, but the COVID-19 pandemic caused a decline on all administrative levels from 2019 to 2020.

[3]Burning Glass Technologies (n.d.[43]) pools data of job announcements from all online job portals.

3 Brandenburg's higher education system

This chapter discusses the organisation and structure of Brandenburg's higher education system, as well as the roles played by the state and federal government in steering, regulating and overseeing the system. It also examines the governance of higher education institutions. The chapter lays out the types of programmes offered in the system, including the growing popularity of dual programmes. It explores the financial challenges of continuing education and training programmes, and public funding in general. Finally, policy recommendations identify how Brandenburg can overcome its challenges.

Governance of the higher education system

The Ministry of Science, Research and Culture co-ordinates and oversees higher education institutions in Brandenburg

In Germany, much of the authority over education is delegated to the states (*Länder*), with the federal government reserving some powers set out in the Basic Law (Article 30) (AER, 2017[1]) (Box 3.1). Therefore, the states have primary responsibility for higher education and operate with a large measure of autonomy (Kultusministerkonferenz, 2019[2]). The governance of higher education, research and cultural affairs in Brandenburg lies in the hands of the Ministry of Science, Research and Culture (*Ministerium für Wissenschaft, Forschung und Kultur (MWFK*)). MWFK has responsibility for public higher education institutions and the non-university research landscape, as well as theatres, orchestras, museums, and music and art schools.

Box 3.1. The role of the Federal Ministry of Education and Research in higher education

While the states have primary responsibility for higher education in Germany, the Federal Ministry of Education and Research (*Bundesministerium für Bildung und Forschung – BMBF*) oversees nationwide policies for higher education and plays an increasing role in funding higher education . The Basic Law defines the federal government's responsibilities in the field of higher education as the following, among other areas:

- admission to higher education and awarding of higher education degrees, although *Länder* may enact state-specific laws;
- financial assistance for students via the Federal Training Assistance Act (*Bundesausbildungsförderungsgesetz – BAföG*);
- the status-related rights and duties of public higher education staff, who have the status of civil servants (although salary levels are set at the state level);
- promotion of scientific and academic research, and technological development.

The Ministry is involved in the planning and funding of supra-regional promotion of higher education science, research and teaching. In the past, HEIs could only be supported through fixed-term programmes. Following an amendment of the Basic Law in 2015, HEIs can now be supported permanently by federal funds, including

- the three Higher Education Pacts (*Hochschulpakt I-III*) and their successor Future Agreement Strengthening Studies and Teaching (*Zukunftsvertrag Studium und Lehre stärken*) to strengthen HEIs and studies;
- Research Pact (*Forschungspakt*);
- Excellence Strategy, which invests in research at HEIs to increase international competitiveness.

Source: OECD (2020[3]), Education Policy Outlook: Germany, OECD Publishing, Paris; Eurydice (2021[4]), Germany: Administration and governance at central and/or regional level, Working paper, 6 December 2021, Eurydice; Hochschulrektorenkonferenz (n.d.[5]), "*Hochschulpakt*", https://www.hrk.de/themen/hochschulsystem/hochschulpakt (accessed on 8 April 2021); Eurydice (2021[6]), "Germany: National reforms in higher education", https://eacea.ec.europa.eu/national-policies/eurydice/content/national-reforms-higher-education-25_en (accessed on 8 April 2021).

The state sets the legal and financial framework for higher education, including HEIs (Hartwig, 2004[7]). Regulations concerning higher education are detailed in the states' constitutions (Landtag Brandenburg,

1992[8]), separate laws and contracts (Box 3.2). Internationalisation, competition and performance orientation have become major factors in the governance and funding of public HEIs. The relationship between the state ministry – MWFK – and HEIs is, thus, increasingly shaped by agreements on targets and performance. MWFK has responsibility for financing public higher education, including remuneration and pensions of academic staff (who are civil servants) (Eurydice, 2021[4]). HEIs, however, increasingly receive competitive funding from the Federal Ministry of Education and Research (*BMBF*).

Box 3.2. Brandenburg's regulatory framework for higher education

Several key documents shape the state's regulation of Brandenburg's higher education landscape, including:

- Brandenburg Higher Education Act (*Brandenburgisches Hochschulgesetz – BbgHG*), which regulates the legal position of the public HEIs and their financing, as well as the government's steering and monitoring of the institutions.
- Brandenburg Higher Education Admission Law and Regulation (*Brandenburgisches Hochschulzulassungsgesetz* and *Hochschulzulassungsverordnung*), which dictates rules for programmes with restricted admissions at HEIs in Brandenburg.
- Higher education institutional contracts (*Hochschulverträge*), which include a general framework agreement (*Hochschulrahmenvereinbarung*) between the state and the HEIs in Brandenburg, as well as specific agreements with the individual institutions.
  - They set out HEIs' obligations, development goals, projects and financing for a five-year period; ensure close articulation between state-wide goals and institutional strategies; and provide medium-term financial planning security for HEIs.
  - Contracts are negotiated with individual HEIs, which then create their own development plans and report to the ministry. They must regularly provide information about use of funds.
  - It is not possible to adjust the contract, which can lead to supplementary agreements. Furthermore, planning security decreases towards the end of the term, unless parties agree to continue the contract or clarify the shape of future contracts. This makes long-term strategic planning more difficult for HEIs.

Source: (MWFK, n.d.[9]), *Rechtliche Grundlagen/Zentrale Dokumente*, https://mwfk.brandenburg.de/mwfk/de/wissenschaft/rechtliche-grundlagen-zentrale-dokumente (accessed on 8 February 2021).

Other federal and state bodies and agencies assist in higher education accreditation and admission and act as the voice of higher education institutions in policy and public discussions

The Accreditation Council and the Foundation for Higher Education Admission assist in higher education accreditation and admission in Brandenburg (Kultusministerkonferenz, 2019[2]).

- The independent Accreditation Council (*Akkreditierungsrat*) sets the standards for the accreditation process and authorises agencies to carry out programme accreditations (European Union, 2014[10]; Akkreditierungsrat, 2021[11]). Germany has ten accreditation agencies.
- The Foundation for Higher Education Admission (*Stiftung für Hochschulzulassung – SfH*) administers and allocates nationwide restricted study places (i.e. medicine, pharmacy, veterinary medicine, dentistry and geoinformation management) (SfH, 2021[12]). SfH also co-ordinates

admission to unrestricted and locally restricted programmes of several HEIs by means of a dialogue-oriented service procedure (*Dialogorientiertes Serviceverfahren – DoSV*).

The Brandenburg State Higher Education Council (*Brandenburger Landeshochschulrat – LHR*) (MWFK, n.d.[13]; Jansen, 2007[14]) advises the ministry and HEIs in planning to ensure a balanced development of the system that draws on external expertise (MWFK, n.d.[13]) (Kultusministerkonferenz, 2019[2]).

Brandenburg Rectors' Conference (*Brandenburgische Landeskonferenz der Hochschulpäsidentinnen und -präsidenten*) is the association of rectors and presidents of public HEIs in Brandenburg (BLHP, n.d.[15]). It promotes collaboration of the institutions and works as a forum for issues relating to research and higher education. The conference is also the voice of HEIs with politicians and the public.

The organisation of higher education institutions builds on the participation of internal stakeholders and self-governance, but actual autonomy is limited

As stipulated in the Basic Law (Art. 5, Paragraph 3), German HEIs have the right of self-administration and self-governance. This includes autonomy on academic matters and matters such as personnel and financial administration. Brandenburg's Higher Education Act distinguishes between governmental matters and self-administration and self-governance (Kultusministerkonferenz, 2019[2]). The state ministry is responsible for legal supervision (*Rechtsaufsicht*) and, to a certain extent, academic supervision (*Fachaufsicht*). It also has final authority over financial and staffing matters (Kultusministerkonferenz, 2019[2]).

In principle, HEIs have statutory autonomy. However, in practice – except for academia – their autonomy in Brandenburg is low compared with other systems of higher education in Germany (Dohmen and Krempkow, 2015[16]; Babyesiza and Berthold, 2018[17]) or Europe (EUA, 2017[18]; EUA, 2017[19]) (see Table 3.1 for an international comparison).

Table 3.1. Autonomy of higher education institutions in Brandenburg

Compared with 29 European systems in 2016

Autonomy aspect	Level of autonomy	Description
Organisational	Medium-low	The appointment and dismissal of presidents and rectors require approval from MWFK. The basic selection criteria for executive heads, the dismissal procedure and the term of office are stipulated by law.
Financial	Medium-low	HEIs receive annual block grant funding with no restrictions on the allocation of funding. MWFK predetermines allocation of any surpluses. HEIs cannot borrow money. HEIs cannot own buildings, but they can build assets. There are no tuition fees for first cycle and consecutive studies at HEIs.
Staffing	Medium-low	The recruitment of some senior academic staff, staff dismissal and decisions on individual staff salaries are restricted. MWFK has a say about competencies. Salary bands for presidents are negotiated with MWFK. Staff promotion depends on the availability of posts at a higher level.
Academic	From medium high to high	Overall student numbers are negotiated with MWFK. At the bachelor's level, admission is co-regulated by universities and an external authority. At bachelor's and master's levels, all new degree programmes must be submitted to accreditation. The termination of degree programmes requires negotiation between universities and an external authority.

Source: EUA (2017[19]), *University Autonomy in Europe III Country Profiles*, European University Association.

The internal governance of HEIs involves internal stakeholders. HEIs are governed by a senate and managed by the executive head of the institution. The head, who is the rector or the president, may be elected by the professors of the institution, but MWFK ratifies all appointments. The rector or president may be supported by a rector's body or presidential body (Eurydice, 2020[20]). Alongside the rector or president, HEIs have a chancellor who is the head of administration and responsible for the budget. The Senate (*Senat*) oversees and plans research, academic programmes and teaching in the university. It includes representatives of the academic community and students. All members of an HEI (i.e. all those whose main employment is at the institution and all matriculated students) have some level of involvement in decision-making processes.

The basic academic organisational unit in the HEIs is the *Fachbereich* (department) or *Fakultät* (faculty). *Fachbereichsrat* (faculty council) and *Dekanat* (the dean) are the administrative heads of the department or faculties. They are responsible for all research and teaching issues (Kultusministerkonferenz, 2019[2]) (Eurydice, 2021[4]). *Fachbereichsrat* are usually composed of professors, students and both academic and non-academic staff.

Students usually have student bodies (*Studierendenschaften*), which are self-governing, to look after their interests. All students become members of these bodies on matriculation.

Structure of the higher education system

In the winter semester of the 2019/20 academic year, Germany had 424 HEIs. Over half were in the Western states of Baden-Württemberg (71), Bavaria (47) and North Rhine-Westphalia (69) and the capital Berlin (41). The state finances and regulates most of these institutions. However, the state officially recognises around 36% of HEIs that are private or church-run. Most students (89%) are enrolled at public institutions. Private institutions mainly attract students who wish to specialise, study in smaller groups or who could not gain admission to a state university due to restrictions (Shumelev, 2019[21]).

Brandenburg has 18 HEIs (Table 3.2). Most HEIs in Brandenburg are public institutions, catering to 98% of all students: (Statistisches Bundesamt, 2021[22]).

The higher education system is binary with institutions varying substantially in size, location and structure

German HEIs vary considerably in size. The 30 biggest institutions (which are nearly all in the West German states) provide higher education to over a third of all students in Germany. The three biggest institutions have over 50 000 students each, as many as all HEIs in Brandenburg combined. Brandenburg's biggest institution, the University of Potsdam, has 21 000 students (Table 3.2).

As with Germany in general, Brandenburg has a *binary higher education system*: state and state-accredited institutions are divided into universities and universities of applied sciences (UAS) (*Fachhochschulen*) (Hochschulrektorenkonferenz, n.d.[23]). The public higher education system in Brandenburg consists of four universities and four UAS. They are concentrated in the southern half of the state; coverage in the regions north of Berlin is limited. In addition, 2 of Germany's 30 specialised colleges of higher education (which prepare future staff of Germany's public administration and services) are located in Brandenburg: the Police University of Brandenburg (HPol BB) and the University of Applied Sciences for Finances Brandenburg (FHF). These specialised colleges cater to 3% of Brandenburg's students (Statistisches Bundesamt, 2020[24]). There is one private sector university (Brandenburg Medical School) and five smaller UAS, including one church-run institution (Elstal Theological Seminary).

Table 3.2. Staff and student populations at higher education institutions in Brandenburg, 2019

Higher education institutions	Location	Number of students	Student population Percentage female	Student population Percentage international	Number of staff
Public universities					
University of Potsdam	Potsdam (Brandenburg's capital)	21 229	57	14	4 844
Brandenburg University of Technology Cottbus-Senftenberg (BTU)	South of Brandenburg; Cottbus, Senftenberg, Close to the Lausitz region	6 919	42	32	2 411
European University Viadrina	Frankfurt (Oder), close to the Polish border	5 992	60	26	1 020
Film University Babelsberg Konrad Wolf	Potsdam (Brandenburg's capital)	867	53	19	427
Public universities of applied sciences					
University of Applied Sciences Potsdam (FHP)	Potsdam (Brandenburg's capital)	3 523	60	12	660
Technical University of Applied Sciences Wildau (THW)	Wildau (on the outskirts of Berlin)	3 696	36	16	702
Brandenburg University of Applied Sciences (THB)	Brandenburg an der Havel (west of Berlin and Potsdam)	2 678	30	20	386
University for Sustainable Development Eberswalde (HNEE)	Eberswalde (northeast of Berlin)	2 208	50	8	642
Public specialised universities of applied sciences					
Police University of Brandenburg (HPol BB)	Oranienburg	763	33	9	504
University of Applied Sciences for Finances Brandenburg (FHF)	Königs Wusterhausen	731	54	-	40
Private university					
Brandenburg Medical School Theodor Fontane (MHB)	Neuruppin (in the north of Brandenburg)	438	66	7	202
Private universities of applied sciences					
University of Applied Science Clara Hoffbauer (FHCHP)	Potsdam (Brandenburg's capital)	208	80	2	37
College for Sport and Management (ESAB)	Potsdam (Brandenburg's capital)	270	35	2	30
Elstal Theological Seminary (TH Elstal)	Elstal	58	41	16	18
XU Exponential University of Applied Sciences	Potsdam (Brandenburg's capital)	41	22	24	24

Notes: The TH Elstal is a church-run institution. Three of the private HEIs are not listed (Health and Medical University Potsdam, GISMA Business School and University of Europe for Applied Sciences) as there are no official numbers available.

Sources: Privathochschulen (n.d.[25]), *Studium in Brandenburg: Private Fachhochschulen & Universitäten + alle Studiengänge*, www.privathochschulen.net/hochschulen/brandenburg (accessed on 15 March 2021); MWFK (2021[26]) *Studienangebote – Duales Studium Brandenburg*, https://www.duales-studium-brandenburg.de/studienangebote#&gid=lightbox-group-2255&pid=0 (accessed on 6 February 2021); Statistik Berlin-Brandenburg (2019[27]), *Studentenstatistik*, https://www.statistik-berlin-brandenburg.de/webapi/jsf/tableView/tableView.xhtml# (accessed on 15 February 2021); Statistik Berlin-Brandenburg (2020[28]), *Personal an Hochschulen im Land Berlin 2019*, www.statistik-berlin-brandenburg.de (accessed on 15 February 2021); Hochschulrektorenkonferenz (n.d.[23]), About us – *Hochschulkompass*, https://www.hochschulkompass.de/en/about-us.html (accessed on 7 February 2021).

More than half of all institutions in Germany are UAS; they serve about 35% of students. In Brandenburg, only a quarter of students are enrolled in the 11 UAS, despite a programme aimed to increase take-up. The limited take-up of places at the UAS likely results from the limited (if increasing) range of subjects they teach (Table 3.3). Typically, universities offer a wider range of subjects (Hochschulrektorenkonferenz, n.d.[23]).

Table 3.3. Main differences between universities and universities of applied sciences in Brandenburg

	Universities	Universities of applied sciences
Focus in research and services provided	Mainly basic research, and provision of health care services (university hospitals)	Mainly applied research and consulting
Importance of teaching	Equal emphasis on research and teaching	Main emphasis on teaching and coursework
Study fields offered	All disciplines (though not offered at all universities)	Mainly engineering, business administration, social work, design
Entrance qualification	University entrance qualification (Hochschulzugangsberechtigung, HZB)	HZB or specific *Fachhochschule* entrance qualification
Degrees	Bachelor's, master's, state examination (for law, teaching, medicine, pharmacy), doctoral degree	Bachelor's, master's, doctoral degrees (no legal entitlement but in some cases in collaboration with universities)
Programme characteristics	Emphasis on theory and research, including research-oriented final theses	Emphasis on practice, including integrated work placements and practice-oriented final theses
Requirements for professorships	Doctorate and habilitation (or comparable additional academic achievements)	Doctorate and five years of practical career experience with outstanding achievements
Teaching load	*Professors:* 8 hours per week *Professors with a teaching focus:* 10-12 hours per week *Junior professors*: 4-6 hours per week *Junior professors with a teaching focus*: 6-8 hours per week *Academic staff:* up to 24 hours per week	*Professors:* 18 hours *Professors with a focus on research*: 9-12 hours *Academic staff:* up to 24 hours per week

Source: Teaching load from MWFK (2017[29]), "*Verordnung über den Umfang der Lehrverpflichtung des hauptberuflich tätigen wissenschaftlichen und künstlerischen Personals an den staatlichen Hochschulen des Landes Brandenburg (Lehrverpflichtungsverordnung - LehrVV)*" (accessed on 6 February 2021).

Universities are normally more research-oriented, whereas UAS emphasise teaching, practical work and applications (Hochschulrektorenkonferenz, n.d.[23]). Teachers at UAS usually have substantial professional experience outside higher education in addition to academic qualifications. The statutory teaching load for regular professors at UAS is more than twice that of university professors. However, regulations differ for professorships focused on research (Table 3.3) (MWFK, 2017[29]).

As a result of the Bologna Process, differences between the two types of institution are declining. Universities and institutions of equivalent status retain a "doctoral degree-granting monopoly". However, new models of co-operation are emerging. Recently, Hesse awarded its UAS the right to confer doctorates (Shumelev, 2019[21]). Brandenburg's UAS have the right to offer doctoral studies only in co-operation with state universities.

Higher education institutions complement each other in their teaching and research profiles, providing students and the economy with specialised expertise

Brandenburg's HEIs differ in study and research profiles (see Table 3.4). The University of Potsdam offers a wide range of fields of study. Conversely, the others have specialised in specific areas, often orienting their study and research portfolio towards the regional labour market.

Table 3.4. Teaching and research profiles of higher education institutions in Brandenburg

Higher education institutions	Location	Programmes	Faculties/departments
University of Potsdam	Potsdam (Brandenburg's capital)	162 programmes (the only HEI offering teacher education); right to confer doctorates	7 faculties: Human sciences, law, mathematics and science, philosophy, business and social sciences, digital engineering
Brandenburg University of Technology Cottbus-Senftenberg (BTU)	South of Brandenburg; Cottbus, Senftenberg, part of the Lausitz region	Over 74 programmes; right to confer doctorates	6 faculties: MINT; environment and natural sciences; mechanical engineering, electrical and energy systems; social work, health care and music; business, law and social sciences; architecture, civil engineering and urban planning
European University Viadrina	Frankfurt (Oder), close to the Polish border	24 programmes (international focus); right to confer doctorates	3 faculties: Law; social and cultural sciences; business administration and economics
Film University Babelsberg Konrad Wolf	Potsdam	23 programmes, includes dual study	2 faculties: Script/dramaturgy, digital media culture, media studies, film cultural heritage, film and television production, directing and acting Animation, animation direction, creative technologies, cinematography, film music, montage, sound, sound for picture and scenography
University of Applied Sciences Potsdam (FHP)	Potsdam	23 programmes (engineering, to sociocultural and design), includes dual study	5 departments: Social and educational sciences; architecture and urban planning; civil engineering; design; information sciences
Technical University of Applied Sciences Wildau (THW)	Wildau (on the outskirts of Berlin)	45 programmes, includes dual study	2 faculties: Engineering and natural sciences; business, computing and law
Brandenburg University of Applied Sciences (THB)	Brandenburg an der Havel (west of Berlin and Potsdam)	20 programmes, includes dual study	3 departments: Computer science and media; engineering business and management
University for Sustainable Development Eberswalde (HNEE)	Eberswalde (northeast of Berlin)	16 programmes, includes dual study	4 faculties: Forest and environment; landscape management and nature conservation; wood engineering; sustainable business
Police University of Brandenburg (HPol BB)	Oranienburg	Includes dual study programmes	
University of Applied Sciences for Finances Brandenburg (FHF)	Königs Wusterhausen	Includes dual study programmes	

Brandenburg Medical School Theodor Fontane (MHB)	Neuruppin (in the north of Brandenburg)	3 programmes within health and human medicine	
University of Applied Science Clara Hoffbauer (FHCHP)	Potsdam	3 social sciences programmes	
Elstal Theological Seminary (TH Elstal)	Elstal		
College for Sport and Management (ESAB)	Potsdam	8 programmes in health and economics (also as dual degrees)	
Health and Medical University Potsdam (HMU)	Potsdam	1 health programme	
XU Exponential University of Applied Sciences	Potsdam	1 programme in informatics	

Source: Privathochschulen (n.d.[25]), *Studium in Brandenburg: Private Fachhochschulen & Universitäten + alle Studiengänge*, www.privathochschulen.net/hochschulen/brandenburg (accessed on 15 March 2021); MWFK (2021[26]) *Studienangebote – Duales Studium Brandenburg*, https://www.duales-studium-brandenburg.de/studienangebote#&gid=lightbox-group-2255&pid=0 (accessed on 6 February 2021); Statistik Berlin-Brandenburg (2019[27]), *Studentenstatistik*, https://www.statistik-berlin-brandenburg.de/webapi/jsf/tableView/tableView.xhtml# (accessed on 15 February 2021); Statistik Berlin-Brandenburg (2020[28]), *Personal an Hochschulen im Land Berlin 2019*, www.statistik-berlin-brandenburg.de (accessed on 15 February 2021); Hochschulrektorenkonferenz (n.d.[23]), About us – *Hochschulkompass*, https://www.hochschulkompass.de/en/about-us.html (accessed on 7 February 2021).

Higher education programmes

As a result of the Bologna Reform, bachelor's and master's programmes are the standard.

Almost half of all study programmes offered in Brandenburg's HEIs can be taken on a part-time basis, allowing flexibility for students (CHE, 2020[30]). The share is higher at universities (over half of all programmes), and for cultural studies and teacher education programmes (three-quarters of all programmes). However, only 2.5% of all students in Brandenburg were part-time students in 2018/19, well below the German average of 7.5%. Among the public HEIs, the Film University Babelsberg (with 15.4% as part-time students), the TH Wildau (10.5%) and the University of Applied Sciences Potsdam (9.7%) have been forerunners.

Dual study programmes are increasingly being offered, integrated into the regular study offer and centrally co-ordinated

Dual study programmes combine academic studies with work experience in a company and vocational training. They can be training-integrated, career-integrated or practice-integrated (see Table 3.5). Such programmes offer an academic degree along with valuable practical experience and many professional skills. In some cases, graduates also receive a vocational degree.

Table 3.5. Brandenburg's types of dual study programmes and number of students

Type of dual study programme	Organisation	Content	Degrees	Number of dual studies students and their share of all students
Training-integrated	The degree programme is combined with training in a recognised occupation requiring formal training.	Study phases and vocational training are linked in terms of time and content.	Students gain a first degree that qualifies them to practise a profession and a vocational training degree.	296 students (21% of all dual study students)
Practice-integrated	Study phases alternate with practical phases in a company.	The content of the courses at the higher education institution and the content of the practical training are related.	Students gain a first degree that qualifies them to practise a profession but not a qualification in a recognised occupation requiring vocational training.	*First academic degree:* 1 103 students (77% of all dual study students) *With further degree:* 15 students (1% of all dual study students)
Career-integrated	Academic studies are combined with vocational further training. Alongside full-time employment, students learn largely through self-study in a manner similar to a distance learning course.	The learning content of academic and vocational further training is connected.		20 students (1.4% of all dual study students)
Overall				1 434 (3% of all students)

Source: MWFK (2021[26]) *Studienangebote – Duales Studium Brandenburg*, https://www.duales-studium-brandenburg.de/studienangebote#&gid=lightbox-group-2255&pid=0 (accessed on 6 February 2021); Statistik Berlin-Brandenburg (2019[27]), *Studentenstatistik*, https://www.statistik-berlin-brandenburg.de/webapi/jsf/tableView/tableView.xhtml# (accessed on 15 February 2021).

Since 2014/15, MWFK has funded the creation and expansion of dual study programmes (Box 3.3) and has set up a dual study agency to co-ordinate the dual study offers at HEIs.

Dual programmes are expensive for HEIs, as they require staffing to manage the liaison with the partner companies. Finding appropriate training partners among local companies is difficult. In addition, company staff need support to mentor and train students in the workplace (given they are not education professionals) and the learning of students on the job needs to be supervised.

Stakeholders, including businesses, support the expansion of dual study programmes. However, employers' investment does not always pay off because some graduates do not remain with the training company. In addition, some graduates prefer to pursue a master's degree, instead of employment, after completing the initial qualification. Companies invest significantly in each student without the guarantee they would stay as employees upon graduation. Nevertheless, dual studies have proven useful to retain a skilled workforce in Brandenburg's business sector.

Box 3.3. Purpose of expanding dual study programmes

Dual study programmes promise to create "win-win situations" for students, companies and higher education institutions (HEIs) by:

- combining the advantages of scientific training at a university with the practical relevance of company-based training;
- providing good career prospects for students, including the possibility of being hired by the company after graduation;
- providing HEIs with the opportunity to sharpen their profile and thus improve their competitive position;
- linking partner companies closely with higher education and research, and, thus, promoting innovation and knowledge transfer and supporting business succession;
- producing doubly qualified staff for regional companies, in particular, for middle management and business succession;
- increasing the permeability between upper secondary and higher education and, thus, decreasing the competition between the two and exploiting their full educational potential;
- reducing the risk of shortages of skilled workers in the region because dual study students who commit to a company during their studies are more likely to remain in the company and region after graduation.

Continuing education and training have potential in Brandenburg, but financing is challenging

Given the impact of the ageing population and workforce on Brandenburg's economy, continuing education and "lifelong learning" are becoming increasingly important for maintaining a highly skilled workforce. Continuing education – including at HEIs – is increasingly seen as a viable solution for upskilling and reskilling of the workforce (Nedelkoska and Quintini, 2018[31]).

All public HEIs in Brandenburg offer some continuing education and training (CET) courses. These courses mainly target workers with a first professional qualification who have been in the workforce since graduation. Courses are adapted to this target group in terms of both content and pedagogical approach. Rather than only targeting higher education graduates, courses are open to everyone who wants to acquire the skills but without the time commitment needed for a complete study programme.

Brandenburg's offerings in continuing education come predominantly in the form of master's degree programmes offered in parallel with work. There is a recent trend towards certificates or modules – alternative credentials that reduce the time commitment, provide greater flexibility to participants and, thus, lower potential participation barriers. Most HEIs have developed a system for awarding European Credit Transfer and Accumulation System credits for these credentials. However, their stackability towards a full degree and recognition between institutions remain obstacles, not only in Brandenburg, but also throughout Germany and Europe.

Funding for CET offerings

Public HEIs face high legal uncertainty about CET funding. HEIs considering use of public funds for continuing education need to consider that funding in the light of EU state aid policy. This policy ensures public subsidies (state aid) are not used by firms to compete unfairly, or by state agencies to crowd out markets (economic activity). Continuing education is defined in *Brandenburgisches Hochschulgesetz*

(Brandenburg Higher Education Act) as a statutory duty of state HEIs, just like undergraduate education and research. HEI research and undergraduate education are classified as non-economic activities and thus not subject to EU state aid rules. However, neither the European Commission nor the European Court of Justice has provided any clear directions about whether continuing education is a non-economic activity and thus exempt from EU state aid rules. CET programmes are judged individually as economic or non-economic. The relevant federal body – *Kultusministerkonferenz* (Assembly of Ministers of Education of German states) – has not resolved state aid questions either.

As a result of the legal uncertainty, HEIs risk non-compliance with EU state aid rules. This may result in reclamation of base funding if CET courses are classified as non-economic activities. If CET courses are classified as economic activities, which might be otherwise non-economic, HEIs prevent risk. However, CET is priced as full-cost recovery. Hence, HEIs in Brandenburg avoid offering continuing education or else offer courses in the high-price segment. They may also manage risks through associated institutes. These could be established as incorporated societies (*eingetragener Verein (e.V)*) or limited liability companies), (*Gesellschaft mit beschränker Haftung, GmbH* which bear high risk as well (OECD, 2022[32]).

Federal states in Germany have adopted different opposing approaches to this question in their higher education laws. Some accept that CET is an economic activity, while others classify it as a non-economic activity outside the scope of state aid rules. Against this background, Brandenburg's offer of CET programmes and courses appears low (Wissenschaftsrat, 2019[33]). Continuing education takes many different forms – from structured degree programmes to modules and certificate courses. It could still be relevant for workers affected by adoption of new technologies or structural change, or who seek jobs in fields with a shortage of skilled workers.

The federal government, in co-operation with the states, ran the EUR 250 million "Advancement through Education: Open Universities" programme, which aimed to encourage CET at HEIs over 2011-20 (BMBF, 2021[34]). New CET courses at several of Brandenburg's HEIs were developed through this initiative.

Financial assistance for participating in CET

Within the federal government's strategic agenda for CET/lifelong learning, measures may become increasingly available to support the reskilling and upskilling of Brandenburg's workforce. With its most recent amendment, the federal assistance for continuing education and training (*Aufstiegsfortbildungsförderungsgesetz*, AFBG) provides funding for adult learners participating in CET. This includes some courses at HEIs (if the participant's highest educational attainment is at the bachelor's level or below).

The federal government also provides grants to support continuing education measures for young people in employment. To qualify, they must have completed a recognised course of vocational education and training or work in one of the health sector professions governed by federal law. They must also be younger than 25 when they start the programme (Continued Training Scholarship). The programme is assisted by *Stiftung Begabtenförderung berufliche Bildung gGmbH* – SBB (Foundation Vocational Education and Training Promotion for Gifted Young People).

Against the background of federal funding, Brandenburg suspended *Bildungsscheck*, its voucher programme. This used to fund continuing education for Brandenburg's workers outside of their companies and was widely used for CET courses at HEIs. MWAE is considering reintroducing a more modest version but with no provision for HEI courses.

Brandenburg's HEIs offer double and joint degree programmes with peers abroad

All of Brandenburg's public HEIs co-operate with peers abroad. Several HEIs, particularly the BTU, the University of Potsdam and the Viadrina, offer double and joint degrees with institutions abroad (European University Viadrina, 2021[35]; BTU, 2021[36]; Universität Potsdam, 2021[37]). In this sort of joint, combined or

dual programme, a student works for two university degrees in parallel – either at the same institution or at different ones – and completes them in less time than it would have taken to earn them separately. Upon the student's successful completion of the study, both institutions confer their own degree certificates or else the student receives a shared degree certificate (Table 3.6).

Table 3.6. International co-operation of Brandenburg's HEIs

University of Potsdam	86 higher education and research institutions from 30 countries
Brandenburg University of Technology Cottbus-Senftenberg	222 institutions from 63 countries
European University Viadrina	274 institutions from 52 countries
Film University Babelsberg Konrad Wolf	27 institutions from 17 countries
University of Applied Sciences Potsdam	78 institutions from 26 countries
Technical University of Applied Sciences Wildau	72 institutions from 38 countries
Brandenburg University of Applied Sciences	76 institutions in 41 countries
University for Sustainable Development Eberswalde	38 institutions in 26 countries

Public funding for higher education institutions

State funding has been continuously increasing

Brandenburg's government funding (*Globalbudget, Topf 1*) is divided into three pillars: base funding, demand-based funding and performance-based funding. Most (40%) of the allocation is distributed via the base funding. Demand-based funding and the performance-based component each account for 30% of the budget. A working group, with representatives from both MWFK and HEIs, advises on allocation of funding.

- Of the *Grundbudget* (base funding), in 2020, the University of Potsdam received 39%, the BTU Cottbus-Senftenberg 28%, the Europa Universität Viadrina 8.8%, the University of Applied Sciences Potsdam 6.2%, the Technical University of Applied Sciences Wildau 5.9% and the three remaining HEIs below 5% each.
- For the *nachfrageabhängig* (demand-based funding), the shares of the HEIs are calculated on the basis of their student numbers and the teaching load required. It only considers students in study programmes financed from the basic funding of the HEIs or the study place extension programme. This excludes fee-financed continuing education programmes from the calculation. To consider the variation in underlying cost structures, HEI shares in the demand-based funding are calculated depending on the HEI type. The formula yields the following results: universities receive 71%, UAS receive 25% and the Film University Babelsberg receives 4%.
- The sum available in the *Leistungsteil* (performance-based component) is distributed according to seven indicators: graduates, third-party funding (without commercial industry), third-party funding (from commercial industry), doctorates, international students, Erasmus and female professorships.

During the last decade, Brandenburg's government significantly improved funding of HEIs, which is reflected in indicators of revenue per student and per professor. Brandenburg's higher education system as a whole has reduced its disadvantage relative to other federal states and is now close to the national average. In the legislative period 2019-23, the base funding is increasing by EUR 25 million over the previous period. This means that HEIs receive EUR 5 million more each year, conditional on approval of the state parliament. In addition, the state government provides EUR 200 million more (as compared to the previous period) to HEIs to serve their obligations within the HEI contracts (Topf 3) over the same five-year period (MWFK, n.d.[9]).

Despite the steady rise in the global budget of recent years, Brandenburg spends the least among the German federal states on HEIs as a percentage of its gross domestic product (GDP) – 0.51% in 2019. Moreover, the state's contribution to research is minimal. By contrast, the state's contribution to general education and vocational schools as a share of GDP (2.64% in 2019) has remained consistently above the German average – similar to other East German federal states and Berlin.

The federal 2020 Hochschulpakt and its successor is an important source of funding for Brandenburg's HEIs

The 2020 *Hochschulpakt* (Pact I 2007-10, Pact II 2011-15, Pact III 2016-20), Topf 2, was an agreement between the federal government and the federal states based on three pillars: admission of additional first-year students, a flat rate for projects funded by the German Research Foundation (DFG), quality pact for improved teaching. In addition, there is some federal lump-sum funding for projects financed by the German Research Foundation to secure the needs-based expansion of study courses by 2020. With its successor, ***Zukunftsvertrag "Studium und Lehre stärken"*** (Future Contract) signed in June 2019, Brandenburg is expected to receive around EUR 35 million in federal funds until 2027. From 2024 onwards, including state co-financing, Brandenburg's HEIs will have received around EUR 70 million to implement the goals, priorities and measures stipulated in Verpflichtungserklärung (letter of intent) including, among others (MWFK, 2020[38]):

- maintain the capacities of HEIs and make better use of them;
- further improve the quality of studies to improve completion;
- create new teaching capacities according to needs and subjects;
- achieve a noticeable increase in the quality of teaching by converting many temporary contracts into permanent ones.

The number of students at state HEIs increased by over 57% over 2000-12 (when the highest number of students was reached in Brandenburg). However, the growth in academic staff numbers did not keep pace. HEIs used the study place expansion programme of *Hochschulpakt* 2020 to increase their faculty staff numbers via temporary positions.

The state government offers diverse incentive structures for academic staff

Research professorships are offered at UAS, which allow a concentration on applied research and have played a pioneering role nationwide in its diversification. Similarly, teaching professorships at universities have provided a career path for academic staff involved predominantly in teaching. Since 2018, Postdoc Network Brandenburg has funded research group leaders and fellowships for visiting researchers at Brandenburg universities to build greater ties. In addition, the "Future Programme for the Universities of Applied Sciences of the State of Brandenburg" was set up in 2018 (MWFK, 2018[39]). This provides incentives for co-operative doctoral colleges, development of structured career paths at the UAS and promotes new research and teaching. In combination with the increase in basic funding, HEIs appear in better position to set up more attractive career paths.

Moreover, in late summer 2020, MWFK initiated a two-year long structured dialogue *Gute Arbeit in der Wissenschaft* (Good work in science) with HEIs and interest groups (MWFK, 2020[40]). These range from staff representatives, trade unions and post-docs to professors, inclusiveness officers, students and the commissioner for the severely disabled. They discuss recommendations for further improvements in the area of career development for young researchers. They also explore additional permanent positions beyond professorships to feed these recommendations into the Higher Education Act.

Some HEI stakeholders, however, emphasised the need for flexibility given the evolving needs of the economy and research. They see Brandenburg's HEIs and research institutes as laying the foundation for

scientific careers. Fraunhofer, Leibnitz and the universities, for example, “enable” young people for a scientific career, who then leave Brandenburg to continue their careers. Continuity at HEIs, however, is maintained by the professors and the administrative structures of the institutions.

Assessment and policy recommendations

Technology and national and global competition, along with the changing organisation of work, are driving the transformation of Brandenburg towards a more knowledge-intensive economy. This, in turn, shifts demand towards higher-level skills and qualifications. The services sector and the knowledge-intensive industries (professional, scientific and technical activities) and education and health care sectors have seen the largest growth in employment in recent years and are projected to continue to experience growth. At the same time, the wide adoption of new technologies is changing the nature of jobs and increasing the skills needed for them (Nedelkoska and Quintini, 2018[31]). Brandenburg’s higher education system will need to offer a broad range of qualifications[1] for the labour market to exploit economic opportunities from these developments and to ensure no one is left behind. This includes developing opportunities for upskilling of the working population.

Ensure the system offers a broad range of qualifications

Diversity of the system

HEIs need a balanced offering of teaching programmes that reflect student and labour market demand and that are underpinned by excellent scholarship and research. In their research and education programmes, HEIs have some specialities that perform especially well and that have gained a reputation for excellence (such as computer science at *Technische Hochschule Brandenburg* (TH Brandenburg), business studies at EUV (*Europa Universität Viadrina*) Frankfurt/Oder, and social work studies at FH Potsdam, among others, as represented in German-wide rankings (CHE, n.d.[41])). These areas of excellence should be the focus of additional state government and HEI investment. They should also be advertised extensively, including via online marketing, to draw the interest of prospective students and leading researchers. This would further lift the performance of those research groups and encourage the exploration of opportunities for knowledge transfer. Excellent research and education across a wide range of fields can also encourage businesses to build deeper relationships with HEIs that lead to the provision of extra services and, possibly, to locate branches of those firms in the state.

Brandenburg’s government has successfully promoted the diversity of the higher education system through institutional specialisation. It should maintain this through the framework agreements, while allowing institutions autonomy in how they will achieve these goals. A continuous dialogue between the HEIs, the world of work and government can ensure timely adjustment and sharpening of institutional profiles.

The programme accreditation process

The accreditation process of new study programmes involves approval by an independent accreditation agency and MWFK, and in some cases another relevant ministry. The process can take more than six months, which HEIs perceive as relatively slow. The establishment or modification of new courses can also be contractually agreed between MWFK and the HEI, but this is exceptional.

The programme approval process by MWFK has two objectives. Above all, it seeks to uphold the quality of new programmes so the HEI has an appropriate curriculum and qualified staff. Secondly, it aims to ensure the efficient use of public resources in HEIs. To that end, it aims to avoid a potentially wasteful proliferation of publicly subsidised programmes with low enrolment and high staff costs, while ensuring the system offers a broad range of qualifications.

While six months may seem a long time to wait, the HEI can use the time to refine the curriculum and develop its delivery approach, hire staff and build a market for the programme.

A balance is required between the needs of MWFK and HEIs. Through its oversight function, MWFK needs to maintain the quality, credibility, integrity and reputation of the qualifications system, while HEIs want to adapt their programme offerings to changing demands from students and employers. A good accreditation system will also build in a post-implementation review cycle. This would ask how well the new programme has met targets for enrolment, student and employer satisfaction, and graduate labour market outcomes. MWFK and HE rectors should jointly reassess the process, evaluating whether objectives have been attained, whether the process stands in the way of good outcomes and whether the post-implementation review stage works well.

Dual study programmes

The provision of dual study bachelor's programmes has recently attracted many students and is expected to grow. Such programmes usually require more staff for several reasons. First, the cost of co-ordinating the programme design with the companies offering traineeships is high. Second, the costs of supporting the workplace trainer (who is not an education professional) and of supervising the student in the workplace are also high. Third, it can be difficult to find training partners among local companies. Up to now, dual studies have proven a successful model for Brandenburg. They serve the needs of the regional and local economy, while attracting students who would otherwise opt out of higher education.

Encourage reskilling and upskilling

Meeting the higher education needs of those in work

Along with dual study programmes, HEIs are expected to offer other formats of higher education for employed students, including bachelor's programmes in parallel with work. Demand for upskilling and reskilling among working adults is expected to increase. At the same time, many students discontinue their studies to pursue an employment opportunity. Consequently, the higher education offer needs to become more flexible and compatible with work. Furthermore, Brandenburg can take steps to facilitate transition towards degree-awarding higher education programmes. Such degrees can recognise prior learning and short-cycle tertiary programmes – micro-credentials – as part of both higher education programmes and the national qualifications framework.

There are opportunities to use digital approaches to counselling and preparatory offers. These could target professionally active people who often cannot take advantage of face-to-face offers due to work and family obligations. In addition, business stakeholders pointed to the potential of digital study to motivate employees in companies in remote rural areas to participate in education and training.

The government plays an important role in informing adult learners about the value, requirements and outcomes of higher education for adults (including continuing education). The *Arbeitsagentur* website offers a step-by-step guide for mature learners, depending on the reason for their interests in returning to study. Adult learners can also assess their preparedness for further education based on their social and work behaviour, skills and interests. This information would need to be properly linked to the educational offer in Germany and Brandenburg (see Chapter 4).

Continuing education and training

The need for reskilling and upskilling raises the issue of the provision, take-up and funding of CET, which can enable firms to manage more complex work that results from developments in technology. CET can also help people stay longer in the workforce, which is crucial for several reasons. Life expectancy is growing; the health and mobility of older people is improving; and the traditional working age population is

shrinking as a proportion of the whole. Therefore, the federal government has developed a lifelong learning strategy.

These trends raise important policy questions:

- How should CET be structured, quality-assured and credentialed?
- How should the costs of CET be distributed between employers, workers and the government?

Some workers continue their education through modules of qualifications. However, those modules may not be suitable for their schedule, or match the scale and focus needed for retraining. Brandenburg's MWFK and HEIs should consider a systematic approach to CET via micro-credentials (OECD, 2021[42]). Micro-credentials are "small" by definition. As such, they can target (both in terms of administration and timing) the needs of those who want retraining. They can be made stackable so workers can get early recognition of their training but also accumulate a more substantial portfolio of retraining over time.

Micro-credentials are particularly suited to CET for workers who have completed their initial education and, in many cases, an initial higher education qualification. While micro-credentials can be made to be stackable, they are less suitable for use in initial higher education qualifications. An HEI degree constitutes a coherent whole, a logical composition of modules. Conversely, stacking modules might not lead to a learning pathway whose components are inter-dependent and create a coherent whole (Wheelahan and Moodie, 2021[43]) (see Box 3.4 for the European consultation process on micro-credentials).

The take-up of continuing education among German workers is around tenth in the OECD, above the OECD average. Around half of German workers took some formal or non-formal training in the 12 months before they took the OECD Survey of Adult Skills – 10 percentage points below the leading nations. However, survey results show that around 30% would prefer more training (OECD, 2021[44]). The main obstacle to take-up of CET is lack of time. This could be insufficient time to fit training around either work or family obligations (OECD, 2021[44]). Collaboration between HEIs and local companies, including small and medium-sized enterprises (SMEs), could help raise awareness about the need for continuing education among employers and their employees. It could also help adjust the educational offer to better address the needs of the economy (see Chapter 6).

Cost is also a constraint, although less important than time. Brandenburg requires CET to be self-funding. Consequently, cost may reduce its demand for CET to a greater extent than in German states (and other OECD countries) where there is some public funding for CET. The complexity of the right of HEIs to use public money to fund certain CET courses in the European Union is elaborated in *Continuing Education and Training in Brandenburg and EU Framework on State Aid* (OECD, 2022[32]). Appropriate financial aid support for participating in CET, including at HEIs, should be in place as well.

Box 3.4. An emerging European approach to micro-credentials

The European Commission has proposed a "European approach to micro-credentials". This approach aims to improve the transparency and portability of micro-credentials, ease recognition processes and enhance uptake.

The European Commission's approach involves:

1. a common and transparent definition;
2. a defined list of critical information elements to describe micro-credentials;
3. alignment to National Qualifications Frameworks and the European Qualifications Framework: defined levels, standards for describing learning outcomes;
4. quality assurance standards;
5. defined credits comprising the European Credit Transfer and Accumulation System (ECTS), defined learning outcomes and notional workload;
6. recognition for further studies and/or employment purposes;
7. portability through issuing, storage and sharing of micro-credentials;
8. platform solutions for the provision and promotion of courses leading to micro-credentials;
9. incentives to stimulate the uptake of micro-credentials.

The consultation group recommends that micro-credentials and the certification of completion should be clearly identified as a micro-credential (as opposed to a full degree) and be linked with the ECTS as far as possible. They could be stacked – i.e. combined to provide enough flexibility for larger sizes of learning units, to meet the different national, institutional and sectoral practices and contexts.

However, the Commission's report stops short of allowing for a combination of micro-credentials to make up a full degree. The underpinning argument is that a university degree constitutes a coherent whole and a logical composition of modules. As such, it cannot be achieved by stacking modules that might not consider a specific learning pathway, mutual dependency and coherence.

The relative prominence of lifelong learning in national policies will likely impact institutional priorities regarding their commitment to further education through micro-credentials. Members of the consultation group commonly believe that micro-credentials need to be underpinned by a comprehensive strategy with clear targets, operational plans and allocated resources. This strategy must be clearly communicated throughout an institution and shared with external stakeholders to instigate a cultural change.

Source: European Commission (2020[45]), *A European Approach to Micro-credentials*, https://education.ec.europa.eu/sites/default/files/document-library-docs/european-approach-micro-credentials-higher-education-consultation-group-output-final-report.pdf.

Policy recommendations

Box 3.5. Policy recommendations to ensure the system offers a broad range of qualifications and to encourage re/upskilling

Diversity and excellence

- Maintain the system of institutional specialisation and invest in areas of excellence through the framework contracts with HEIs underpinned by continuous dialogue between the rectors' conference, MWFK, other government agencies and employer groups.
- Advertise areas of excellence extensively, including via online marketing, to draw the interest of prospective students and leading researchers, further lift the performance of those research groups and encourage the exploration of opportunities for knowledge transfer.

Study offerings, pathways and accreditation

- Ensure that programme delivery is structured (e.g. offering hybrid teaching and using blended learning) and timetabled (e.g. with evening tutorials) to reduce disadvantages for part-time enrolment and to increase the compatibility of study schedules with work. This would respond to the projected increase in demand for upskilling and reskilling among working adults and the reality that many students discontinue their studies to pursue employment or for financial reasons.
- Investigate mechanisms for improving access to study programmes, including bachelor's degrees to be studied in parallel with full-time employment.
- Review the structure of continuing education and training (CET) programmes, considering new developments such as the advent of micro-credentials.
- Review the processes for initial programme approval and accreditation, balancing the need for high standards of integrity and credibility (through assessment of the quality of programme design and institutional capability) with the need to be responsive to the needs of employers and industry groups. Introduce better systems of follow-up audits of approved programmes, (such as checking the performance of new programmes in attracting enrolments, producing graduates, delivering good outcomes for graduates and meeting employer/industry needs).

Public funding for HEIs

- Secure available funding and infrastructure for dual study programmes.
- Secure funding for bachelor's degree programmes, which can be studied in parallel with full-time employment
- Review options for CET, recognising the importance of compliance with European Union rules on state aid.

Financial assistance for participation in CET

- Monitor the effectiveness of federal financial assistance to participants in CET; potentially reintroduce a state-specific measure to provide targeted support for uptake of CET at HEIs (similar to the recently discontinued support measure *Bildungsscheck*).

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Notes

[1] The offer should be comprehensive, including study programmes in social sciences and humanities. The skills acquired within higher education and via internships are transversal enough to provide for careers in the technology-intensive industries as well.

4 System performance in ensuring access to higher education

This chapter examines the performance of the state higher education system in ensuring access for young people. It focuses on the transition from secondary schools to higher education, including efforts to attract students. It also explores study advice and career orientation for secondary students from *Präsenzstellen* (presence centres) and *Netzwerk Studienorientierung* (Study Orientation Network), as well as from outside of the education sector. Enrolment rates are analysed, including trends such as a low direct transition from secondary school to higher education in the state. Finally, the chapter explores the decision making of school leavers and sets out factors that influence the choice of study destination.

School to higher education transition in Brandenburg

The secondary school tracking system decides early on academic careers, but permeability and flexibility of the system have increased

Admission to any course of study leading to a first degree at a higher education institution (HEI) generally requires a general higher education entrance qualification (*Allgemeine Hochschulreife*) or a subject-restricted higher education entrance qualification (*Fachgebundene Hochschulreife*) (Eurydice, 2021[1]). The former entitles school leavers to study at any HEI in any subject or field, while the latter permits entry into universities of applied sciences (UAS) and only into specified university courses (MBJS, 2021[2]). In Brandenburg, the higher education entrance qualification for UAS (*Fachhochschulreife*) also allows students to enter specific university courses (which is not the case in all German states). The higher education entrance qualification can also be gained through vocational education or adult education (*zweiter Bildungsweg*) (Box 4.1).

Over 70% of students who enrolled in one of Brandenburg's HEIs in the winter semester 2019/20 accessed it through a general university entrance qualification acquired through upper secondary schooling in Germany. Only 12% of students accessed higher education through an advanced technical college certificate or a subject-restricted entrance qualification. Around 15% of students acquired their entrance qualification abroad.

Box 4.1. Obtaining a higher education entrance qualification

The pathway through secondary education is decided in the last year of primary education. In Brandenburg, children usually attend primary school for six years, whereas four years is the norm in most German states. Brandenburg has three secondary education paths: *Hauptschule*, *Realschule*, *Oberschule* (non-academic), *Gymnasium* (academic) and *Gesamtschule* (comprehensive, combining different paths). The decision is taken by the class conference (an assembly of all teachers of a cohort) based on the recommendation of the class teachers following a discussion with the parents. Gifted children on a non-academic path may change to the academic or comprehensive path after four years of secondary school, where they are grouped into specific classes for gifted children.

In the 2019/20 school year in Brandenburg, 41% of children transitioned from primary school to an academic secondary school, 38% to a non-academic secondary school and 17% to a comprehensive school. The share transitioning to academic secondary schools was almost 10 percentage points higher for girls.

Students can obtain the following school-leaving certificates after completing regular secondary schooling:

- ***(Erweiterte) Berufsbildungsreife*** **((Extended) General school-leaving certificate)** can be obtained at all school types at the end of grade 9. It primarily entitles holders to begin vocational training under the dual system (which combines an apprenticeship and theoretical training). The extended certificate on completion of grade 10 enables a broader range of options for vocational training (e.g. *Berufsfachschule*).
- ***Fachoberschulreife*** (**Intermediate school-leaving certificate)** can be obtained at all school types after ten years of schooling. It entitles holders to begin vocational training or to continue education. In addition to enabling people to begin vocational training under the dual system, it also allows them to begin full-time school-based vocational education and training. In addition, if they achieve a certain average mark, they can access the various types of school at the upper secondary level.

- ***Allgemeine Hochschulreife or Abitur*** **(General higher education entrance qualification)** can be obtained after grade 12 at *Gymnasium* or grade 13 at *Gesamtschulen*. A higher education entrance qualification is evidence that the holder is prepared and entitled to enter higher education.

Apart from secondary schools, higher education entrance qualifications can be obtained in vocational schools or adult education, either in part-time (e.g. *Abendgymnasien*) or full-time schools (e.g. *Fachoberschule, Berufsoberschule*).

Of 21 100 students who completed school in Brandenburg in the 2018/19 school year, 7% acquired no school-leaving certificate, 14% a vocational school-leaving certificate, 39% an intermediate school-leaving certificate and 40% a general higher education entrance qualification

Brandenburg is therefore one of the six German federal states with more school leavers with a general higher education entrance qualification than with an intermediate school-leaving certificate.

Source: Statistisches Bundesamt (2020[3]), *Schulen*, https://www.destatis.de/DE/Themen/Gesellschaft-Umwelt/Bildung-Forschung-Kultur/Schulen/_inhalt.html (accessed on 15 March 2021).

Admission criteria and procedures are based on quota and selection criteria defined by regulations

In some cases, HEIs may place additional requirements on applicants for specific programmes, beyond the general matriculation standard. For admission to certain study programmes, previous related practical experience is required. In certain study fields at UAS and universities, the applicant's aptitude is determined through a separate test procedure. This applies particularly to sport, design and creative and performing arts.

According to the *Brandenburgisches Hochschulgesetz* (BbgHG) (Brandenburg Higher Education Act), § 9, vocationally qualified applicants without a higher education entrance qualification obtained at school are granted the right of entry to higher education under certain conditions (*Hochschulzugang für beruflich qualifizierte Bewerber ohne schulische Hochschulzugangsberechtigung*) (CHE, 2021[4]). Craftsmen certificates and advanced further training certificates have unrestricted access to higher education programmes similar to applicants with a general higher education entrance qualification. Vocationally qualified applicants without advanced further training can study programmes related to their work field after completing vocational training and work experience of at least two years in their field. In Brandenburg (unlike in states like Saxony or Saxony-Anhalt), these applicants do not have to pass additional aptitude tests. However, faculties or departments can stipulate such tests in their statutes (Technische Hochschule Brandenburg, 2021[5]). The knowledge and skills acquired outside of higher education can count for credit for up to half of a higher education programme, if the content and level are equivalent to the programme part being replaced (CHE, 2021[4]).

Generally, HEIs in Brandenburg recognise completed programmes, modules and courses from other HEIs in Germany and abroad. After successfully completing at least two semesters in another federal state, students can continue their studies in Brandenburg in the same or a closely related study programme, regardless of the type of higher education entrance qualification (CHE, 2021[4]). Individual HEIs take further decisions on the recognition and awarding of credits for academic achievements.

HEIs administer admission to bachelor's and master's programmes autonomously within the legislative framework. The legislation defines certain quotas: for instance, 10-20% of study places are reserved for specific groups (e.g. hardship cases, applicants for a programme in a field with high demand). The remaining places are allocated according to selection criteria: grades in the prior qualification and at least one other predefined criterion (e.g. subject-specific aptitude tests, application interview).

Programmes with nationally restricted study places (ie.g. medicine, pharmacy, veterinary medicine, dentistry) are centrally co-ordinated by the Foundation for Higher Education Admission (*Stiftung für Hochschulzulassung – SfH*).

The state strategy for career and study orientation is an important step towards better guidance at schools

In 2015, Brandenburg's Ministry for Education, Youth and Sports (*Ministerium für Bildung, Jugend und Sport – MBJS*) developed a strategy for career and study orientation. This set up a framework for a comprehensive, systematic career and study orientation at schools. The strategy was updated at end-2021 and will be implemented gradually as of 2022/23 (Box 4.2). Brandenburg's government signed a co-operation agreement with the federal government (*Bundesministerium für Bildung und Forschung* - Federal Ministry of Education and Research, and *Bundesministerium für Arbeit und Soziales* - Federal Ministry of Labour and Social Affairs) and the *Bundesagentur für Arbeit* (Federal Employment Agency) on the implementation of career and study orientation in Brandenburg's schools.

Box 4.2. The updated state strategy for career (and study) orientation

The state parliament adopted a new strategy for career and study orientation in September 2021. It wants schools to become more practice-oriented, focused on the individual, and better integrate career and study orientation into schools' organisational structures in order to better prepare students for the world of work. In addition, the strategy encourages schools to consider regional economic and social contexts and develop an increasingly digital offer. The strategy has four fields of action:

- Promote school autonomy: Schools in the state of Brandenburg will be enabled to plan and implement career and study orientation. The state will strengthen the interdisciplinary character of the task and support schools in the further development of their orientation concepts. Furthermore, adequate resources and the qualification of teachers need to be ensured. Additional offers for self-reflection are intended to support the schools in assessing their own career and study orientation offer and in identifying the need for action.
- Accompany needs-oriented career choice process: All young people are to be supported with their transition to career and education. The orientation offer should focus on the individual, be practice-oriented and take an approach neutral to gender and sensitive to the needs of other target groups. Schools should improve the visibility and image of the orientation offer to reach all target groups. A continuous evaluation of the orientation offer will be required.
- Strengthen co-operation between schools and external partners: The orientation offer should be implemented in co-operation with relevant stakeholders. The development and enhancement of models for co-operation, particularly in rural regions, are to be promoted.
- Intensify collaboration with parents: Parents are to be more closely involved in the career and study orientation of their children. Their participation should be encouraged and information flows should be improved.

Successful career and study orientation offers are promoted to achieve the set goals. The package of measures is to be supplemented with elements that target further development of professional orientation. The main projects include:

- conception and implementation of a follow-up programme to the Secondary Level I Initiative;
- introduction of the digital career choice pass 4.0;
- development of a modular training series for school administrators and teachers;

- digitalisation of the award procedure “Schools with excellent career and study orientation”.

The orientation offer in Brandenburg is usually financed by the state, the European Union, the federal government, the Federal Employment Agency and other partners (e.g. companies, chambers/business associations, social partners, foundations, municipalities). Implementation of the development projects in the strategy will depend on available funding.

Source: MBJS (2022[6]), *Landesstrategie zur Beruflichen Orientierung: Handlungsrahmen einer systematischen, individuellen und praxisnahen Ausbildungs- und Studienorientierung an Schulen im Land Brandenburg, Ministerium für Bildung, Jugend und Sport des Landes Brandenburg*.

Career and study advice and orientation at schools

Brandenburg’s schools offer some options for career and study orientation. Students can undertake work experience in the ninth grade and are offered career guidance during *Studien- und Berufsorientierung* (a study and career orientation seminar). This course requires students to reflect on their own professional future over two years and to get acquainted with requirements of the higher education and professional world (MBJS, 2021[7]). The *Berufswahlpass* (career choice pass) provides a structured tool for individual career and study orientation from grades 7 to 13 (including documentation of projects and practical experience, analysis of strengths and interests, career planning, etc.) (MBJS, 2021[7]). All grade 9 students receive the *Kopfstütze* (headrest) school calendar that gives useful advice for choosing careers and study fields. It also provides information on vocational training and study options in Brandenburg and Berlin. Students in grades 7 or 8 can take part in an analysis (*Potenzialanalyse als Kompass*) that explores their strengths, inclinations and interests as a compass for a structured, individual study and career orientation. The analysis includes student-self evaluations, a day of practical simulation and exercises, and individual counselling (kobra.net, 2021[8]).

Netzwerk Zukunft Schule und Wirtschaft für Brandenburg (The Network Future) manages the state strategy for career and study orientation and promotes co-operation between schools, businesses and HEIs (Netzwerk Zukunft, n.d.[9]). It supports schools, for example, in implementing their career and study orientation programmes and offers training for teachers in providing career and study orientation. For one day each year (*Zukunftstag*), businesses, HEIs, research institutes, public agencies and other organisations open their doors to students in grades 7-10 so they can gain first-hand work and study experiences (FBB, 2021[10]).

Netzwerk Zukunft has granted some of Brandenburg’s schools the “School with excellent career and study orientation” award (Netzwerk Zukunft, 2021[11]). This distinction recognises strong engagement in providing the mandatory *Berufswahlpass*, *Kopfstütze*, work placement and other features of the programme. In Brandenburg, this distinction is held by 61 of 149 *Oberschulen* (intermediate secondary schools) but by only 15 of 103 *Gymnasien* (academically oriented high schools) and 4 of 45 *Gesamtschulen* (comprehensive secondary schools).

Schools granted the award offer a wide range of activities that demonstrate the worlds of work and higher education to their students. Many can rely upon established networks with education providers and employers, strong alumni networks and “friends of the school” associations, extracurricular activities on campus, a relatively good material base and a strong school identity. These bring students and their families, teachers and school principals closer together. These schools can also compete for European and federal funding programmes to support their ambitious projects. Ensuring such a comprehensive offer state-wide requires opportunities for peer learning among all – public and private – schools. In addition, the state government may need to adapt its regulation for teaching hours to include a provision for career and study orientation. In addition, it may need to provide or expand earmarked state funding for the offer in study and career orientation.

The higher education framework contracts promote student orientation and guidance by HEIs

HEIs play a key role in providing career and study orientation and have been funded for this role by the ministry and European Social Fund (MWFK, 2013[12]). The higher education framework agreement expects HEIs to expand orientation services, as well as to co-ordinate efforts for student recruitment and guidance with other institutions (MWFK, n.d.[13]). The measures of MWFK can be grouped into four pillars (Box 4.3).

Box 4.3. MWFK measures to gain students for Brandenburg

1. Joint appearances at education fairs in the Western German states

For several years, MWFK has organised and financed joint appearances of Brandenburg's HEIs at educational fairs, especially in the Western German states. HEIs all rate this joint initiative as positive.

2. Regular advertising of the website www.studieren-in-Brandenburg.de

The most recent advertising campaign of the website, which lasted for several weeks on Jam FM, featured two radio commercials. In the winter of 2019/20, this campaign reached around 1.7 million listeners in the advertising-relevant target group. Other advertising channels include press releases and a flyer, bookmarks for Instagram, Instagram advertising, ads on local online news websites, screen ads in 25 subway and train stations in Berlin, in-app advertising on the cell phones of students in Berlin and ads in high school newspapers.

3. Expanding funding and mandate of Netzwerk Studienorientierung to approach prospective students in Berlin

One-third of students at Brandenburg's HEIs come from Berlin's schools. MWFK funded an additional position at the co-ordination office of *Netzwerk Studienorientierung* (Study Orientation Network) office to work with prospective students at Berlin's schools. The network has increased and diversified its offer on social media. The aim is to connect all Brandenburg's HEIs with the network via social media so prospective students can receive "first-hand" answers to their questions.

A related measure is expanding www.studieren-in-Brandenburg.de across all institutions by improving the presence of study offers at Brandenburg's HEIs; launching the assessment tool of the *Netzwerk Studienorientierung*; and introducing subject-related knowledge tests.

4. Supporting peer groups

Project funding can support initiatives of peer groups advertising Brandenburg's HEI locations among students as valuable places of living; this is not happening yet.

Source: Information provided by the Ministry of Science, Research and Culture (*Ministerium für Wissenschaft, Forschung und Kultur, MWFK*).

HEIs have expanded their presence in the (online) media, providing information about studying in Brandenburg and dual studies. HEIs participate in career fairs organised and financed by MWFK. Online Self-Assessment provides an interactive opportunity for students to discover their own interests and skills and to gain insights into study programmes. Institutions offer information events and workshops in schools. They also organise information days and open houses where future students and parents can visit the campus and participate in seminars, workshops and other activities.

Zentrale Studienberatung – ZSB (HEIs' student advice centres) provide information and guidance to (future) students, parents and teachers. As an independent association of the eight public HEIs, *Netzwerk*

Studienorientierung (Study Orientation Network) is the largest provider of career and study guidance in Brandenburg (Netzwerk Studienorientierung Brandenburg, n.d.[14]). It runs offices at each HEI; provides guidance and counselling; and maintains the *studieren-in-brandenburg.de* website (Box 4.4). The network offers counselling and study orientation in and outside of schools, including study counselling, university information days, a workbook for future students, Instagram challenges, seminars and information evenings. It also provides training for school teachers. The network organises about 1 000 events per year, which attract about 30 000 participants. It is financed jointly by MWFK and HEIs.

Box 4.4. The digital offer of *Netzwerk Studienorientierung*

Netzwerk Studienorientierung (Study Orientation Network) addresses prospective students who seek information about study options at HEIs in Brandenburg and need support in their study choice. It maintains the major web portal about higher education in Brandenburg: www.studieren-in-Brandenburg.de. The network considers the website to be part of its customer relationship management. Recently, it improved the website significantly to offer the following information and tools:

- a compilation of pre-study programmes at HEIs in Brandenburg, including junior studies that allow students to attend lectures at HEIs and collect European Credit Transfer and Accumulation System credits, to attend trial lessons in courses at the bachelor's level and to complete internships at HEIs;
- a digital rally to explore HEIs in the state based on the app Actionbound, including an interactive quiz that lasts about 20 minutes;
- an online media centre that contains various videos about studying at HEIs in Brandenburg, rallies to explore campuses, recorded webinars on study orientation and interviews with alumni provided by HEIs;
- digital study counselling provided by HEIs and the network;
- a workbook to support prospective students in their study choice;
- information about Brandenburg HEIs;
- a blog that includes articles about choosing study courses;
- an event calendar that is searchable by personal subject-related interests, HEIs, target groups and types of events;
- links to the Instagram and the Facebook channels of the network, as well as to the WhatsApp messenger chat service of HEIs;
- a section that focuses on teaching staff and parents to receive input for supporting young people in their study decisions.

It targets and accompanies prospective students, primarily from Berlin but from elsewhere as well. Since the beginning of the COVID-19 pandemic, its digital offer has turned out to be even more important. The above measures have likely raised awareness about the HEI offer in Brandenburg, particularly among students in Berlin and peripheral regions in Brandenburg. Since the beginning of the pandemic, the website has been visited more than 11 000 times. More than half of the users come from Berlin.

Sources: *Netzwerk Studienorienterung* (n.d.[14]), Website of *Netzwerk Studienorientierung,* www.studieren-in-brandenburg.de (accessed on 8 April 2021); *Netzwerk Studienorienterung Brandenburg* (2020[15]), "*Bericht der Koordinierungsstelle des Netzwerks Studienorientierung*", Universität Potsdam.

The HEIs' *Präsenzstellen* (presence centres) also provide information, including for student financing; advise (prospective) students; and engage in networking with companies, chambers of commerce and

associations (Box 4.5). Each centre is set up and operated by one HEI or jointly by two HEIs in co-operation with business actors in *Regionale Wachstumskerne – RWK* (the regional growth core) that host the centre. Independently from its host HEI(s), each centre presents the offers of all HEIs in Brandenburg. The centres are steered by a co-ordination office at the TH Brandenburg.

Box 4.5. *Präsenzstellen* of HEIs in Brandenburg

Since 2018, MWFK has expanded the HEI presence in several growth cores (RWKs), mainly in rural areas located at some distance from HEIs. The work of *Präsenzstellen* is based on specific regional (economic) issues, and key activities vary from centre to centre. HEIs and RWKs jointly set the focus and choose locations of *Präsenzstellen*. The current locations are listed below:

- **Präsenzstelle Prignitz** is managed by TH Brandenburg in co-operation with the RWKs Prignitz and Neuruppin and with *Wachstumskern Autobahndreieck Wittstock/Dosse e.V.*; the office operates three locations.
- **Präsenzstelle Schwedt Uckermark** is managed by HNE Eberswalde, in co-operation with the RWK Schwedt/Oder.
- **Präsenzstelle Spremberg** is managed by BTU Cottbus-Senftenberg, in co-operation with the RWK Spremberg.
- **Präsenzstelle Luckenwalde** is managed by TH Wildau and FH Potsdam, in co-operation with the RWK Luckenwalde.
- **Präsenzstelle Westlausitz/Finsterwalde** is managed by the BTU Cottbus-Senftenberg and the TH Wildau, in co-operation with the RWK Westlausitz.
- **Präsenzstelle Fürstenwalde** is managed by the European University Viadrina University and the TH Wildau, and operated in co-operation with the RWK Fürstenwalde/Spree.
- **Präsenzstelle O-H-V/Velten** is managed by the University of Potsdam and the TH Brandenburg, in co-operation with the RWK Oranienburg-Hennigsdorf-Velten.

The *Präsenzstellen* areas of activity include networking, mediating and co-ordinating between the HEI/research sector and the region; strengthening the presence of HEIs in the regions; ensuring the availability of skilled workers; and improving transparency, co-operation and communication between academia, business and civil society actors.

Präsenzstellen organise various types of events. They have introduced new communication channels such as digital consultation hours and digital morning calls with professional input. They also provide a *Kinderuni* (university for children), public scientific events, and open stage story-telling events. In Luckenwalde, they established a co-working space. Events and activities tested at one *Präsenzstelle* and that have generated positive effects are adopted by the others. Recently, *Präsenzstellen* improved visibility by launching a joint website (www.praesenzstellen.de), which complements the seven websites of the individual centres.

The state provided EUR 1.5 million for *Präsenzstellen* in 2019 and EUR 2.5 million in both 2020 and 2021 (MWFK, 2018[16]). *Präsenzstellen* are only funded until the end of 2023; the state plans to evaluate them in 2022/23. The work of *Präsenzstellen* is widely appreciated by regional business stakeholders who hope the centres will be sustainable.

Sources: MWFK (n.d.[17]), *Wissens- und Technologietransfer*, https://mwfk.brandenburg.de/mwfk/de/wissenschaft/wissens-und-technologietransfer/~mais2redc107558de, (accessed on 13 July 2021); *Präsenzstellen* (n.d.[18]), *Willkommen in den Präsenzstellen der Hochschulen in Brandenburg*, www.praesenzstellen.de (accessed on 13 July 2021); Expert interviews with representatives of MWFK and written information provided by MWFK to the OECD project team.

Study orientation and guidance also happen outside of the education sector

Studentenwerke (student service organisations) are institutions under public law, affiliated with one or more HEIs. Brandenburg has two of these, one in Potsdam and the other in Frankfurt (Oder). In addition to processing applications for the Federal Training Assistance Act (*Bundesausbildungsförderungsgesetz – BAföG*) and other ways of counselling on financing options, they offer a comprehensive range of social security and student support services, and provide students with affordable housing. Day-care centres, organised with external providers, and counselling centres are also available.

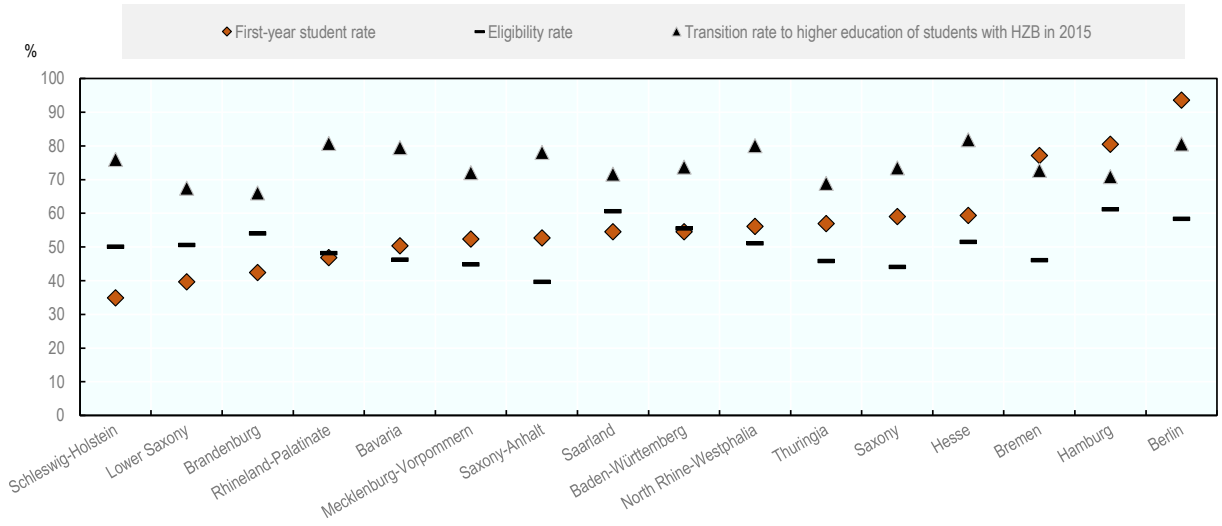
The regional employment agency in Brandenburg (*Agentur für Arbeit*) also provides information and guidance for (prospective) students. The tasks of employment agencies include career guidance for young people, first-year students and higher education graduates. In Brandenburg, the employment agency has five branches; it reports reaching about 80% of the young people in Brandenburg with career guidance offers before they leave school.

Brandenburg's schools appear to collaborate extensively with the employment agency. Many school representatives interviewed by the OECD acknowledged the agency's support as structured, informative and usually unbiased towards any of the post-secondary paths. Moreover, the agency counsellors appear well informed about, and connected with, the guidance offer of other providers.

Enrolment rates in Brandenburg's HEIs

Brandenburg's first-year student rate is low, coupled with a low direct transition from secondary to higher education

Figure 4.1. First-term student rate, eligibility rate and transition rates to higher education, 2018



Notes: The first-year student rate refers to the share of students in the state enrolled for the first time in an HEI in the winter term 2017/18 or the summer term 2018 from the same-age population of the state. The eligibility rate shows the share of students holding a higher education entrance qualification (Hochschulzugangsberechtigung, HZB) of the same-age population. The transition rate to higher education is computed as the share of students who enrol in an HEI by 2018 from all students who obtained a HZB in the state in 2015.
Source: Statistisches Bundesamt (2019[19]), *Bildung und Kultur. Nichtmonetäre hochschulstatistische Kennzahlen* [Education and Culture. Non-monetary university statistical indicators] (database), *Fachserie* 11, *Reihe* 4.3.1, Tables 1, 10 and 13, https://www.statistischebibliothek.de/mir/receive/DEHeft_mods_00128354 (accessed on 3 November 2021).

StatLink https://stat.link/nqsway

Brandenburg has one of the lowest rates in Germany of higher education enrolment (43% of the population were of school leaving age in 2018) (Figure 4.1). The rate is low despite a relatively high rate of higher education eligibility – holding a higher education entrance qualification (Hochschulzugangsberechtigung, HZB) among leavers from Brandenburg's schools. In 2018, the state had one of the highest eligibility rates (54%). This means that more than half of the corresponding cohort obtained an entrance qualification that year. Of those who left Brandenburg schools holding a qualification to enter higher education, only 66% transitioned to higher education – the lowest rate of all German states.

Most eligible students who decide to study move to another German state, especially Berlin

In Germany, around two-thirds of students remain in the state in which they acquired their university entrance qualification. However, many students from the new *Länder* leave the state to study. In 2018, Brandenburg had the highest "student outflow rate" (73%) among the states (Figure 4.2, Panel A). A closer look at students' destinations shows that nearly half of these students move to neighbouring Berlin. Some others can be found in Saxony (8.8%), Mecklenburg-Vorpommern (6%) or North Rhine-Westphalia (5.8%).

Brandenburg's high outflow rate goes hand in hand with a high "student inflow rate", the highest among the *Länder* (Figure 4.2, Panel B). In 2018, 71% of all first-year students in Brandenburg obtained their higher education entrance qualification elsewhere – mostly in Berlin (30%) or a foreign country (27%).

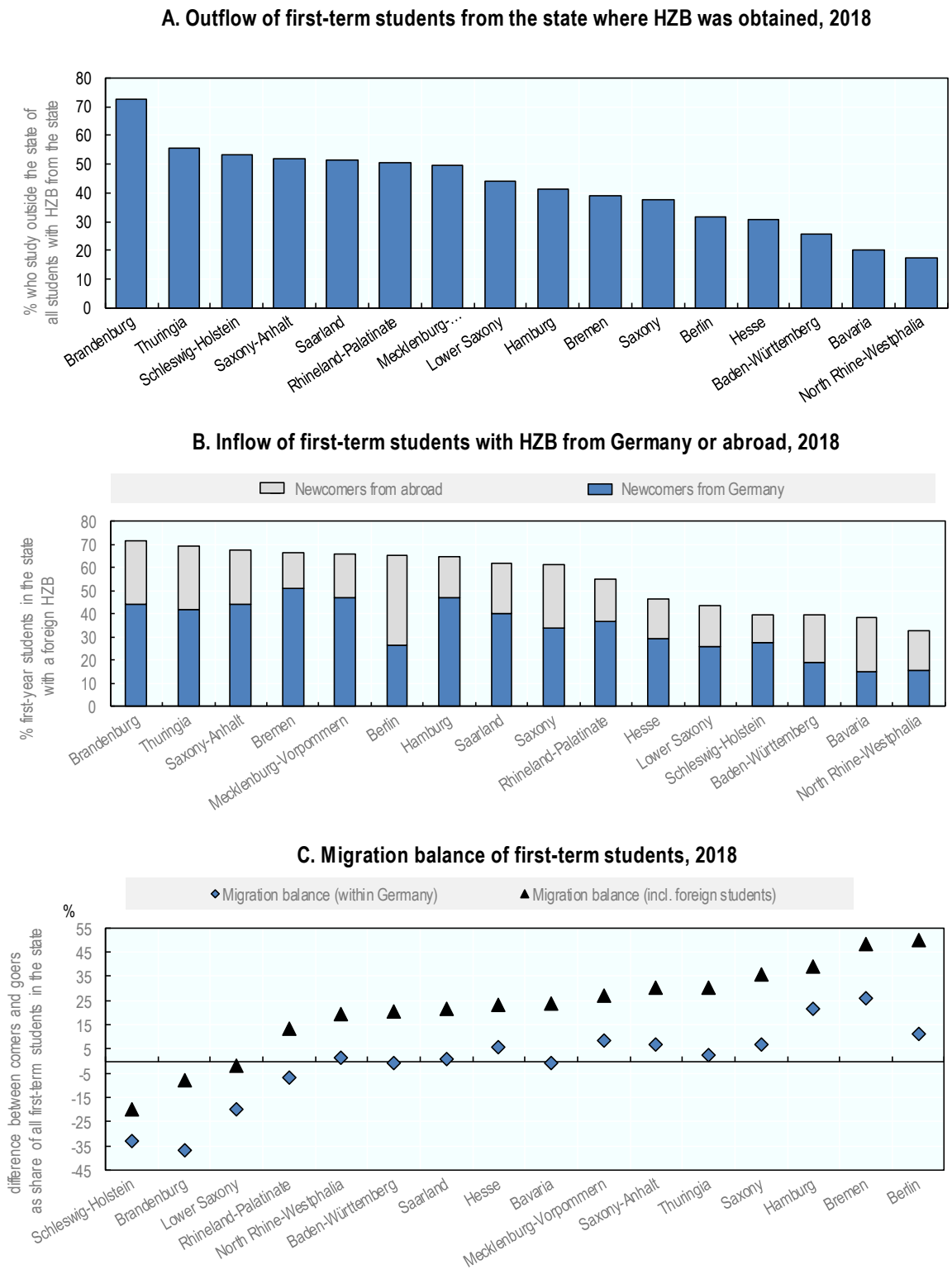
However, the number of incoming students does not fully compensate for those leaving. The migration balance rate (i.e. the difference between the number of incoming and outgoing first-year students) shows a negative balance for Brandenburg (Figure 4.2, Panel C). Notably, Brandenburg's has the lowest net inner-German migration. This means it loses many students to other federal states without attracting a substantive share of their students to its higher education. This is in contrast to neighbouring Berlin, where the migration rate is positive even without accounting for incoming international students.

Motivation of school leavers to study

Brandenburg has the lowest share of school students eligible for higher education who are willing to study

Survey data on school leavers with higher education eligibility largely reflect the trends discussed above. In 2012, 63% of surveyed school leavers in Brandenburg, responded they would "definitely" or "likely" take up higher education studies, versus 70% in the rest of Germany (Figure 4.3). Instead, Brandenburg's school leavers are relatively more likely to aim at vocational education and training (VET). Among the cohort of 2012, 28% of students intend to transition into VET compared to 20% in East Germany and 22% in West Germany. Analysis shows that, across Germany, students' reported education goals are closely aligned to their later education behaviour. For example, 89% of final-year secondary school students who reported plans to pursue higher education were enrolled in higher education six months later. Similarly, 74% of students who aimed at VET followed through on their intentions within six months of completing secondary school (Box 4.6).

Figure 4.2. Students' mobility at the entry to higher education, 2018



Note: First-term students are those enrolled for the first time in a higher education institution in the winter term 2017/18 or the summer term 2018.

Sources: Statistisches Bundesamt (2018[20]), Bildung und Kultur. Studierende an Hochschulen. Wintersemester 2017/2018, Fachserie 11, Reihe 4.1, Table 6, https://www.statistischebibliothek.de/mir/receive/DEHeft_mods_00092410 (accessed on 6 November 2021); Statistisches Bundesamt (2019[21]); Bildung und Kultur. Studierende an Hochschulen. Sommersemester 2018, Fachserie 11, Reihe 4.1, Table 4, www.statistischebibliothek.de/mir/receive/DEHeft_mods_00095976 (accessed on 6 November 2021); Statistisches Bundesamt (2019[19]), Bildung und Kultur. Nichtmonetäre hochschulstatistische Kennzahlen, Fachserie 11, Reihe 4.3.1, Tables 1, 10 and 13, https://www.statistischebibliothek.de/mir/receive/DEHeft_mods_00128354 (accessed on 3 November 2021).

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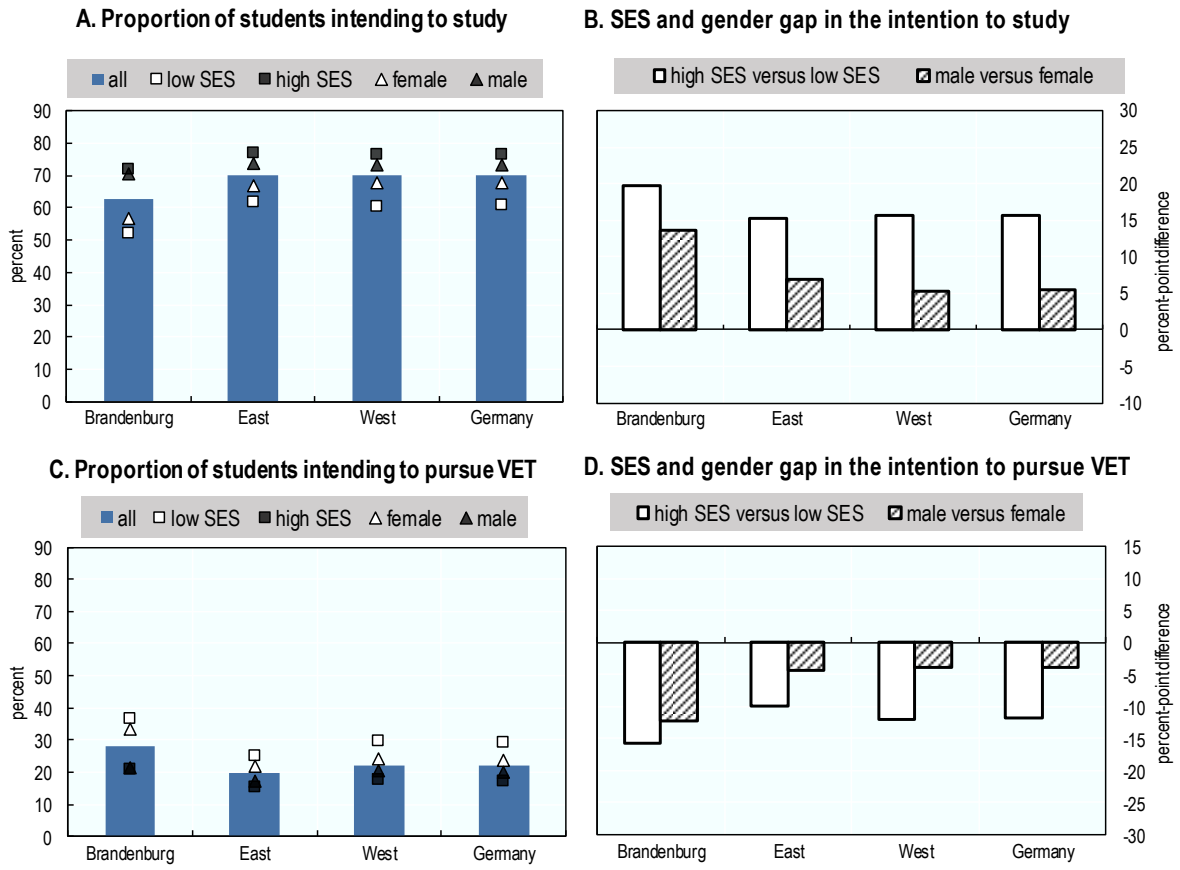
Figure 4.3. Students' intentions to study and pursue VET, by socio-economic status (SES) and gender

Students with higher education eligibility in their last year of school, 2012



Source: OECD calculations based on the DZHW Panel Study of School Leavers with a Higher Education Entrance Qualification 2012.

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Box 4.6. DZHW Panel Study of School Leavers with a Higher Education Entrance Qualification 2012

The German Centre for Higher Education Research and Science Studies (DZHW) Panel Study of School Leavers with a Higher Education Entrance Qualification (FDZ-DZHW, 2021[22]) is a nation-wide follow-up survey of the eligible school leavers cohort of 2012. The most recent panel study in 2018 has not released the micro-level data for independent research purposes yet. However, DZHW studies

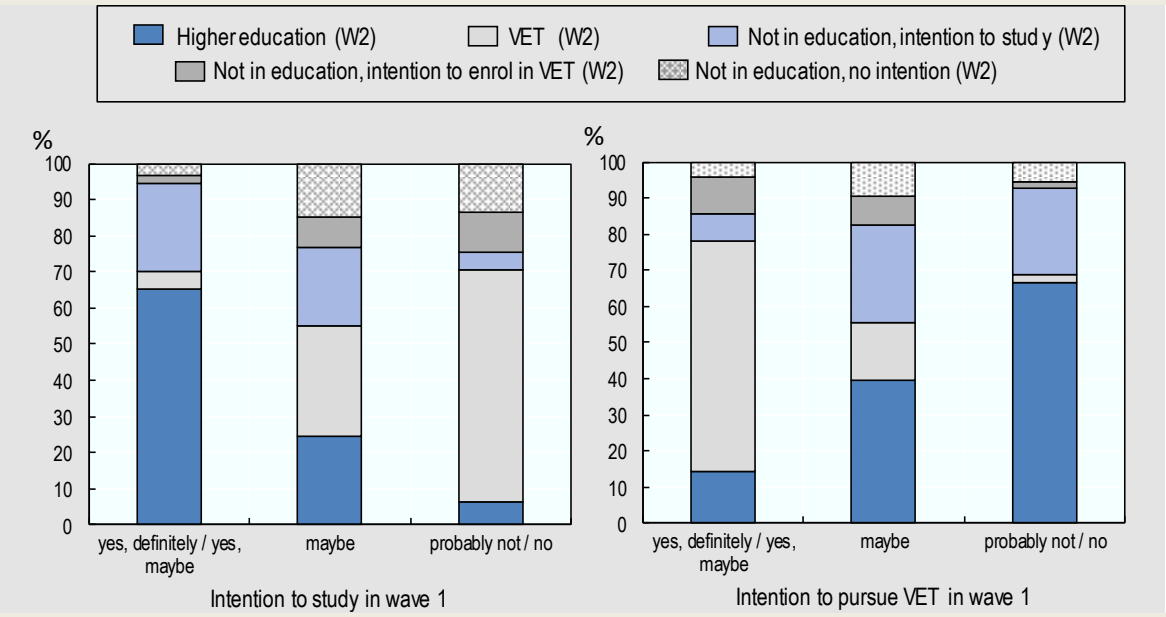
based on the 2018 study show that results for the whole of Germany remained stable over 2012-18. The only differences concern the role of schools and counsellors in the provision of career and study orientation. DZHW has kindly provided aggregate results of these differences for Brandenburg based on the 2018 dataset, complementing the OECD study.

The first survey wave of the 2012 panel study took place in the last year of school, approximately half a year before graduation. It covered 32 800 eligible students from general and vocational secondary schools in Germany. This survey wave collected information on students' plans for further education and the resources and support they receive when making this decision. The second wave took place half a year after graduation and collected data on the education trajectories of students. In all, 11 700 respondents took part in this survey. In 2018, a third follow-up survey, with 6 100 respondents, was carried out.

Analysis is restricted to data from the first survey wave of the 2012 panel study. Only this survey contains enough students from Brandenburg (nearly 1 200 respondents) and data are still available. Hence, the focus is on students' intentions to study or continue on to vocational education and training (VET) and not on actual education behaviour. However, additional analyses based on the entire German sample show that education goals reported in the first wave are closely aligned with later enrolment. In the second wave, half a year after graduation, only 69% of school leavers were in education. Among the students who reported an intention to study in the first interview, 65% were enrolled at a higher education institution and another 24% were not yet enrolled but intended to do so. Among those who initially aimed at VET, 64% were enrolled in VET in the second wave and 10% were prepared to do so.

Figure 4.4. Relationship between education goals and later education enrolment

Education participation in wave 2 by intention to study and pursue VET in wave 1



Source: OECD calculations based on the DZHW Panel Study of School Leavers with a Higher Education Entrance Qualification 2012.

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Additional analysis (not presented here) shows the determinants of the intention to study are similar to the factors related to actual enrolment.

Many eligible students decide on vocational training while at school, especially girls and disadvantaged students

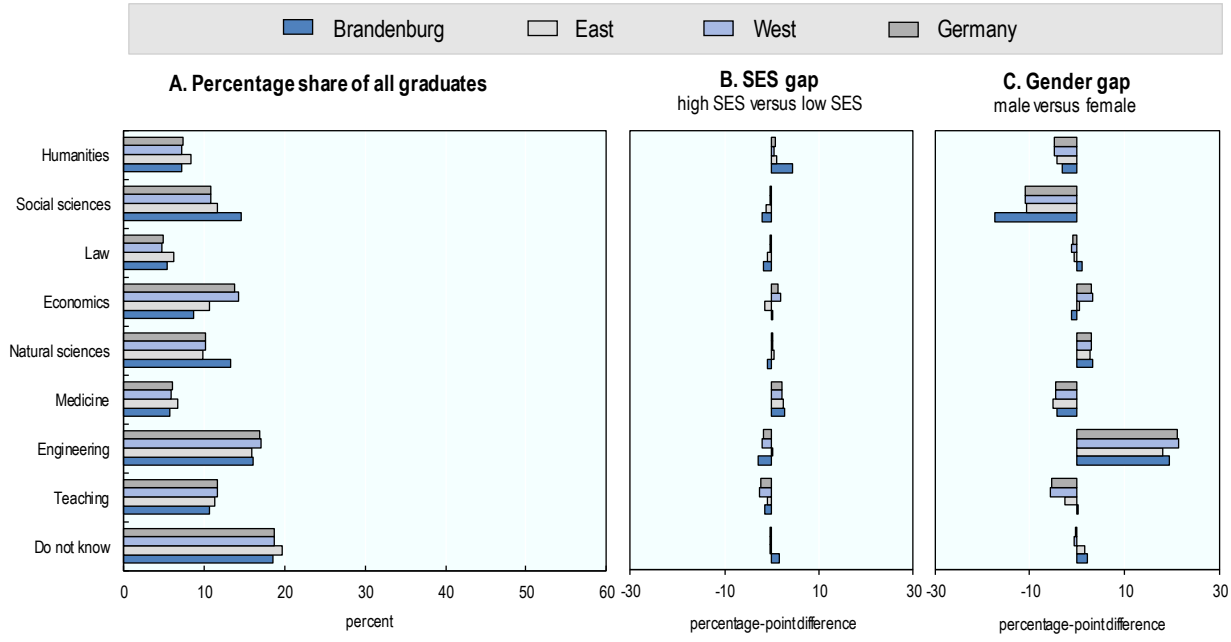
Brandenburg exhibits relatively greater socio-economic and gender differences in the decision to study than other German states (Figure 4.3). Male school leavers are 14 percentage points more likely than female school leavers to opt for higher education; students from high socio-economic status (SES) backgrounds are 20 percentage points more likely than students with low SES to choose to study. In Germany, on average, the gender gap amounts to 5.5 percentage points and the socio-economic gap to 16 percentage points. In Brandenburg, male students and high SES students are relatively less likely to aim at VET compared to female and low SES students, respectively.

Differences in uptake of education at a university or a university of applied sciences are laid out in school

In Brandenburg, as in Germany as a whole, around half of eligible students who intend to study intend to enrol at a university and approximately another quarter intends to continue at a UAS (Figure 4.5). A considerable share of those who wish to study – 20% in Brandenburg and 18% in Germany – are still uncertain about the type of HEI in their last year at school. There are socio-economic and gender differences in the choice of type of institution: students from advantaged backgrounds are more likely to opt for university and less likely to choose to study at *Fachhochschule* than students with low SES; male students are less likely to choose university education and more likely to choose a UAS than female students. However, the gender gap in the choice of *Fachhochschule* is considerably smaller in Brandenburg than elsewhere.

Figure 4.5. Students' desired type of institution, by socio-economic status (SES) and gender

Eligible students in their last year of school who intend to study, 2012



Source: OECD calculations based on the DZHW Panel Study of School Leavers with a Higher Education Entrance Qualification 2012.

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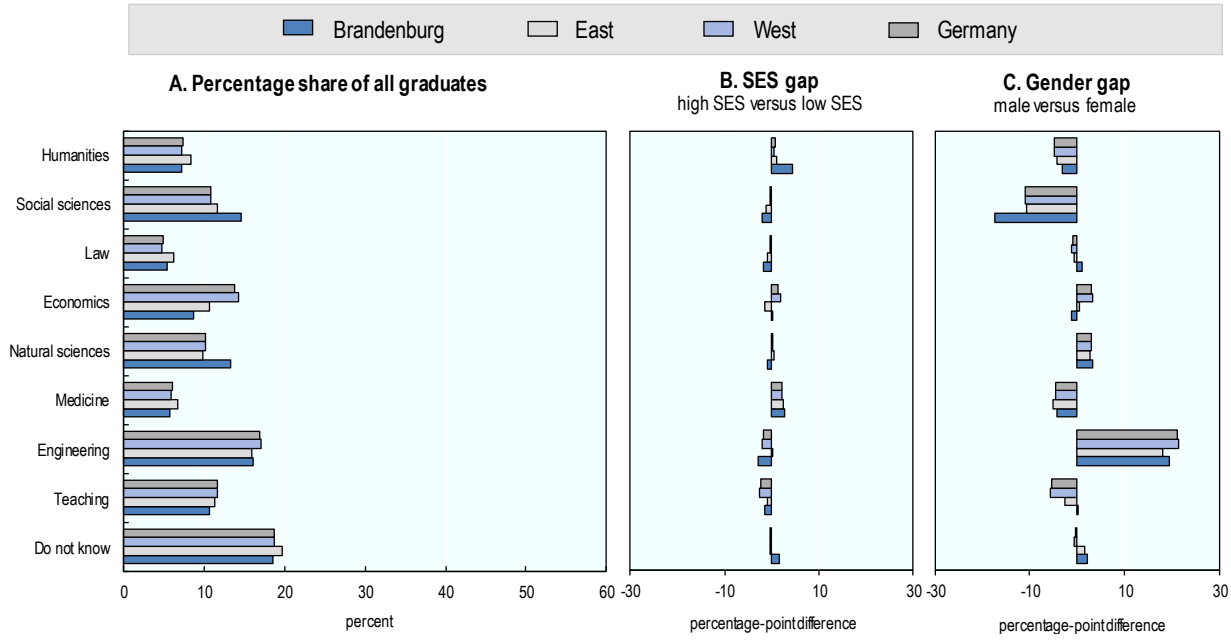
Brandenburg deviates more noticeably from the German average in choice of study field (Figure 4.6). A higher share of students who wish to study, and particularly a higher share of female students, choose a field of study from the social sciences. Brandenburg's school leavers are also more likely than German students on average to opt for the natural sciences, and less likely to choose economics. As in the Eastern *Länder* on average, gender differences in Brandenburg with respect to choosing the teaching profession, economics and humanities are somewhat smaller compared to West Germany.

Figure 4.6. Students' desired field of study, by socio-economic status (SES) and gender

Eligible students in their last year of school who intend to study, 2012



Source: OECD calculations based on the DZHW Panel Study of School Leavers with a Higher Education Entrance Qualification 2012.

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The perceived costs of higher education and the relatively high returns on vocational education and training deter students, especially women and disadvantaged students, from entering higher education

School leavers' propensity to study typically depends on how they assess the costs and benefits of higher education. A higher share of students report the costs of studies play a role in their education decision in East Germany, including Brandenburg, than in West Germany (Figure 4.7). By contrast, the labour market returns to higher education are rated equally high: 90% of students in each region, for example, report that holders of higher education degrees have good career chances. With regard to VET, Brandenburg's school leavers tend to perceive higher returns than their peers elsewhere in Germany, particularly in terms of income, working conditions and social recognition.

If social groups perceive the utility and costs of education investments differently, social disparities in education participation may emerge. In Brandenburg, as in the other regions, cost considerations are less likely to hamper high SES students in their education decisions than low SES students (Figure 4.7, Panels A and B). SES differences in the perceived returns to higher education are small in all regions. However, low SES students, especially those in Brandenburg, are more likely than students from advantaged backgrounds to rate the value of VET high.

With regard to gender differences, male students in all regions are more likely to perceive high returns to higher education than female students. Conversely, higher shares of female students assess the returns to VET as high (Figure 4.7, Panels C and D). The difference with respect to VET is more pronounced in Brandenburg. There, female students are nearly 10 percentage points more likely than male students to report a VET degree is linked to good overall labour market chances, high job security and good career options.

Students in higher education may be eligible to offset some study costs through financial support from the federal government or from a foundation that provides scholarships (see Chapter 5). However, information and advice on student financial aid appears fragmented. Brandenburg's students are underrepresented in awards from *Studienstiftung des deutschen Volkes* (German National Merit Foundation) – the oldest and largest organisation for promotion of young talent in Germany. Indeed, many of Brandenburg's schools have never nominated one of their graduates for a scholarship.

Many schools in Brandenburg are not using their right to nominate prospective students to Studienstiftung des deutschen Volkes

Each April, *Studienstiftung des deutschen Volkes* asks all schools in Germany leading to a higher education entrance qualification to propose talented graduates for a scholarship immediately after completing upper-secondary education. The schools are allowed to submit one proposal for every 40 graduates. In 2010-19, of the schools invited to nominate candidates, only 27% on average from Brandenburg responded. Nationwide, however, half of eligible schools did so.

Recent initiatives of *Studienstiftung des deutschen Volkes* in North Rhine-Westphalia, Mecklenburg-Vorpommern and Saxony-Anhalt show that working together with state governments and local schools can significantly increase the number of nominations (Box 4.7).

Box 4.7. Initiatives of *Studienstiftung des deutschen Volkes* to motivate more schools to use their right to nominate students

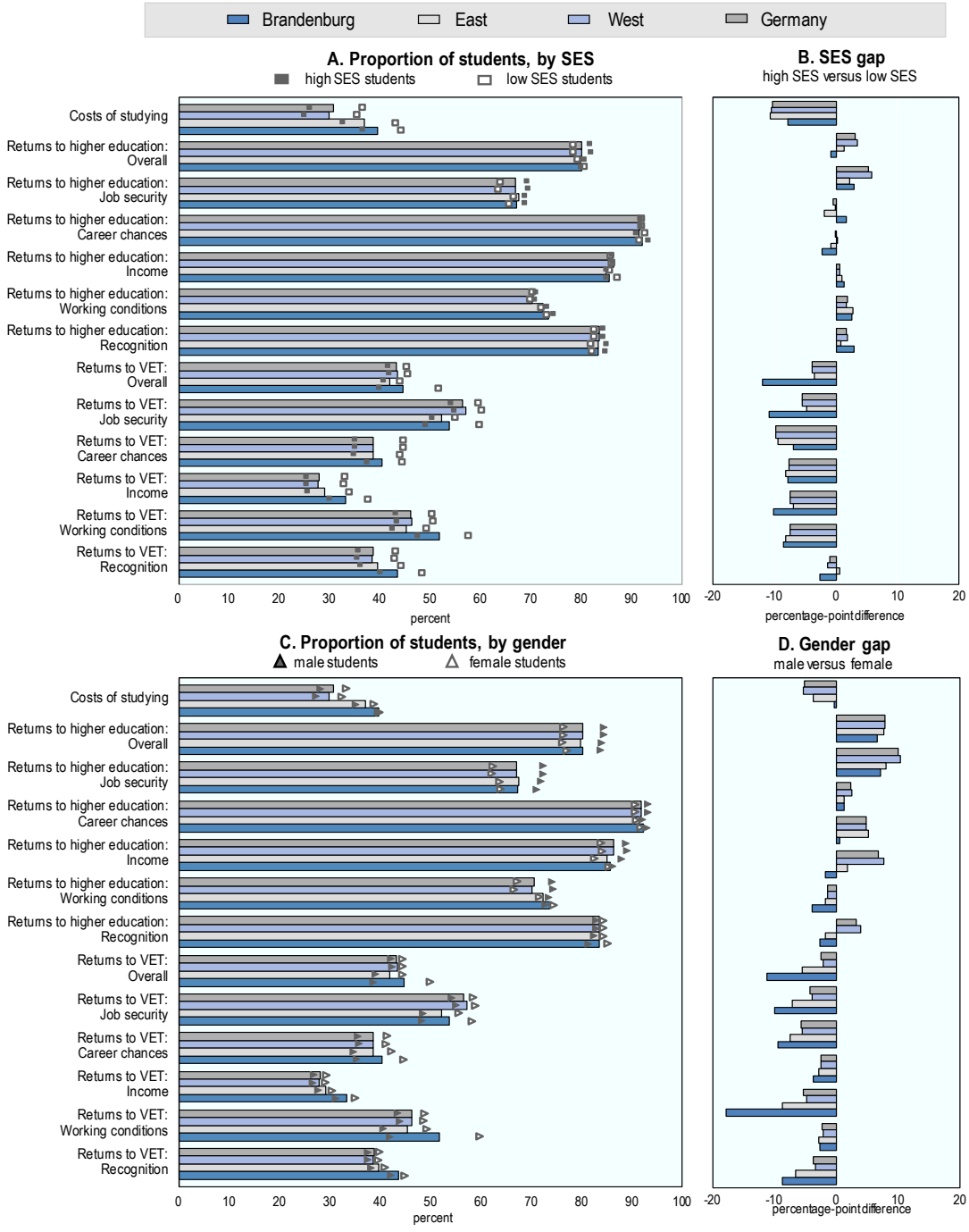
Since 2017, *Studienstiftung des deutschen Volkes* (German National Merit Foundation) and *Talentförderung* (Centre for the Promotion of Talents) in North Rhine-Westphalia have been co-operating to reduce social inequalities in the state education system. Together, they also try to create new access opportunities to the student funding offer of the Foundation. More than 60 talent scouts from the Centre from 17 state higher education institutions have been co-operating with more than 300 schools in North Rhine-Westphalia to discover and promote talented students predominantly from non-academic families. Talent scouts can nominate a student for the Foundation's selection process in addition to each school's own right to nominate. The initiative has had a significant effect on the schools' use of their right to nominate students. Among the schools that did not use this right prior to 2017, 31% of co-operating schools have done so over the last four years compared to 21% of the schools where talent scouts were not active.

At the start of the 2019 school year, the Foundation attended events involving school principals in Mecklenburg-Vorpommern and Saxony-Anhalt. As a result, the share of schools not using their right to nominate fell slightly between 2018 and 2019 from 82% to 68% in Mecklenburg-Vorpommern and from 78% to 72% in Saxony-Anhalt.

Source: Information provided by the German National Merit Foundation (*Studienstiftung des deutschen Volkes*).

Figure 4.7. Costs and benefits of higher education, by socio-economic status (SES) and gender

Students with higher education eligibility in their last year of school, 2012



Source: OECD calculations based on the DZHW Panel Study of School Leavers with a Higher Education Entrance Qualification 2012.

StatLink https://stat.link/moa87h

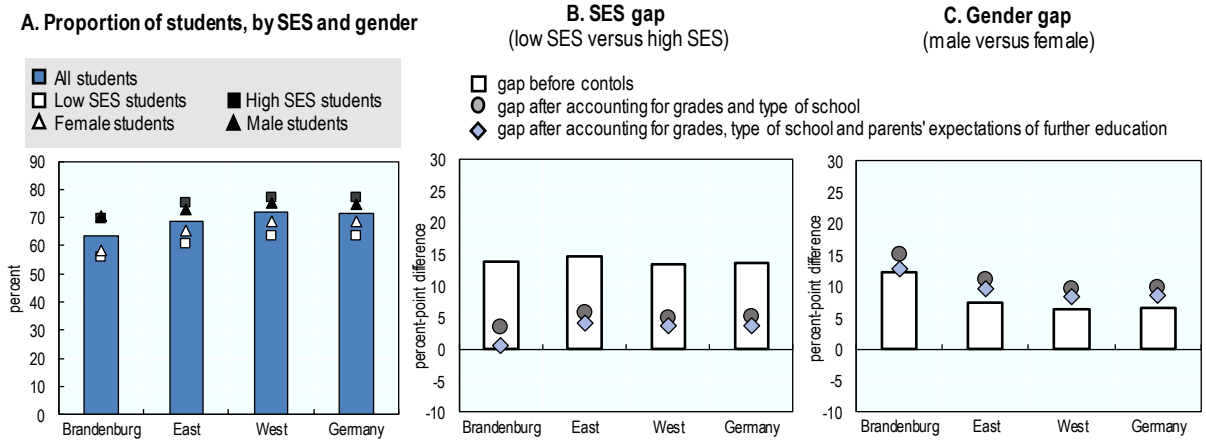
School graduates' expectations of completing higher education pose another barrier, explaining socio-economic and gender disparities

A central component of education decision making is how students assess their chances to complete a degree successfully. This expectation may be based on objective evaluations of one's academic performance and skills. However, gender stereotypes or class-specific education expectations and preferences may also affect this self-assessment. Compared to the rest of Germany, a lower share of Brandenburg school graduates expects to complete a higher education degree successfully (Figure 4.8, Panel A). In all regions, students with low SES are 14 percentage points less likely to hold such expectations than students with high SES (Figure 4.8, Panel B). After accounting for grades and type of school, the SES gap decreases substantially. This means a relatively poorer performance of low SES students and the type of schools they typically attend dampen their expectation of success in higher education. In addition, controlling for parental expectations of further education is linked to an additional small decrease of the gap. This indicates that, net of academic achievement, parental expectations play a smaller role in students' expectations of completing a higher education degree.

In Brandenburg, the gender difference in education expectations is relatively larger. Female students are 12 percentage points less likely than male students to expect to complete a higher education degree successfully, compared to a gap of 7 and 6 percentage points in East and West Germany, respectively (Figure 4.8, Panel C). After accounting for grades, type of school attended and parental expectations of further education, these differences remain. This is partly explained by the small difference between female and male students in Germany in academic achievement and parental education expectations.

Figure 4.8. Students' expectations of successfully completing higher education

Students with higher education eligibility in their last year of school, 2012



Source: OECD calculations based on the DZHW Panel Study of School Leavers with a Higher Education Entrance Qualification 2012.

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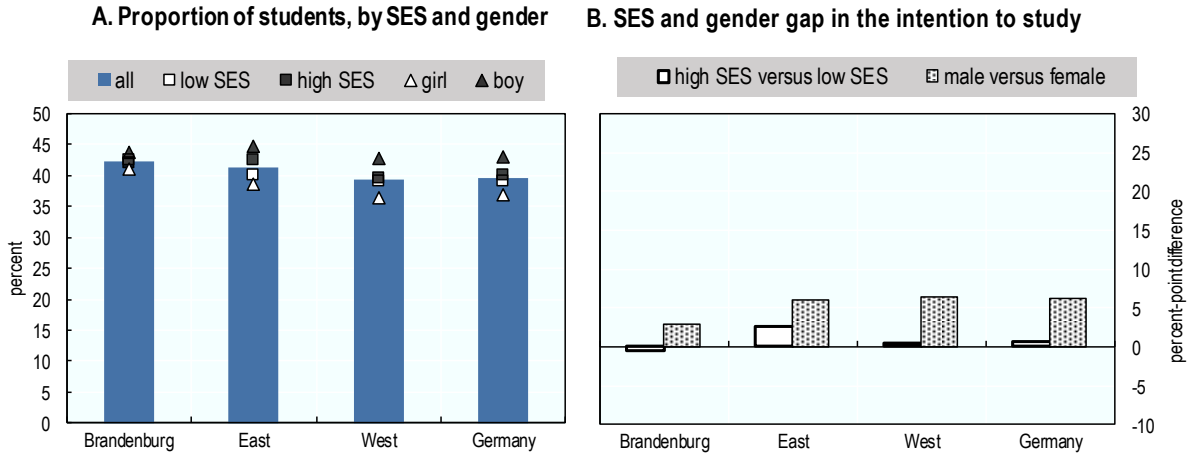
Around 40% of school graduates consider themselves well informed about study options

Well-informed education decision making enables a better match between students' abilities, interests, expectations and their choice of study programme. In 2012, less than half of students in each region felt well informed about post-secondary education options (Figure 4.9). This applies equally to female and male students, as well as to students with low and high SES.

Figure 4.9. Proportion of students who feel well informed about education options

Students with higher education eligibility in their last year of school, 2012



Source: OECD calculations based on the DZHW Panel Study of School Leavers with a Higher Education Entrance Qualification 2012.

StatLink https://stat.link/83iozg

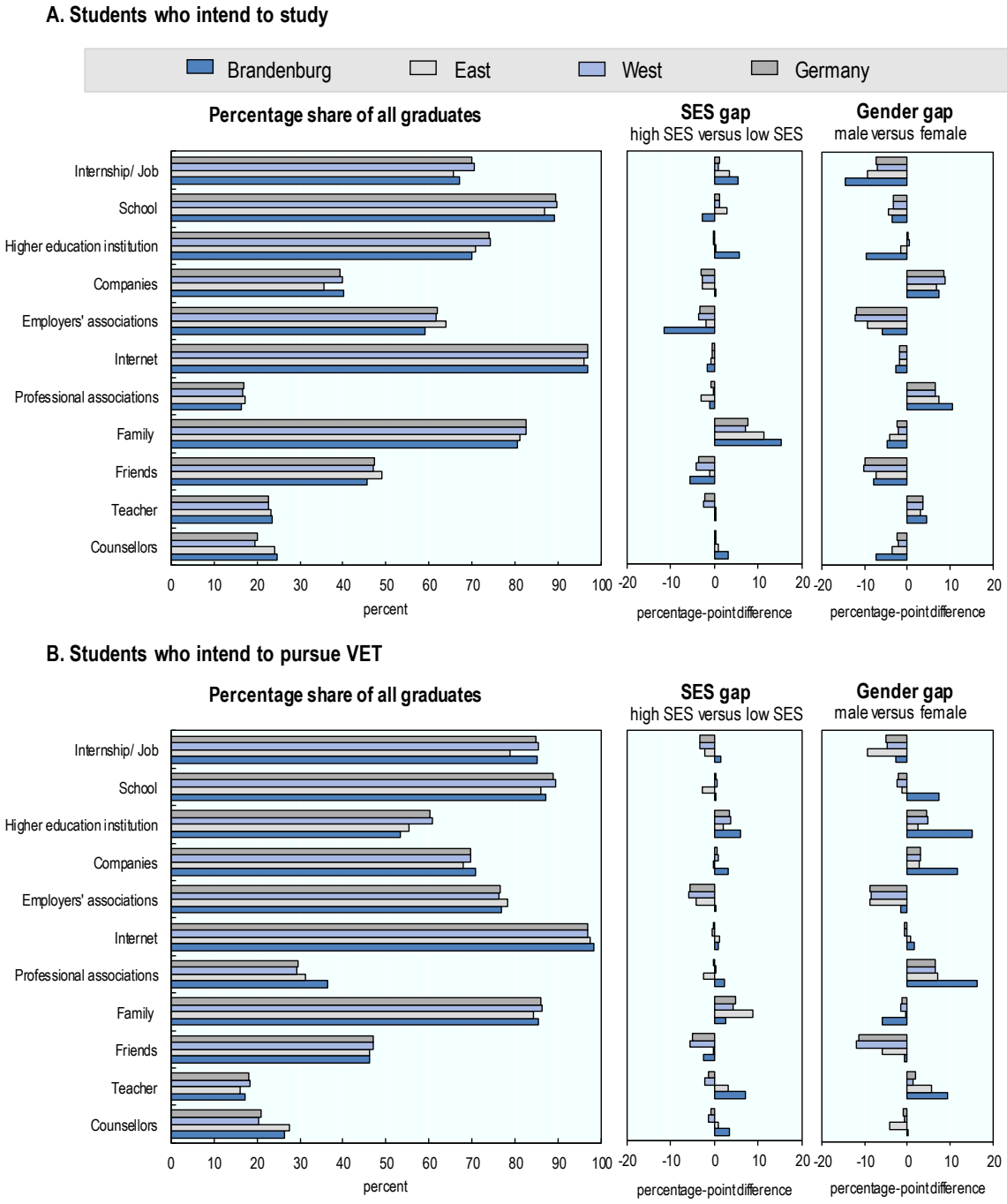
The Internet, school and family are students' primary sources of information

How students get information about education options generally depends on whether they aim at higher education or VET (Figure 4.10). Students who aim at VET gather information from companies, employers' associations, internships and jobs more frequently than those who intend to take higher education.

However, for both groups, the Internet, school and family are the most common information sources. Among students who wish to study, high SES students are more likely than low SES students to get information support from the family. This is not surprising, given their parents by definition have a higher education degree and, thus, more knowledge about the higher education system. In Brandenburg, this difference amounts to a higher likelihood of 15 percentage points for high SES students and in Germany, on average, of 7.7 percentage points. Such SES differences are smaller among students who aim at VET. With regards to gender differences, male and female students have similar chances to get information from their school and family. However, they differ on the use of companies, employers' associations and professional associations as information sources.

When deciding how to continue their education, many school graduates in Brandenburg and in Germany overall are overwhelmed by the huge number of education options, the unpredictable labour market demand and by an uncertainty about their own interests and aptitudes (Figure 4.11). Meeting the admission requirements of desired programmes and, particularly in the Eastern *Länder*, financing studies are further common difficulties for school leavers. By contrast, smaller shares of school leavers report that a lack of information or a lack of support from the school pose barriers to choosing further education. As expected, high SES students are less likely than students with lower SES to perceive the financing of studies as a problem. Furthermore, male students are in general less likely than female students to report difficulties in choosing post-secondary education. Male students are especially less likely than female students to perceive admission requirements as a hurdle. The latter may be due to the fact that male students are relatively less likely to opt for the more demanding studies at a university (see Figure 4.5) and that they hold higher expectations of success in higher education (see Figure 4.8).

Figure 4.10. How students get information about post-secondary education options



Source: OECD calculations based on the DZHW Panel Study of School Leavers with a Higher Education Entrance Qualification 2012.

StatLink https://stat.link/z38tkq

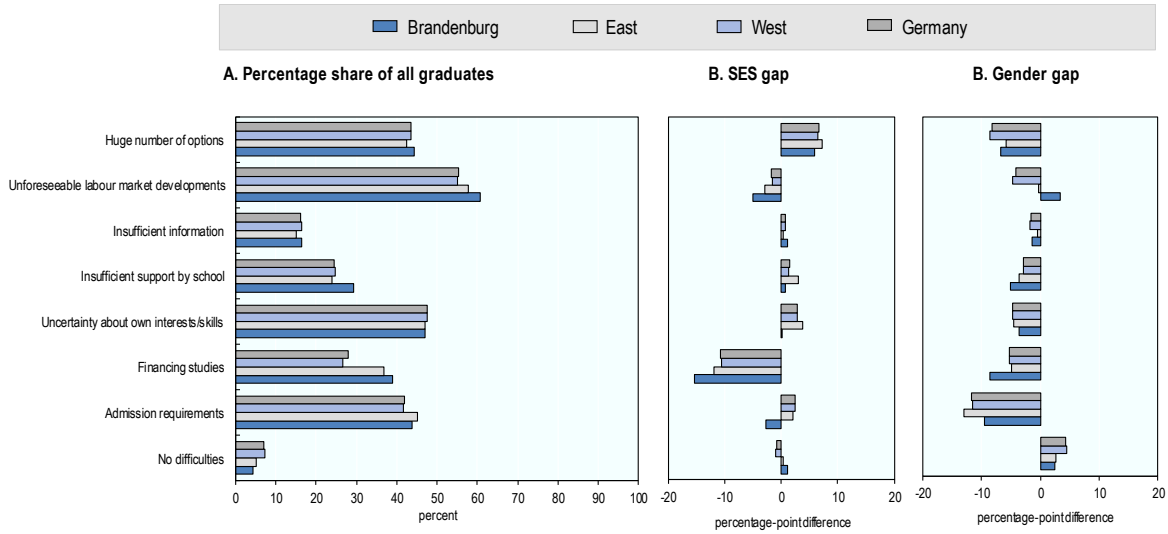
Students receive increasing support from teachers, and career and study counsellors

Compared to the 2012 cohort, students who acquired their higher education entrance qualification in 2018, received more support from career and study counsellors, and teachers (Figure 4.12). In Brandenburg, one-third of students report being advised by a counsellor in 2018, which is 8 percentage points higher than in 2012. Moreover, one in five received support from teachers. In addition, support in Brandenburg

appears more extensive than in the rest of Germany. These results are likely to be directly related to the launch of the federal and state strategies for career and study orientation in 2015 and the range of orientation measures at schools. In contrast, students rely less on advice from the wider family and friends.

Figure 4.11. Difficulties in choosing post-secondary education

Students with higher education eligibility in their last year of school, 2012

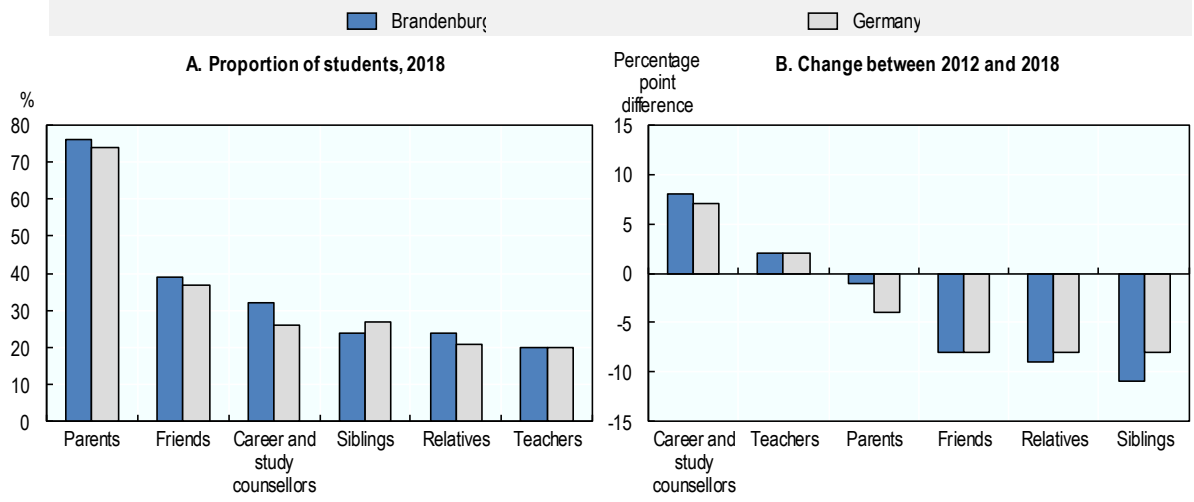


Source: OECD calculations based on the DZHW Panel Study of School Leavers with a Higher Education Entrance Qualification 2012.

StatLink https://stat.link/eyisoj

Figure 4.12. Who supports students in their career and study choices?

Students with higher education eligibility in 2018 vs. 2012



Source: DZHW calculations based on the DZHW Panel Study of School Leavers with a Higher Education Entrance Qualification 2012 and 2018.

StatLink https://stat.link/k5ylzw

Four of ten students report their school provided extensive information and guidance in choosing a course of study and career (Table 4.1). In contrast, 27% report having received little or no information about the various educational pathways from their school. The support level varies depending on the type of school: 44% of students at a comprehensive or academic school felt well supported by their school but only 32% of students at a non-academic school felt the same. The Germany-wide trend is similar. However, the results for Brandenburg by type of school appear surprising since many more non-academic schools than academic schools are granted the distinction “School with excellent career and study orientation”.

Table 4.1. Level of support for career and study orientation provided by school

Students with higher education eligibility in 2018

	High level of support		Little or no support	
	Brandenburg	Germany	Brandenburg	Germany
All	41	39	27	26
Low SES	43	38	27	26
High SES	39	39	28	25
Male	45	42	26	23
Female	38	36	28	28
Comprehensive and academic path	44	40	26	23
Non-academic path	32	35	32	31

Source: Information was provided by the DZHW; DZHW calculations based on the DZHW Panel Study of School Leavers with a Higher Education Entrance Qualification 2018.

Parents of disadvantaged students believe less in the capacity of their children to succeed in higher education

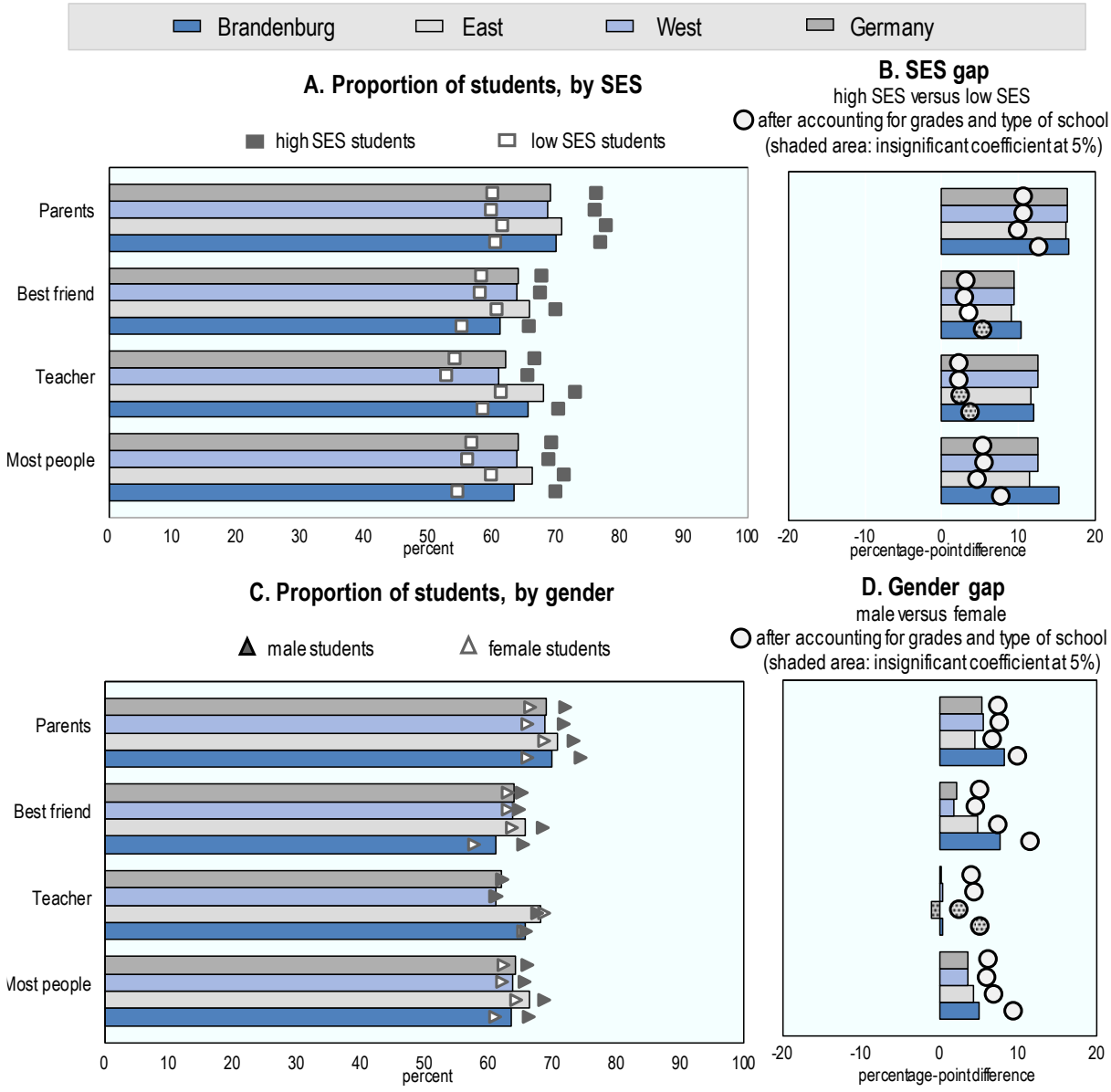
The expectations of parents, teachers and peers on whether students should pursue higher education may have an important impact on education decisions. Across regions, between 60-70% of students report that their parents, best friend, teacher and most people believe they should study (Figure 4.13). In all regions, students with high SES are more likely to report such expectations than low SES students. After accounting for grades and type of school, SES differences with respect to parents’ expectations of further education persist. Meanwhile, differences in teachers’ expectations decrease considerably. This suggests that parents follow class-specific aspirations that are not necessarily aligned with their children’s actual academic performance. For their part, teachers’ expectations are strongly based on academic performance. In all regions, gender differences related to other persons’ expectations of further education are small.

Barriers to higher education study: Cost, parental and own fears of failure, information overload and attractiveness of VET

Figure 4.14 estimates the relationship between school leavers’ intention to study and the various likely determinants of education decision making discussed above. The magnitudes and directions of the associations are similar across regions. In all regions, the expectation of successfully completing higher education shows the strongest relationship with the intention to study, controlling for all other factors, including academic achievement and teachers’ expectation of further education. Parents’ and peers’ expectations of further education are also linked to a substantially higher likelihood of choosing higher education (around 14 and 13 percentage points, respectively, in each region). By contrast, teachers’ beliefs that students should study do not play a role after accounting for other factors, especially grades. Feeling well informed is also not associated with the decision to study.

Figure 4.13. Other persons' expectations of students completing higher education

Students with higher education eligibility in their last year of school, 2012



Source: OECD calculations based on the DZHW Panel Study of School Leavers with a Higher Education Entrance Qualification 2012.

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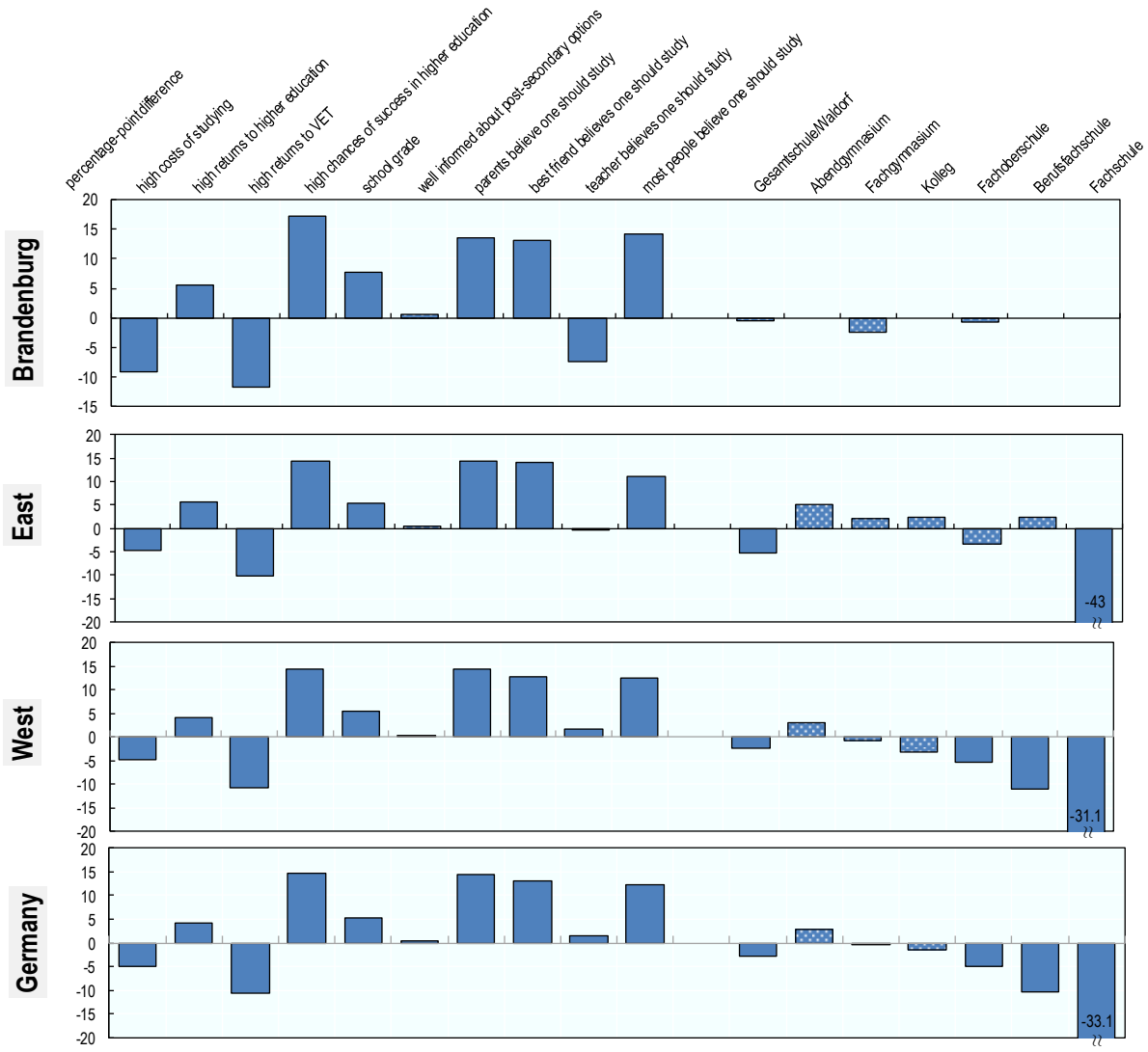
Figure 4.14. Determinants of the decision to study

Average marginal effects, students with higher education eligibility in their last year of school, 2012 (shaded bars: insignificant coefficients at 5% confidence)



Notes: Coefficients from logistic regressions for each region. Coefficients are presented as average marginal effects, e.g. the average percentage change in the probability to decide to study when an explanatory factor increases by one unit. The reference categories of the presented binary factors (from left to right) are students who report that costs have no or some impact on their decision to study; low to moderate returns to higher education; low to moderate returns to VET; low to moderate chances of successfully completing higher education; poorly to moderately informed; parents/best friend/teacher/most people do not or to some extent expect that respondent should study. The reference category of the type of school is *Gymnasium*. The coefficient of school grades shows the change in outcome for one standard deviation increase in grades. All models control for age, gender and socio-economic background.
Source: OECD calculations based on the DZHW Panel Study of School Leavers with a Higher Education Entrance Qualification 2012.

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Interestingly, the perceived returns to VET are relatively more important than those to higher education. A high perceived return to VET is associated with a lower probability of choosing higher education across regions of 14 to 17 percentage points. Meanwhile, high perceived returns to higher education lead to a higher probability of 4 to 6 percentage points of choosing higher education.

In Germany, on average, the costs of studying play a small role in choice. However, in Brandenburg, costs have a larger impact on the education decision, leading to a lower probability of intent to study of 9 percentage points.

Obviously, factors such as school grades, parents' expectations, teachers' expectations and perceived returns to study all interact. They also have different effects on high and low SES students and on male and female students. Figure 4.15 further analyses the SES and gender effects on the decision to undertake higher education. It breaks these differences down into their components, looking at how factors like school grades, students' and parents' expectations of success and perceived returns to VET contribute to the decisions of school leavers, controlling for SES (Panel A) and for gender (Panel B). In other words, it shows the relative importance of different factors to the intention to pursue higher education in each of the SES groups and in each of the gender groups.

Panel A quantifies how differences in various factors contribute to the difference between high and low SES in the decision to pursue higher education. Panel B shows the extent to which the various factors contribute to the gender difference in the decision to study.

Panel A shows that around one-third of the gap between high and low SES students' decision making in Brandenburg (7 of the 20 percentage-point difference) cannot be explained by any factors in the model. However, of the factors in the survey, the difference in perception of returns to VET between high and low SES students makes the biggest contribution to the SES gap in the intention to study in all regions. This difference explains 17% of the SES gap in the intention to study in Brandenburg (or 3.3 of the 20 percentage-point difference between high and low SES students in the decision to study),

Differences in school grades also contribute greatly to the socio-economic differences in education decisions. In Brandenburg, school grades account for 12% of the difference between high and low SES students in their decision. This means that high SES students have a 2.4 percentage-point higher probability to study because of their relatively better grades. In East and West Germany, this contribution share is smaller – 10% and 9%, respectively.

Students' expectations of success and parents' expectations of further education also contribute to the SES gap in the choice of studying. However, their contributions are smaller than perceived returns to VET and school grades.

Panel B shows the decomposition of the gender gap in the decision making on higher education study. In Brandenburg, the other variables cannot explain about half of the difference. However, here too, the perceived returns to VET play a major role. Gender differences in the assessment of these returns contribute to about a quarter of the gender gap in each region. Differences in how male and female students rate their chances of success in higher education are also important.

Distance to higher education institutions is another barrier to study for Brandenburg's students

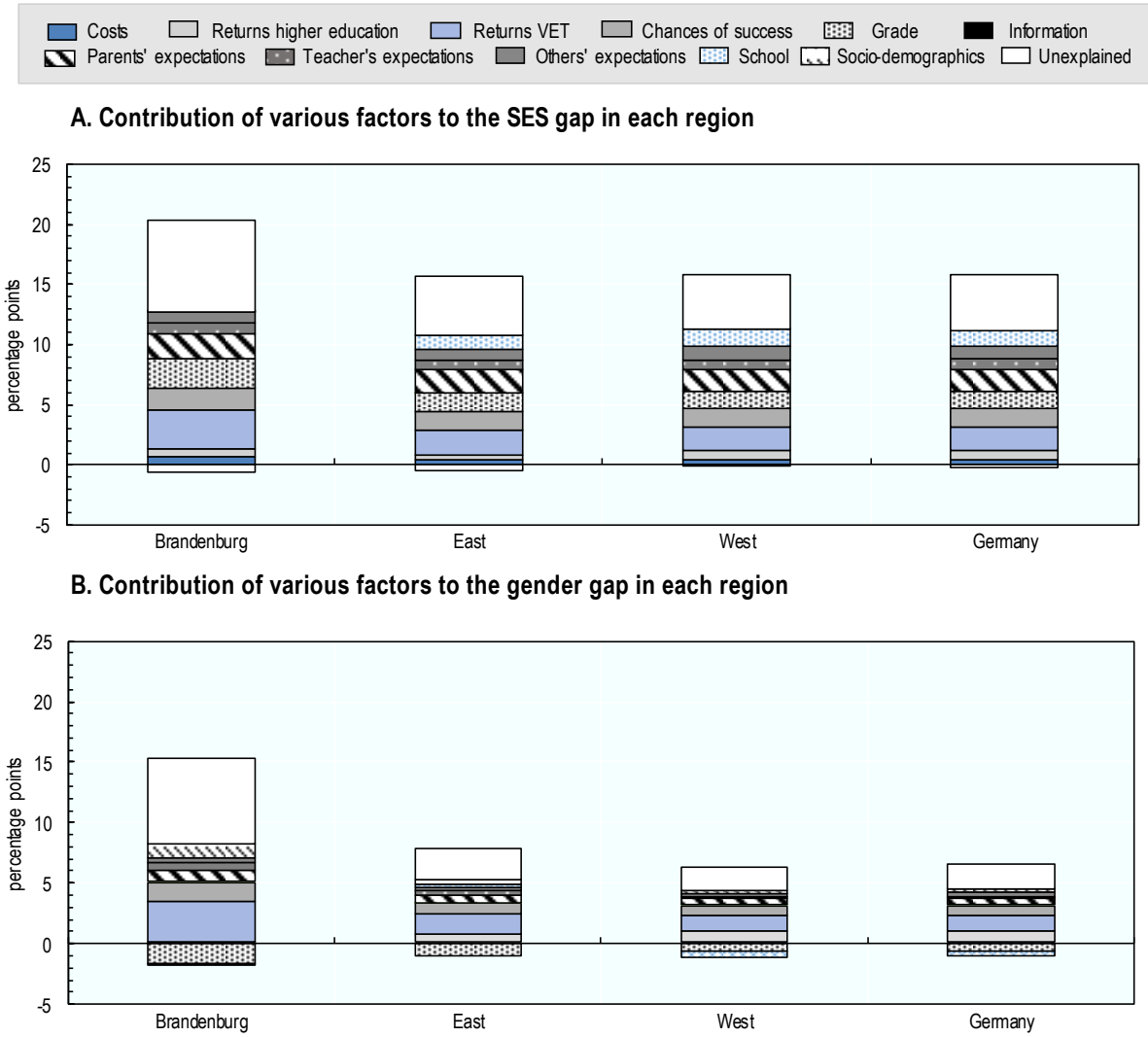
Distance to regional HEIs is another factor in shaping students' aspirations. This is due both to the largely rural character of the state and the locations of institutions. As distance to regional HEIs increases, a student's intention to study decreases (Quast, Mentges and Buchholz, forthcoming[23]), which is often related to monetary costs and information deficits. Similarly, on average in Germany, 15-year-old students in a city of over 100 000 people are 12 percentage points more likely to expect to attend higher education than those attending a school in an area with fewer than 3 000 inhabitants – after accounting for students' socio-economic status and maths proficiency (OECD, 2019[24]).

The average distance to regional HEIs affects both the decision to study and the choice of study location. Students who acquired their higher education entrance qualification in a remote place (far from an HEI) are willing to move farther away for their studies – if they have decided to study – than peers from cities

and regions with a high density of HEIs (Quast, Mentges and Föste-Eggers, 2021[25]). These results have direct implications for Brandenburg, which is struggling to retain its eligible school leavers for in-state studies. The recent establishment of *Präsenzstellen* in remote areas is an important step in bringing HEIs closer to prospective students.

Figure 4.15. Decomposition of the socio-economic and gender gaps in the intention to study

Students with higher education eligibility in their last year of school, 2012



Notes: Results obtained using a decomposition method proposed by source (Karlson, 2012[26]) with one model estimated for each region. The height of the bar corresponds to the total percentage-point difference in the intention to study between high and low SES students in Panel A, and between male and female students in Panel B. The subcomponents show the contribution of each factor to these total gaps. For example, in Brandenburg, high SES students are 20 percentage points more likely to intend to study than low SES students (Panel A, left bar). The relatively better grades of high SES students are responsible for 2.4 percentage points of this SES gap. Hence, socio-economic differences in grades contribute 13% to the SES gap in the intention to study.
Source: OECD calculations based on the DZHW Panel Study of School Leavers with a Higher Education Entrance Qualification 2012.

StatLink https://stat.link/4oq9lb

Assessment and policy recommendations

Equitable access to higher education is vital to help people adapt to a changing world of work. In Brandenburg, however, there remain large gaps in access and willingness to study between young people with high and low socio-economic status and between boys and girls. The DZHW Panel Study of School Leavers identified several factors that influence school leavers' decisions and potentially create barriers to access. These include perceived high costs of studies, perceived high returns of VET, lack of self-esteem and parents' views, and the large amount of available information. The large average distance to regional HEIs is another barrier to study for Brandenburg's school students.

Ensure prospective students have structured information to make informed choices

Timely, reliable and well-structured information about post-secondary education and training pathways, funding options and the labour market can ease students' decisions about higher education.

There is a great deal of career and study advisory information for prospective students; indeed, there could be said to be an overload. Schools, career advisers, HEIs and government agencies are all "competing" sources, but their information is not connected. Many information sources tell the "story" from their own perspective. Their information may be authoritative and accurate but not comprehensive.

The main source of higher education information is the *Hochschulkompass* website run by the German Rectors' Conference. It presents information about German HEIs and their programmes and allows for search by field of study, location and study format. It will soon be linked to the "*hoch & weit*" portal, which is geared towards mature learners with information about continuing education. Prospective students can also access online rankings of German HEIs and study programmes. The CHE ranking of the Centre for Higher Education, for example, contains information on teaching quality, research performance and equipment, as well as students' opinions on study conditions. For some programmes, it also includes professors' views of the reputation of their departments. The *Arbeitsagentur* website of the *Bundesagentur für Arbeit – BA* (Federal Employment Agency) provides labour market information, including trends by occupation. It also provides general information about the various post-secondary pathways and their funding options. In addition, it allows users to search professions by field of study and delve into sub-fields. The website also points students to several useful e-assessment tools.

At the state level, the *studieren-in-brandenburg.de* website targets prospective students looking for guidance about what and where to study at HEIs in Brandenburg. The website appears well structured and provides much relevant information for prospective students. However, a few additional improvements could make it even more user-friendly. A general search field as well as a search function for the study programme offer in Brandenburg, for example, might improve navigation. It could also provide general information about Brandenburg as a place to live and study and compile arguments in its favour (as the Mecklenburg-Vorpommern website does) or link to such information. Targeted information for international students in both German and English, as available on the websites of some other German states, could be considered. Direct links to social media profiles of HEIs rather than just their websites could appeal to young users.

Fachkräfteportal (Brandenburg Skills Portal) is another useful resource, offering information on the labour market in the state, the study offer and other related topics. The portal informs about job vacancies and apprenticeship opportunities in the state and provides useful information for newcomers, returnees, prospective students and other target groups.

The two websites – *Hochschulkompass* and *studieren-in-brandenburg.de* – are not linked and do not refer to each other, although both have been advertised via some national and state-level channels. Some countries have ensured their advisory websites combine information from all sources (e.g. labour market agencies, education agencies and education providers). A single, curated source of information can make

it easier for prospective students and their families to make informed decisions (Hofer, Zhivkovikj and Smyth, 2020[27]) (see Box 4.8 for the Irish case).

Box 4.8. CareersPortal: The "one-stop shop" for those needing and providing study and career orientation in Ireland

The CareersPortal website was launched by the Minister for Education and Science of Ireland in 2008 in response to the Expert Group on Future Skills Needs. The group aimed to ensure that career guidance professionals and users of career information in Ireland had a clearly defined and up-to-date reference. One key recommendation was the creation of a Central Careers portal.

The CareersPortal, developed and run by a private company, aims to be a one-stop shop for national career information. The career guidance programmes are designed to provide the most up-to-date and relevant information and resources on careers in Ireland. The portal provides information about the world of work and the world of education along with advice and information for a number of target groups: secondary school students, college students and graduates, jobseekers, and career changers, adult learners, parents and guardians, guidance professionals and careers educators.

The CareersPortal website, which is freely available to all Irish citizens, addresses the following key areas: i) career sectors; ii) CourseFinder database (CAO/PLC/Fetchcourses); iii) occupational database (Career Explorer); iv) self-assessment tools; v) scholarship and supports (financial/disability); vi) organisation profiles; vii) career interviews and videos; viii) work experience advice and vacancies; ix) apprenticeships database; x) upskilling opportunities and supports; xi) college profiles; xii) integrated labour market information – jobs in demand; xiii) careers advice; xiv) daily career news and events; xv) employability/career skills; and xvi) subject choice.

The unique architecture allows information to flow freely between sections. This helps users to plan and direct their careers in the context of the labour market and available education and employment opportunities.

The site has over 2 million visitors a year (from the Irish population of 4.9 million). One of its greatest achievements was using all the information to develop two bespoke guidance programmes. During COVID-19 lockdowns, these programmes have been invaluable to both the guidance community and their clients. They have allowed the guidance relationship and practice to continue seamlessly in a remote setting.

One key success factor was CareersPortal's ability to engage and collaborate with a wide selection of public and private stakeholders who agreed to help create content. The central advisory board, made up of guidance counsellors from across the community, is another key success factor. Connecting with and training career guidance professionals in the use of the resources and in understanding their role as gatekeepers has been essential.

Source: Careers Portal Ireland (n.d.[28]), https://careersportal.ie/about.php (accessed on 20 October 2021).

Prospective students of higher education in Brandenburg – and the rest of Germany – need well-structured information and online guidance tools to make informed choices about their education pathways and study programmes. The federal government could work on making the *Arbeitsagentur.de* or another web portal a comprehensive information and counselling online tool for prospective students at German HEIs. This project could be overseen by a joint taskforce of the federal ministries responsible for employment, education and sciences, and the economy; BA and chambers of commerce and crafts; experienced career counsellors; and experts from the secondary and post-secondary education sectors.

Ensure strong study orientation support in Brandenburg

Advisory tools and career information resources are critical mechanisms for helping students make wise choices. However, people will only access those tools and resources if they are focused on their studies and recognise the importance of education in opening career opportunities. That orientation starts from a young age and gains momentum as the student progresses through education. The comprehensive, integrated information resources and advisory tools discussed above contribute to that process. However, they are only one part of the broader orientation. Online tools can help students explore educational options and narrow them down to their interests, aptitudes and career expectations (Vuorinen, R., Sampson, J. P., & Kettunen, J., 2011[29]). However, these tools are rarely sufficient to motivate students to enter higher education, especially those from low-income families.

The orientation process involves many different components:

- **Brandenburg's schools** provide career and study orientation to students. However, the guidance staff at schools are often full-time teachers, who provide career and study orientation to students alongside their teaching responsibilities. Despite the training and support available to those teachers, it is unclear how well they can keep up to date on educational options, funding options (such as scholarships and BAföG) and labour market needs. In addition, schools struggle to support students and their parents with their applications. Yet support with applying for higher education and financial aid, provided in person, can boost enrolment in higher education (Bettinger et al., 2012[30]) (Oreopoulos, P. and R. Ford, 2016[31]).

  An information and guidance offer that combines all of the above aspects delivered across all types of in-state schools and funded appropriately could reduce uncertainty about the cost and labour market relevance associated with higher education in Brandenburg.

  Brandenburg's schools could also be more active in nominating gifted school students for scholarships of excellence offered by *Studienstiftung des deutschen Volkes* and informing about other scholarships. In the last decade, only one in four schools in Brandenburg invited to nominate graduates by the Foundation has done so compared to half of schools nationwide.
- **Parents and caregivers** play an important role over many years in the orientation of young people towards their career and further education choices. They are role models and act as counsellors. Often, they are decisive participants in the decision-making process. However, parents may lack information about educational paths and developments in the labour market. An additional challenge for parents is how to talk to their children about occupations, the labour market and the occupational implications of educational choices in ways that engage and make sense to students. Ireland's "CareersPortal" website (Box 4.8) supports parents and caregivers in this by providing questions that can stimulate conversations. In addition, public service offices would also need to be mandated and trained to provide advice and support, particularly to parents and working adults in the study and career choice decision, or to refer them to specialised counsellors in the field. Such offices include local employment agencies, revenue agencies and social welfare offices.
- **Brandenburg's HEIs** and *Netzwerk Studienorientierung* provide career and study orientation to prospective students in a structured way, including via digital counselling. StudiPortal is expected to offer online study orientation, preparation and guidance linked to the *studieren-in-brandenburg.de* website. MWFK has assured funding of these structures within HEI contracts and has expanded their mandates, but funding beyond 2023 remains an issue. However, HEIs are only likely to be effective in counselling when students have developed some level of orientation towards higher education. Further, it is not clear whether HEIs' counselling is reaching prospective students from disadvantaged families or female students. Targeted outreach to vocational schools, and HEI role model and mentoring programmes may help raise the aspirations of remote families, those from low SES families and girls. In addition, the good showing of an HEI or study programme in rankings can draw interest from prospective students and their parents. Finally, HEIs should

continue to invest in digital marketing and to increasingly leverage social media platforms – particularly WhatsApp, Instagram and TikTok, Germany's most widely used platforms among youth (Statistisches Bundesamt, 2019[32]), as this is where they meet (prospective) students today.

- **Student mentors and ambassadors**: The federal initiative *ArbeiterKind.de* uses volunteers – mostly students or academics – to target advice on higher education options to school students whose families have no experience of higher education in some parts of Brandenburg. Most of the volunteers are first-generation HEI students who use their own experience to encourage those who may not have thought of higher education. Austria's recent experience in promoting access to higher education for underrepresented groups provides a useful model for regional and institutional initiatives (Box 4.9). Student ambassadors can also spread the word on line if they manage a social media channel and feed it in with videos about their lives as students. Successful and influential alumni can also help with student recruitment.

Box 4.9. Austria's policy agenda to promote access to higher education for underrepresented groups

Austria promotes access to higher education among students from underrepresented groups, including those with *Berufsreifeprüfung* (professional matriculation examination), those whose parents do not have a *Matura* (higher education entrance qualification), those from rural regions and those with a migrant background.

Austria has a number of regional and institutional initiatives to increase higher education uptake.

- The University of Innsbruck launched the "*Chill die Basis*" project that aims to achieve equitable access to higher education in Tyrol. Bringing together five universities, the Chamber of Labour and the Psychological Student Advisory Service, the project examines inequalities in access and devises measures to reduce them (University of Innsbruck, 2021[33]). The measures include an outreach programme "Talent Scout" – visiting schools in the region to provide prospective students with individual guidance (University of Innsbruck, 2021[34]).
- The Styrian University Conference, comprising all nine HEIs in Styria, provides prospective students with information on study programmes and advice services on line and via phone (CAMPUS 02, 2021[35]). The University of Graz in Styria also offers targeted support and information services to first-generation students and students from a migrant background as part of the project *Peer Mentoring/Die Ersten in der Familie, die an die Uni gehen* (Peer Mentoring/The First People in the Family to Go to Uni). It offers individual consultation and counselling to the targeted students and helps them develop their social network upon enrolment (University of Graz, 2021[36]).

A review of these measures shows that accessible peer support and individual counselling have a positive impact on access to higher education. In addition, information and support from outside of the school system were found to be important as many Austrian students do not enrol in higher education directly on completion of secondary education. The review suggests that stronger links are needed among information on study and career options, counselling provision, and information on financial and non-financial support, to attract more talent from underrepresented groups (BMBWF, 2017[37]).

The National Strategy on the Social Dimension in Higher Education has set national goals, including nine quantitative targets reflected in performance agreements with public universities and a financing plan for universities of applied science. The targets include reducing underrepresentation of students whose parents do not have a Matura (high school graduation), and reducing regional differences in access to higher education. The federal education ministry also aims to improve the quality and

accessibility of information and promote more targeted communication to increase higher education uptake in underrepresented groups.

Source: University of Innsbruck (2021[33]), *Chill die Basis*, https://www.uibk.ac.at/soziologie/forschung/sozialstrukturanalyse-sozialpolitik-sozialforschung/chill-die-basis/; University of Innsbruck (2021[34]), *talentescout-tirol*, https://www.uibk.ac.at/public-relations/studienberatung/talentescout-tirol.html; CAMPUS 02 (2021[35]), *Steirische Hochschulkonferenz startet Info-Offensive für Studieninteressierte*, https://www.campus02.at/news/steirische-hochschulkonferenz-startet-info-offensive-fuer-studieninteressierte/; BMBWF (2017[37]), *Nationale Strategie zur sozialen Dimension in der Hochschulbildung Bildungsministerium für Bildung und Forschung*; BMBWF (2021[38]), "*Soziale Dimension*", https://www.bmbwf.gv.at/Themen/HS-Uni/Studium/Leitthemen/SozDim.html (accessed 1 February 2021).

Bringing higher education physically closer to prospective students can also bridge the gap. Following the example of the "*Campus connectés*" in rural France (Box 4.10), the seven *Präsenzstellen* could be also used as sites for regional students enrolled at Brandenburg's HEIs. Each centre could provide a connected classroom where students taking a course off-campus could work under supervision and benefit from individual and collective tutoring.

Box 4.10. *Campus connectés*: Study sites to facilitate access to higher education in rural France

Campus connectés (CCs) are state-certified sites where students can study remotely, with tutoring, in courses offered by French HEIs. CCs allow people to study close to their home in rural areas; every student is registered to a public university. These places provide connected classrooms where students can work. Students are supervised and benefit from individual and collective tutoring. Since first opening in 2019, CCs have drawn strong demand.

CCs aim to expand opportunities to pursue higher education, especially in rural regions where too many high school students choose not to enrol at a distant university campus in an expensive large city. Students in a CC can pursue the same courses as they would in a university campus without leaving home.

Most learners are young students who have just completed secondary education, or who have already started higher education. There are also adult learners. All study towards a bachelor's or master's degree, or a university or technological diploma. They must be on-site at least 15 hours a week to receive guidance and advice from the tutor. They can also benefit from communication workshops, foreign language classes or meetings with business leaders in the region.

Chances for success in distance higher education in France are much lower than in university campuses. Therefore, in-person tutoring and social interaction are key features of CCs. On-site tutors organise educational workshops and social events, which allow people in the same cohort to connect with each other.

There are 89 CC sites in metropolitan France and overseas. The sites receive EUR 50 000 per year, and the French HEI partner receives EUR 10 000 per year to support their collaboration. The total budget of the CC initiative is EUR 25 million over five years. CCs aim to enroll 5 000 students per year within the next five years. While this is a small share of each year's cohort of 700 000 higher education students in France, this is considered an important step in rural areas.

Source: Campus connectés (n.d.[39]), www.enseignementsup-recherche.gouv.fr/pid39023/www.enseignementsup-recherche.gouv.fr/pid39023/les-lieux-labellises-campus-connecte.html (accessed on 25 March 2021).

Policy recommendations

Box 4.11. Policy recommendations to ensure prospective students have structured information to make informed choices and ensure strong study orientation support

Study and career orientation at schools

- Study and career orientation at schools should be comprehensive and include i) information about study and career paths and programme options; ii) information about financing options for the various education pathways, including higher education and vocational education and training (VET), and non-financial support mechanisms available to students; and iii) individual counselling for students and parents. Career orientation should be appropriately funded across all public schools and peer learning should be encouraged among all schools – public and private.
- Brandenburg's schools should more actively use their right to nominate gifted school students for scholarships of excellence offered by *Studienstiftung des deutschen Volkes* (German National Merit Foundation) and provide better information and support for scholarship applications.

Study and career orientation at HEIs

- MWFK should ensure sustainable funding for the (currently temporary) structures of study and career orientation at HEIs, particularly *Netzwerk Studienorientierung* (Study Orientation Network) and *Präsenzstellen* (presence centres) and consider extending the mandate of *Präsenzstellen* to also use them as study sites.
- HEIs should continue to reach out to schools, including vocational schools, via *Netzwerk Studienorientierung* and *Präsenzstellen* and offer individual guidance and peer support, particularly to disadvantaged school students.
- MWFK and *Ministerium für Bildung, Jugend und Sport – MBJS* (Ministry for Education, Youth and Sports) should take steps to introduce a student-mentorship programme between school students and HEI students, particularly for disadvantaged students.

HEI digital marketing

- HEIs and *Netzwerk Studienorientierung* should maintain the recently developed digital information and counselling offer and continue to invest in digital marketing and to leverage social media platforms, as this is where they increasingly meet (prospective) students.
- HEIs should consider employing student ambassadors to manage social media channels, informing about life on campus and engaging alumni in student recruitment.

Career orientation information and tools

- MWFK should advocate among German states and also with the federal government for career advice tools that integrate all forms of relevant data, and for a one-stop national career and study guidance website that would provide impartial, objective and factual information in a structured way and that would give access to interactive tools to aid the decision-making process, ensuring:
    - that the site is designed to help young people, their families and advisers by reducing uncertainties (for instance, about labour market needs), by providing tools that help them clarify their career and study interests, and by helping them navigate the myriad study and career options and their funding;

- that the website explains the benefits of lifelong learning and provides information and tools to help mature learners and workers who are seeking help to deepen their skills or to shift their career trajectories.

- The state government should maintain and expand the use of tailored information channels to target learners in Brandenburg (and other German states, notably, neighbouring Berlin), with the two Brandenburg advisory websites *studieren-in-brandenburg.de* and *fachkraefteportal-brandenburg.de* via social media, targeted online ads, billboard ads, etc.
- *Netzwerk Studienorientierung* should regularly update the *studieren-in-brandenburg.de* website, which is already well structured, to include new useful features and relevant information.

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5 System performance in terms of student success

This chapter discusses the profile of the student population in Brandenburg. It examines factors such as enrolment and study fields, as well as the age and gender of students in higher education. It also looks at the growing number of international students. Measures of success in the Brandenburg system are compared to other German states, especially completion rates and the time taken to complete a qualification. This chapter also discusses the system of financial aid that supports higher education students, examining the impact of federal financial assistance and scholarships from merit foundations.

The student population in Brandenburg

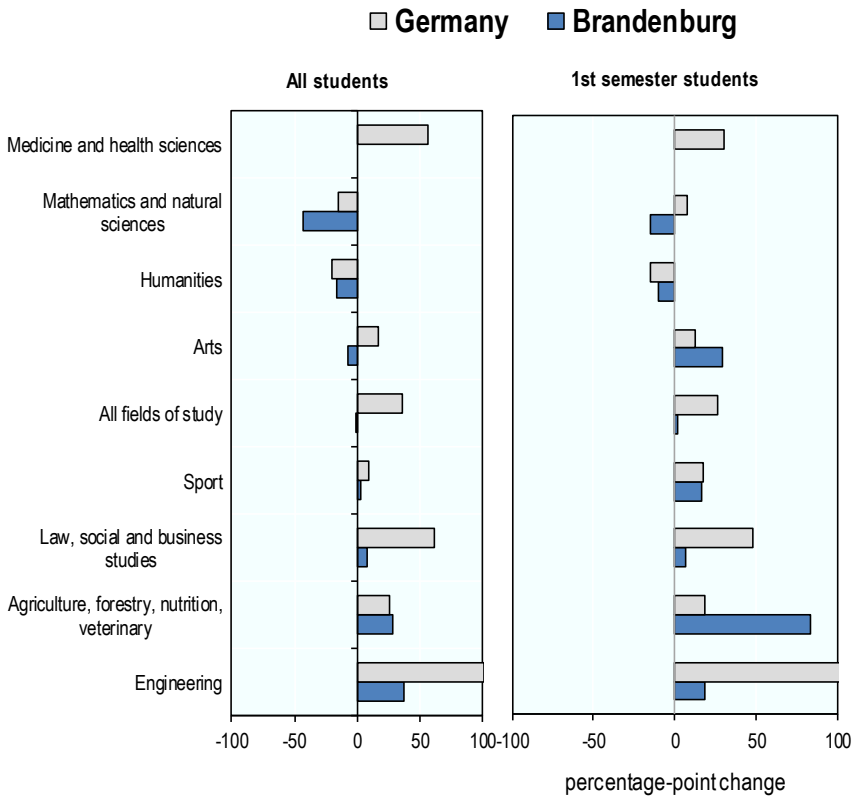
Germany's student numbers have been increasing; enrolments in Brandenburg's HEIs remain stable

The number of students in higher education varies greatly between the Western and Eastern states. Since 2000, the number of students in higher education in Germany's Western states has increased by 64%. The East German states have been recovering from migration losses after reunification and, thus, the increase in student numbers was lower (46%). The number of students in Brandenburg increased from 33 000 in 2000 to 50 360 in the winter semester 2020/21. However, most of that increase occurred before 2015; over the last five years, enrolments have been stable or declining.

While Brandenburg has 3% of the German population, it accounts for only 1.7% of all students (the fourth lowest share) in German higher education. In light of the high median age of Brandenburg's population, its relatively low contribution to the overall student population in Germany is not surprising (Statistisches Bundesamt, 2020[1]).

While student numbers have been relatively stable over the last decade, study fields have been shifting

Figure 5.1. Changes in student numbers in Brandenburg, 2010-19



Source: Statistisches Bundesamt (2021[2]), *Hochschulstatistik*, https://www.destatis.de/DE/Themen/Gesellschaft-Umwelt/Bildung-Forschung-Kultur/Hochschulen/Methoden/Erlaeuterungen/hochschulen.html (accessed on 15 March 2021).

StatLink https://stat.link/2de7wm

While student numbers in Brandenburg have remained almost stable over the last ten years, there has been a significant shift in study fields (Figure 5.1). Student numbers have dropped in mathematics and natural sciences by 43%, in humanities by 16% and in arts by 8%. Over the same period, numbers have grown in engineering by 37%, in agriculture, forestry, nutrition and veterinary by 28% and in law, business and social sciences by 8%.

The largest study fields in Germany are law, business, social sciences (37% of all students); engineering (27%), humanities (11%) and mathematics and natural sciences (11%). The overall picture for Brandenburg is similar, but there is a higher share of Brandenburg students in these fields: law, business and social sciences (39%), humanities (19%); sports (2.1%) and agriculture, forestry, nutrition, veterinary (3.6%). Conversely, engineering (22%), mathematics and natural sciences (10%) and human medicine and health sciences (1.3%) are comparatively lower.

As in most German federal states and OECD countries, gender differences between fields of study are common in Brandenburg's higher education system. Female students make up a higher share than male students in law, business, social sciences (43% vs. 35%), humanities (24% vs 13%) and agriculture, forestry, nutrition, veterinary (4.3% vs 2.8%). Enrolments in engineering (32% male vs. 12% female) and sports (2.9% male vs. 1.4% female) are more popular among men than women.

The universities of applied sciences (UAS) have a stronger focus in some fields of studies than universities. For example, 80% of all students study business, social sciences and engineering at Brandenburg's UAS (compared to 54%, including law studies, at universities). Certain other fields are less well represented at UAS such as humanities (3.1% vs. 25% at universities), mathematics and natural sciences (0.9% vs. 13% at universities). On the other hand, agriculture, forestry and nutrition accounts for 9.5% of students at UAS and only 1.2% at universities.

Brandenburg has an above-average share of students pursuing graduate and doctoral degrees

Compared to the German average, a higher percentage of Brandenburg's students pursue a master's (24% vs. 19%) or a doctoral degree (5.8% vs. 4.1%). The share of master's students at universities is significantly higher than at UAS (32%[1] vs. 20%). However, both are above the German average (27% at universities and 15% at UAS). Similar to the German average, almost 9% of students are in a teaching programme; of those, two-thirds are in a bachelor's programme and one-third in a master's programme.

Brandenburg's students are predominantly female and older, but there are differences by HEI type

In Brandenburg, female students are in the majority (52%; third highest share among states). This is especially the case at universities (54%) compared to 49% of all German students and 51% at German universities. They are, however, in the minority at UAS (45%). The gender profile of Brandenburg's UAS more closely resembles that of institutions in the West (44% women) than in the East German states (49%). This probably results from the strong technical-engineering orientation of most study programmes at UAS in Brandenburg.[2]

Brandenburg's higher education students are older than the average German student: more than half (51%) of all students in Brandenburg are over 25 years of age and 22% are over 30 compared to 45% and 17% in Germany, respectively. Interestingly, UAS have a higher share of younger students than universities (42% aged 20-25 at UAS vs. 39%). Students 35 years and older, who often study part-time or with a more flexible agenda, are also more highly represented in UAS than in universities (10% vs. 8%).

Brandenburg has a growing number of international students

From 2000 onwards, the number of international students in higher education has increased in Brandenburg from 2 700 to 8 700. In 2019/20, their share increased from 9.2% to 18%, which makes Brandenburg's higher education system the second most international after Berlin. There is a particularly high share of foreign students in Brandenburg's universities (20%). The share of international students at UAS (14%) is also above average.

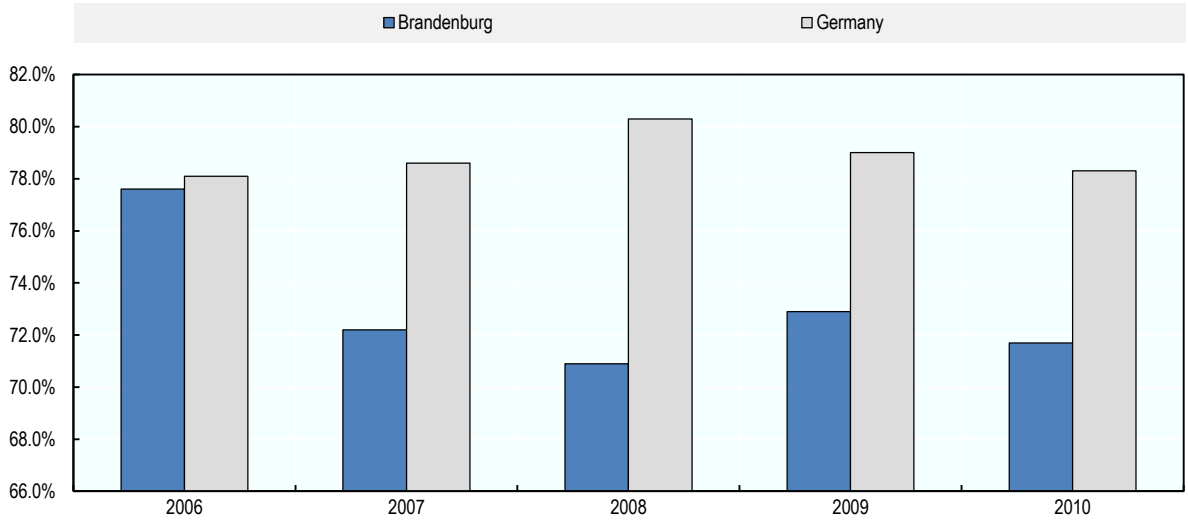
Most international students in Brandenburg study science, technology, engineering or mathematics (STEM) and business fields, which are in demand by the state labour market. This largely compensates for declining student demand from Brandenburg and the rest of Germany in these fields of study at some of the local higher education institutions (HEIs). International students constitute one-third of the student body at the Brandenburg University of Technology Cottbus-Senftenberg and one-fourth at the Europa University Viadrina.

Timely completion and the risk of dropping out are a concern

Brandenburg's students take longer to complete their studies than those in other German states and some may not graduate at all (Figure 5.2). In 2018, eight years after enrolling as a student for the first time (2010 cohort), only 72% of Brandenburg's students had completed their studies (compared to 78% on average, in Germany). This was the third lowest rate in Germany. The trend has been similar in most cohorts. Only the 2006 cohort had performed close to the German average of 78% (completing 12 years after enrolment). Some calculations of dropout rates from Germany, based on another methodological approach[3], indicate that slightly more than one-quarter of students drop out of higher education (Heublein, U. and R. Schmelzer, 2018[3]).

Students give both personal and professional reasons for non-completion. Some students, for example, may never have intended to complete. They enrolled only to benefit from their student status or else to acquire a particular skill.

Figure 5.2. Completion rates in Brandenburg and Germany in 2018, by cohort



Source: Statistisches Bundesamt (2020[4]), *Bildung und Kultur: Erfolgsquoten, Berechnung für die Studienanfängerjahrgänge 2006 bis 2010, Statistisches Bundesamt.*

StatLink https://stat.link/mg079d

The share of students who take a leave from their studies is relatively high (20% vs. 16%, in Germany) according to the *21. Sozialerhebung* (21st Social Survey of German students) (Middendorff, E. et al., 2017[5]) (Middendorff, E. et al., 2017[6]). On average, one in four students in Brandenburg takes longer than two semesters, compared to one in five across Germany. However, there are differences between female (1.8 semesters) and male students (2.5 semesters). Almost twice as many university students as students at UAS take a leave from education. The patterns differ also by socio-economic background. Disadvantaged students tend to take shorter leaves than those with high socio-economic background and for different reasons.

The rationale for taking a leave from studies ranges from personal to professional reasons. Health and financial problems and finding employment are among the major reasons for interrupting their studies. In contrast to the rest of Germany, however, relatively few students from Brandenburg declare taking a leave for an internship opportunity or a stay abroad. In addition, more than one-third of Brandenburg's leavers[4] (36%) do so questioning the purpose of their studies – a much higher rate than the German average (23%) (Schirmer, H., 2017[7]). The latter result, however, represents largely the views of students in humanities and social sciences, as it refers predominantly to responses from the University of Potsdam and not the whole higher education sector in Brandenburg.

The system's relative flexibility allows students to move easily between programmes and HEIs. Socio-economic background plays a role, too: 38% of students from a non-academic household and 27% of students from high socio-economic background switch between programmes or institutions. Again, many more university students use their right to switch a programme. Students usually switch to another programme within their field of study.

Student financing

Many of Brandenburg's students come from educated households, but financing their studies remains challenging

The share of students whose parents have a higher education is slightly higher in Brandenburg (53%) than the German average (48%). However, relatively fewer students in Brandenburg are financially supported by their parents (79% vs. 86%) and the average monthly payments are lower (EUR 483 in Brandenburg vs. EUR 541 in Germany). Moreover, around 70% of students work during their studies in both Brandenburg and the rest of Germany. However, on average, 68% of Brandenburg's students use their earnings to finance their studies compared to only 61% in Germany (Table 5.1).

Table 5.1. Sources of income to finance studies, 2016

Sources of income	All students	
	Brandenburg	Germany
Parents	79%	86%
Parents (in EUR)	EUR 483	541
Domestic partner	1%	1%
Relatives	19%	19%
Own earnings	68%	61%
Own earnings (in EUR)	EUR 440	384
Savings	16%	18%
I would like to be financially independent from my parents	72%	67%

Note: Percentage of students who reported to receive income from the sources in the table and who responded "to a very large/large extent" to the question whether they would like to be financially independent from their parents, 2016.

Sources: Middendorff et al. (2017[5]), *Die wirtschaftliche und soziale Lage der Studierenden in Deutschland 2016. 21. Sozialerhebung des Deutschen Studentenwerks, durchgeführt vom Deutschen Zentrum für Hochschul- und Wissenschaftsforschung, Bundesministerium für Bildung und Forschung*; Middendorff et al. (2017[6]), *Die wirtschaftliche und soziale Lage der Studierenden in Deutschland 2016. 21.Sozialerhebung des Deutschen Studentenwerks – durchgeführt vom DXHW. Randauszählung zur 21. Sozialerhebung für deutsche und bildungsinländische Studierende für Brandenburg, Bundesministerium für Bildung und Forschung*.

Not surprisingly, the highest study-related expenses are for housing. Potsdam ranks as the most expensive city in the Eastern German states and has the seventh highest employment rate in Germany among students to cover their living costs. The lack of affordable housing in Potsdam presents an important challenge for all students. However, it is more difficult for international students because of discrimination in the housing market (Apolinarski and Brandt, 2018[8]). By contrast, all other HEI locations in Brandenburg offer more affordable living space. Around 18% of students in Brandenburg live in on-campus student accommodation/dormitory facilities (12% in Germany) (Middendorff, E. et al., 2017[5]) (Middendorff, E. et al., 2017[6]).

Federal financial assistance is available, but not many students are eligible

Student financial support in Germany is a federal government responsibility. The major financial aid comes from *Bundesausbildungsförderungsgesetz – BAföG* (Federal Training and Education Assistance Act). German students (and foreign students who have long-term prospects of remaining in Germany[5]) who meet the scheme's age limits[6] are eligible to apply for financial assistance. The assistance duration corresponds to the regular period of the study programme. The amount of the assistance depends on the student's own income and financial means, as well as those of his or her parents and domestic partner. Half of the support takes the form of a grant, while the other is an interest-free state loan totalling no more than EUR 10 000. This loan must be repaid in instalments after completion of regular study. Since 2016/17, students in higher education not living with their parents may receive up to EUR 735 per month. Where applicable, they may receive a child-care supplement of EUR 130 per month for each child (Kultusministerkonferenz, 2019[9]).

Brandenburg has a high proportion of older students and many students take longer to complete their studies. Only around 10 000 students (20%) received BAföG in 2019, which is the German average. Almost half of Brandenburg's beneficiaries receive full funding. The average monthly payment to Brandenburg's students of EUR 551 is the third-highest after Hamburg and Berlin. In light of high housing costs, Potsdam is ranked the seventh most expensive study location in Germany according to (Middendorff, E. et al., 2017[5]) (Middendorff, E. et al., 2017[6])*;* the BAföG alone does not appear sufficient to cover student living expenses in that city. Students from low socio-economic backgrounds are in an especially difficult position: 41% in Brandenburg (vs. only 16% in Germany) do not qualify for BAföG because they have been enrolled longer than the regular study time of their programme (Table 5.2).

Around 65% of Brandenburg's students and 68% of German students overall do not qualify for assistance due to the relatively high income of their parents or domestic partner (Table 5.2). Yet 72% of Brandenburg's students would prefer being financially independent from their families (Table 5.1).

The support system is supplemented through *Bildungskreditprogramm* (Educational Credit Programme). This programme is offered by the federal government in conjunction with *Kreditanstalt für Wiederaufbau – KfW* (Reconstruction Loan Corporation) and *Bundesverwaltungsamt – BVA* (Federal Office of Administration), which can support students in an advanced stage of their education. This loan scheme can be used to fund exceptional expenses not covered by the Federal Training Assistance Act[7] (Kultusministerkonferenz, 2019[9]).

As noted in Chapter 3, the federal assistance for continuing education and training (*Aufstiegsfortbildungsförderungsgesetz,* AFBG) was initially conceived to finance the skills development of craftsmen and other vocationally trained workers. With its most recent 2016 amendment, AFBG can

cover some types of continuing education and training courses at HEIs. Specifically, the study must not be eligible for support under BAföG or Sozialgesetzbuch – SGB (Social Security Code) and cannot be for an academic degree. Unlike the BAföG scheme, AFBG financial aid does not depend on the student's age and is not based on parents' income.

Table 5.2. Reasons for having a BAföG application rejected

Percentage of students whose application was rejected, by reason for rejection, 2016

	All students		Students from low SES	
	Brandenburg	Germany	Brandenburg	Germany
Income of parents/domestic partner	64.7	67.8	67.2	44.4
Own income	21.7	25.4	17.9	24.5
Funding period limit exceeded	13.1	8.3	41.0	15.5
Age limit exceeded	4.9	3.0	3.6	6.2
Studies not eligible for funding	3.6	2.5	3.8	3.4

Sources: Middendorff et al. (2017[5]), *Die wirtschaftliche und soziale Lage der Studierenden in Deutschland 2016. 21. Sozialerhebung des Deutschen Studentenwerks, durchgeführt vom Deutschen Zentrum für Hochschul- und Wissenschaftsforschung, Bundesministerium für Bildung und Forschung*; Middendorff et al. (2017[6]), *Die wirtschaftliche und soziale Lage der Studierenden in Deutschland 2016. 21.Sozialerhebung des Deutschen Studentenwerks – durchgeführt vom DXHW. Randauszählung zur 21. Sozialerhebung für deutsche und bildungsinländische Studierende für Brandenburg, Bundesministerium für Bildung und Forschung*.

Scholarships from merit foundations offer another funding option

Gifted and high-achieving students can be supported by a grant from the 13 foundations for the promotion of young talent supported by the federal state. The largest of these groups is *Studienstiftung des deutschen Volkes* (German National Merit Foundation) and the *Deutschlandstipendien*. Around 1% of holders of these awards are from Brandenburg. The remaining organisations mirror the various religious, political, business or union-based organisations in Germany and support Brandenburg's students to various degrees (Table 5.3).

On completion of a first degree, students may also receive scholarships to support further studies in line with the Postgraduate Assistance Acts. *Begabtenförderungswerke* (foundations for gifted students) also provide grants to enable students with a first degree to study for a doctorate. Gifted people with professional experience who want to study after several years of professional activity may apply for "upgrading" scholarships via *Stiftung Begabtenförderung berufliche Bildung gGmbH – SBB* (Vocational Education and Training Promotion Foundation for Gifted Young People). For 2008-21, less than 1% of all beneficiaries of that scheme has been studying at Brandenburg's HEIs. As noted in Chapter 3, SBB also provides scholarships to support continuing education measures for young people in employment. These youth must have completed a recognised course of vocational education and training or one of the health sector professions governed by federal law. They must also be younger than 25 when they start the programme (Continued Training Scholarship).

The German Academic Exchange Service (*Deutscher Akademischer Austauschdienst (DAAD)*) offers grants for foreign students and up-and-coming academics and scientists. These grants support studies or further education of limited duration at a German HEI. Alongside the DAAD, some *Länder* also have special funds for foreign students at the local institutions of higher education.

Table 5.3. Numbers of scholarship holders in 2010-19, by merit foundation

	2010			2015			2019		
	Scholarship holders from Brandenburg	Overall number of scholarship holders	Brandenburg's share	Scholarship holders from Brandenburg	Overall number of scholarship holders	Brandenburg's share	Scholarship holders from Brandenburg	Overall number of scholarship holders	Brandenburg's share
Heinrich Böll Foundation	33	839	3.93%	40	978	4.09%	42	1 143	3.67%
Rosa Luxemburg Foundation	24	715	3.36%	56	966	5.80%	47	971	4.84%
Foundation of German Business	41	1 350	3.04%	30	1 361	2.20%	26	1 721	1.51%
German National Merit Foundation	128	11 336	1.13%	128	12 158	1.05%	136	12 953	1.05%
Hans Böckler Foundation	59	1 993	2.96%	72	2 190	3.29%	62	2 393	2.59%
Friedrich Ebert Foundation	76	2 117	3.59%	90	2 396	3.76%	73	2 398	3.04%
Deutschland stipendium	81	5 375	1.51%	367	24 276	1.51%	557	28 159	1.98%
							2008-21 period		
SBB-Upgrading scholarship							117	13 434	0.87%

Notes: Several foundations are not listed in the table for the following reasons: The Hanns Seidel Foundation does not support any students at Brandenburg's HEIs, which is not surprising considering its focus on the federal state of Bavaria; the Konrad Adenauer Foundation and the Friedrich Naumann Foundation did not share any numbers with the OECD; the foundations affiliated with religious structures were not contacted to participate in the survey. The 2010 numbers for the Deutschland Scholarship stem from 2011.
Source: Numbers have been provided by each of the foundations individually; data about the *Deutschlandstipendium* come from Statistisches Bundesamt (2021[10]), *Deutschlandstipendium*, https://www.destatis.de/DE/Themen/Gesellschaft-Umwelt/Bildung-Forschung-Kultur/Bildungsfinanzen-Ausbildungsfoerderung/Tabellen/_tabellen-innen-deutschlandatipendium.html (accessed on 15 March 2022).

Information on student financial aid options for higher education seems to be fragmented and not offered by all actors involved in career and study orientation in Brandenburg

Studentenwerke (two student service organisations in Brandenburg) are the major information and guidance points of contact for student financing in Brandenburg, including on BAföG applications. HEIs, their *Netzwerk Studienorientierung* (Student Orientation Network) and *Präsenzstellen* (presence centres) also advise prospective students on the cost of study and funding but not necessarily on the BAföG application process. The employment agency refers school students to relevant websites and agencies but does not provide targeted guidance. Secondary schools in Brandenburg are the major providers of career and study orientation in Brandenburg. However, they do not provide advice on funding options for higher education.

A recent project, funded by European Social Fund (ESF) and the *Ministerium für Wissenschaft, Forschung und Kultur – MWFK* (Ministry of Science, Research and Culture) aims to provide more structured information about student financing options, including scholarships. This project provides an online

overview of options for prospective students and study and career counsellors (Technische Hochschule Wildau, 2018[11]).

Assessment and policy recommendations

The amount of time that students take to complete their degree has implications both for them and the economy. Students who complete within the regular time can contribute to the labour market earlier. This provides employers with greater access to the skills they need to support innovation. Taking longer than expected increases the risk of dropping out of higher education without a qualification. This, in turn, heightens the risk of being left behind as the economy changes. Non-completion also raises efficiency concerns as it can represent a waste of financial and human resources in the state higher education system.

Increase student preparedness for higher education

Several factors explain why Brandenburg's students do not complete their studies in the prescribed period. Some students may not have the skills to succeed in the chosen programme or may not receive enough support from their HEI to help them succeed. In addition, transfer pathways and credit recognition make it relatively easy to switch programmes or HEIs; many students in Brandenburg do so.

HEIs have successfully implemented measures to orient and prepare students for studies

Brandenburg's HEIs have successfully implemented a number of measures to orient and prepare students for studies. These include self-assessment, student laboratories and junior studies, projects that appeal to special groups (e.g. women for STEM), colleges or college-like programmes (Box 5.1). These initiatives are often funded by MWFK or the ESF.

Box 5.1. Selected measures at Brandenburg's HEIs to improve preparedness for studies

Colleges

Colleges are university preparation programmes, designed to help new students bridge the gap between secondary school and higher education. *Colleges* were initially set up at BTU Cottbus-Senftenberg, funded by ESF funds. The HNE Eberswalde has a "math clinic" accompanying the course and a one-week "college week" to prepare students for studies in the wood technology department. It hopes in this way to expand access to candidates from disadvantaged backgrounds and those coming to higher education from the workforce, as well as to immigrants. The FH Potsdam and the TH Brandenburg also established college-like structures but closed them when ESF funding expired.

In 2017, the BTU had a successful evaluation. Overall, the *college* was found to have met its objectives. The findings of the evaluation are summarised below:

- The *college* represents an appropriate and well-established answer to problems arising from demographic and social change (especially the increasing diversity of students).
- Thanks to the high level of commitment of university management, it has been possible to anchor the structure sustainably within the university and thus create an essential prerequisite for success.

In 2018, the *Stifterverband für die Deutsche Wissenschaft*, a German organisation seeking to address challenges in higher education, science and research, marked it *Hochschulperle* (a "university pearl") i.e. an innovative and exemplary project at an HEI (Stifterverband, n.d.[12]).

Junior study courses (*Juniorstudium*) and student labs

TH Wildau, BTU and the University of Potsdam provide junior study courses that allow students to attend lectures and collect European Credit Transfer and Accumulation System points while still at school. In addition, the three HEIs offer student labs in several technical and science fields targeting students from various age groups (Schülerlabor-Atlas, n.d.[13]). The Hasso Plattner Institute (HPI) at the University of Potsdam provides special support to students who are enthusiastic about computer science and mathematics (Hasso Plattner Institute, n.d.[14]). For an entire school year, the working groups (grades 7/8, 9/10 and upper grades) meet every two weeks on Tuesday afternoon. Under the umbrella of its Youth academy, the HPI combines further offers for students and teachers, including, for example, IT camps, workshops and project days for school classes or information events on its range of courses. *Nachhaltig studieren* (Studying sustainability and in a sustainable way) at the University for Sustainable Development Eberswalde is also a work camp with aims to give insights into courses, life on campus and professional perspectives; the camps are funded by the ESF (HNEE, n.d.[15]).

STEM-related measures

Most public HEIs have developed orientation measures with a special focus on science, technology, engineering and mathematics (STEM). Most HEIs offer self-assessment tests to help candidates better assess their preparedness for a STEM degree (Netzwerk Studienorientierung Brandenburg, n.d.[16]). As feedback, students receive a recommendation as to whether they need a study preparation course and, if so, which one would be the best fit. TH Wildau's *MINT-Orientierungsexpress* (STEM Orientation Express) uses senior female students to tutor and support women starting their studies in STEM. It is further developing the programme "TH MINT+", which provides an introduction and orientation to STEM courses (Technische Hochschule Wildau, n.d.[17]).

Sources: Stifterverband (n.d.[12]), *Hochschulperle, Stifterverband für die Deutsche Wissenschaft*, www.stifterverband.org/hochschulperle; Schülerlabor-Atlas (n.d.[13]), *Schülerlabore in Brandenburg*, www.schuelerlabor-atlas.de/schuelerlabore/in/Brandenburg; Hasso Plattner Institute (n.d.[14]), Youth academy, https://hpi.de/en/studies/before-your-studies/youth-academy.html; HNEE (n.d.[15]), *Hochschule – Offene Hochschule* – Future Camp Workcamps, *Hochschule für nachhaltige Entwicklung Eberswalde*, https://hnee.de/de/Hochschule/Offene-Hochschule/Future-Camp-Workcamps/Dein-Workcamp-Dein-Studium-Deine-ZukunftMit-den-HNEE-Workcamps-erfolgreich-ins-Studium-starten-K5642.html; *Netzwerk Studienorientierung Brandenburg* (n.d.[16]), *Mediatek der Online Angebote*, https://studieren-in-brandenburg.de/angebote/weitere-online-angebote-zur-studienorientierung/; Technische Hochschule Wildau (n.d.[17]), TH Mint +, www.th-wildau.de/hochschule/zentrale-einrichtungen/zentrum-fuer-qualitaetsentwicklung/th-mint/.

The state programme ESiSt has attracted many applications from international candidates, but its effectiveness is not clear yet

In 2017, the state government set up the *Erfolgreicher Studieneinstieg für internationale Studierende* in Brandenburg (EsiSt) (Successful Entrance to Studies for International Students) network. It seeks to help facilitate access to higher education for international students, including refugees, without a higher education entrance qualification recognised in Germany and/or who do not have the German language skills to take up studies. Its goal is to strengthen the loyalty of international students to Brandenburg's HEIs, especially in more peripheral regions of the state. The HEIs design, implement and execute the programme in co-ordination with the ESiSt network. There are dedicated state funds for this initiative. With this programme, the state government has gone beyond the resolution of the Standing Conference from May 2016 on "Access and admission to higher education for refugees" (Box 5.2).

Box 5.2. Federal policy to facilitate refugees' access to the German higher education system

Refugees who wish to study in Germany can access a wide range of support. *Bundesministerium für Bildung und Forschung* (Federal Ministry of Education and Research) provides higher education institutions (HEIs) with up to EUR 100 million over four years through *Deutscher Akademischer Austauschdienst* (German Academic Exchange Service).

The package of measures consists of three elements to help applicants:

- Refugees can take academic and scholastic aptitude tests through TestAS. The Office for International University Applications (uni-assist) can evaluate specialist language proficiency and verify education certificates.
- *Studienkollegs* and subject-related courses at HEIs prepare candidates for entry into specific fields of study.
- Students in teacher training offer support through buddy programmes and language training.

In December 2015, the *Länder* agreed on a joint procedure if applicants cannot provide complete evidence of a higher education entrance qualification obtained in their home country because of their refugee status.

In addition, in view of the influx of refugees, the Standing Conference of the Ministers of Education and Cultural Affairs agreed, in May 2016, on "Access and admission to higher education for refugees – possibilities for reducing the costs of enrolment". This draws on *Länder* regulations that enable the reduction of public fees and charges for attending an HEI.

Source: Kultusministerkonferenz (2019[9]), The Education System in the Federal Republic of Germany – A description of the responsibilities, structures and developments in education, *Kultusministerkonferenz*.

While the success of the programme is still unclear, it has attracted relatively high interest from prospective students. In 2019, more than 1 000 candidates applied for the language and specialist course programmes carried out as part of ESiSt. Three-quarters had a valid entrance qualification certificate but lacked the German language level required for their studies. Meanwhile, one-quarter had a foreign school leaving certificate that did not correspond to the German qualification. Only 328 candidates enrolled and 134 completed the programme successfully. There are still no data on the transition rate to higher education, but initial feedback shows that most successful participants studied at one of Brandenburg's HEIs; others moved on to higher education in another federal state. An evaluation of the ESiSt programme for international students is envisaged for 2023.

Support for students to complete their study programmes

Taking leave may suggest that students are not well prepared. It may also result from logistical difficulties (e.g. the need to balance commitments to study and employment, coupled with financial pressures and long commuting times). In addition, it may signal quality issues in learning and teaching. Completion rates in Brandenburg's higher education system are low with a completion rate of just above 70% eight years after starting. In addition, the share of Brandenburg students who take leave from their studies is higher than the German average, particularly among university students.

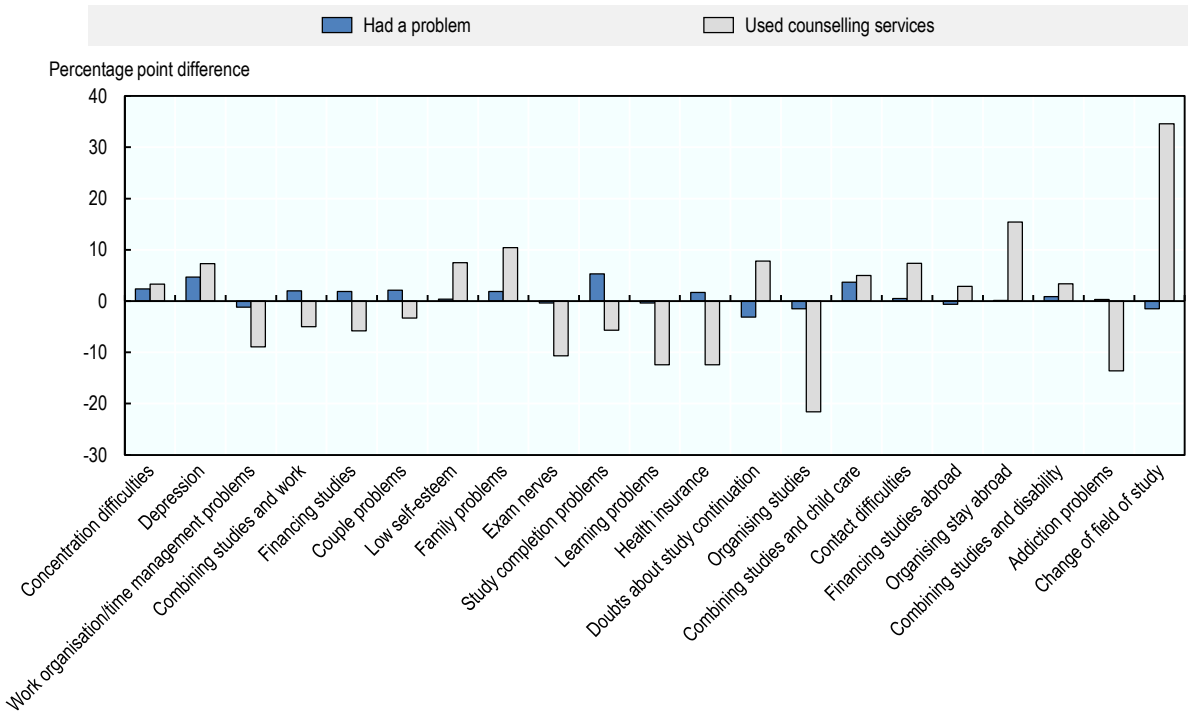
Counselling for financial problems and balancing commitments to study and employment

Various counselling services and structures are available at Brandenburg's HEIs and the *Studentenwerke*, and it appears that students make relatively good use of them (Figure 5.3). Difficulty with concentration

and depression – the two most pressing issues identified by the *Sozialerhebung* (Middendorff, E. et al., 2017[5]) (Middendorff, E. et al., 2017[6]) – seem well covered by the counselling offer. However, the visibility and scope of services should be examined. There are few services for many other pressing problems: time management, combining studies and work, personal finance, couple problems, study completion, organising studies and learning problems, among others.

Figure 5.3. The need for and the uptake of counselling services, by problem field

Percentage point difference between the students who answered "Yes" in Brandenburg, and those who answered "Yes" in Germany overall, to the questions about whether they need counselling on a particular problem and whether they have made use of counselling services to resolve that problem.



Note: Problem fields are in a descending order for Brandenburg's students. For instance, "Concentration difficulties" is the most prevalent problem for which Brandenburg's students report the need for counselling. By contrast, "Change of field of study" is the least prevalent problem field.

Sources: Middendorff et al. (2017[5]), *Die wirtschaftliche und soziale Lage der Studierenden in Deutschland 2016. 21. Sozialerhebung des Deutschen Studentenwerks, durchgeführt vom Deutschen Zentrum für Hochschul- und Wissenschaftsforschung, Bundesministerium für Bildung und Forschung*; Middendorff et al. (2017[6]), *Die wirtschaftliche und soziale Lage der Studierenden in Deutschland 2016. 21.Sozialerhebung des Deutschen Studentenwerks – durchgeführt vom DXHW. Randauszählung zur 21. Sozialerhebung für deutsche und bildungsinländische Studierende für Brandenburg, Bundesministerium für Bildung und Forschung*.

StatLink https://stat.link/8cbmrj

Brandenburg's Studentenwerke have noticed an increased need for psychological counselling in view of the COVID-19 pandemic. This particularly affects international students who may struggle to get help because of language and insurance barriers. In the group of students with special circumstances (students with disabilities/chronic illnesses, single parents with children), existing problems have also worsened. *Stu*dentenwerke met increased requests for advice by setting up additional appointments and offering advice via telephone and video conference.

HEIs' applications for funding in the last ESF round highlighted the need to make available advisory structures more visible and transparent for the various target groups. Within the 2021-27 funding period, HEIs will focus on offering better targeted support to first-generation students, students from a migrant background and international students. The experience of the Austrian University of Graz (see Box 5.3), which offers individual consultation and counselling to disadvantaged students and helps them develop social networks, could serve as a good example.

Students' long commuting time

The relatively long distance between living and studying locations and long commute time of students at Brandenburg's HEIs may be another factor leading to students dropping out or changing their HEI. Most of Brandenburg's students (59% vs. 16% of Berlin's students and 39% in Germany, on average) do not live near their study location, they commute 46 minutes in one direction on average (vs. 40 minutes in Berlin and 33 minutes in Germany), and 28% (vs. 11% in Germany) need more than an hour to get to their HEI from home, mainly via public transportation (57% vs. 41% in Germany) (Middendorff, E. et al., 2017[5]) (Middendorff, E. et al., 2017[6]). Maintaining a hybrid teaching approach (as was done during the COVID-19-related HEI closures) could reduce the need to attend class in person. This might help students with family and professional commitments at their living location to complete their studies. Others, by contrast, might get motivated to move to their study location if they are better aware of its advantages. For instance, the General Students Committee of the EUV Frankfurt/Oder is running the *Zieh nach Frankfurt* ("Relocate to Frankfurt") initiative. This informs students of all the advantages related to living and studying in Frankfurt/Oder. The low cost for rental accommodation, proximity to nature and modern facilities on campus are some of the benefits students can enjoy at Brandenburg's HEI sites.

Leaving higher education for a job

Leaving higher education can affect a non-completer's career prospects. Leaving higher education for a job may not be a critical issue for non-completers immediately. However, as employers increasingly demand advanced skills, lack of qualifications may impede non-completers from progressing in their careers. In Austria, informal agreements between job-out students and their employers provide offers of individualised learning formats in support for study completion (see Box 5.3). This is a potential solution for some cases but might be difficult to implement institution- or system-wide.

Box 5.3. Measures to improve completion rates in higher education in Austria

Only one-quarter of students in full-time bachelor's programmes complete their study within the within the typically allocated three (four) years in Austria. In response, the government has implemented several measures to improve completion rates.

Performance agreements exist between *Das Bundesministerium für Bildung, Wissenschaft und Forschung* (Federal Ministry of Education, Science and Research) and public universities. They include indicators related to student study progression, such as the number of "examination-active students" (i.e. those obtained at least 16 European Credit Transfer and Accumulation System credits per year), and the number of graduates, instead of a focus on student enrolment. In addition, the agreements consider *Studierbarkeit* ("studyability") of programmes. For example, whether programme design allows students with different needs to graduate within a normal timeframe. Universities have been working to improve *Studierbarkeit.*

The National Strategy on the Social Dimension in Higher Education also includes the improvement of academic success as one of the three targets, as well as more inclusive access to higher education (see Box 4.9). It outlines several academic and non-academic support measures, such as the provision

of preparatory and bridging courses before enrolment, courses on academic writing or "learn how to learn" after enrolment, tutoring, mentoring and buddy systems.

In addition, the strategy discusses further developing *Studieneingangs- und Orientierungsphase (STEOP)* (Introduction and Orientation Phase) of degree programmes. This phase is a legal requirement in the first year of most bachelor's programmes. The strategy seeks to examine whether some programmes could develop the STEOP into a general module that allows students to select their majors upon completion of the general module.

Moreover, given the high share of employed students in higher education, several support measures make higher education more compatible with work. No part-time higher education programmes are available in Austria. However, the universities of applied sciences offer study programmes for employed students in the evenings and on weekends. In addition, employed students can take up to 12 months of educational leave and receive compensation. The Austrian Economic Chamber and the Chamber of Labour also offer information on the topic of studying and working.

Source: BMBWF (2017[18]), *Nationale Strategie zur sozialen Dimension in der Hochschulbildung*, Vienna: *Bundesministerium für Bildung, Wissenschaft und Forschung*.

The rigid system of federal student financial assistance

The multiple pathways for entry into the state-wide higher education system provide the job-outs with some opportunities to return to higher education later in life. However, the relatively rigid system of federal student financial assistance (BMBF, n.d.[19]), BAföG – available only to full-time students younger than 30 for bachelor's degrees and younger than 35 for master's degrees and dependent on parents' income – may represent a hurdle. The analysis above suggests that financial problems present a barrier to completion for some of Brandenburg's students. They tend to be older, and hence more likely in a job and/or caring for minor children and elderly parents than the average German student.

Some European countries require their HEIs to enter into study contracts so they can monitor students' progress and ensure timely intervention; yet, again BAföG emerges as a hurdle. For these contracts to be effective, their purpose and reporting mechanisms should be clear to both HEIs and students and be linked to financial assistance. For instance, the Flemish Community has a study contract between HEIs and students that outlines how many European Credit Transfer and Accumulation System (ECTS) credits the student aims to complete during the semester and links student loan entitlements to achievement of this target. BAföG ties eligibility to the standard completion time of the student's programme. As a result, students who make slow progress may lose entitlement towards the end of their studies. However, limits to eligibility and delay of consequences for poor performance until the end of the programme blunt the effectiveness of BAföG as a performance incentive.

In addition, the differences in targeting and entitlements between AFBG and BAföG raise questions about the alignment of the two schemes and whether the application procedures are user-friendly and efficient.

Box 5.4 describes Norway's State Educational Loan Fund as a counterexample of a single provider of student financial assistance for all education levels and target groups.

Box 5.4. Norway's State Educational Loan Fund

Norwegian students are entitled to loans and grants from the State Educational Loan Fund. Students who have been accepted by a university, university college or other post-secondary education institution and fulfil certain basic criteria have a right to educational support.

The basic support is meant to cover living costs and study material. The amounts are universal for all students who are eligible for financial support. Students can apply for an additional loan to cover tuition fees. Students may receive loans and grants for up to eight years. They may have a one-year delay in completing the education without losing their right to support. There is an upper age limit of 65 years but no other age-specific rules.

Basic support is initially given as a loan. However, 40% of the loan may be converted to a grant for students who do not live at home with their parents. To receive the maximum grant, students have to pass all their examinations and not have income or assets exceeding certain limits.

Additional loans are available for students 30 years or older and for students with children. Additional grants are also available for students on maternity leave or with children, and for those who become ill or have a disability. The size of the grant depends on the income of the student and the income of the spouse or cohabitant.

Financial support is also given for study abroad for Norwegian citizens and certain foreign citizens.* Degree students abroad must study full-time to be eligible for financial support. Norwegian students abroad can, in addition to basic support, receive tuition support and support for travel expenses. Both tuition support and support for travel expenses are paid partly as grants and partly as loans.

Students must repay their loans when they complete their education or when they are no longer entitled to receive support. The repayment period is normally 20 years with the first payment about seven months after graduation. No interest is calculated or paid during the years of study. Interest is calculated only from the first day of the month following graduation. Interest is also calculated if the student interrupts his/her education or is no longer entitled to financial support. The government sets the interest rate for loans, but it is normally close to the private interest rate.

The State Educational Loan Fund has schemes and arrangements for loan remission and postponement of payment of interest rates. Any borrower may postpone repayments for up to 36 months during the entire repayment period. However, interest will still be calculated during the period of deferred payment. To be granted relief from paying interest, the borrower must have special circumstances, such as low income, unemployment, illness, childbirth or caring for small children. Also, the borrower's total income needs to be below certain limits. A borrower entitled to interest exemption may also be granted deferred payment for more than 36 months.

In some cases, all or part of the student's loan may be cancelled. This applies if the graduate lives and works in certain parts of Northern Norway and for some kinds of teacher education. All, or part of the loan, may also be cancelled if illness or injury prevents the graduate from working (the student would become eligible for a disability pension from the National Insurance Scheme). Debt is also cancelled on the death of the debtor. Foreign students from developing countries under the quota system are not expected to pay back their student loans if they return to their country of origin after studies in Norway.

Note: *This applies to foreign citizens of a country in the European Economic Area or European Free Trade Association who has accrued rights in Norway and foreign citizens with a permanent right of residence.
Source: OECD (2018[20]), *Higher Education in Norway: Labour Market Relevance and Outcomes*, OECD Publishing Paris, https://doi.org/10.1787/9789264301757-en.

Surveying students

A number of countries survey students as part of a suite of quality indicators for learning and teaching in higher education (Box 5.5). Student engagement surveys provide indicators on effective learning and teaching practices but also campus environment. The American example in Box 5.5 is designed to produce information that HEIs can use to identify areas of poor process and help them manage the quality of learning. *Studierendenbefragung* in Germany covers some important aspects such as campus environment, experience with work-based learning, stays abroad and leaves of absence. However, it does not include questions about academic challenge, learning with peers, teaching methods, and experiences with faculty. The framework contracts between MWFK and Brandenburg's HEIs envisage the collection and provision of some of these data. MWFK could manage a state-wide survey on student engagement with data provided to HEIs to feed into their quality improvement work.

Box 5.5. National Survey of Student Engagement (NSSE) in the United States

Student engagement surveys can provide valuable information to support institutions' quality assessments and planning. These surveys ask students about their behaviour and approaches to learning, and about the learning and teaching practices in higher education and the support provided by institutions.

The National Survey of Student Engagement (NSSE) in the United States, for instance, seeks detailed information from both first-year and senior students in four thematic areas:

- academic challenge, e.g. higher-order learning, reflective and integrative learning, learning strategies, quantitative reasoning;
- learning with peers, e.g. collaborative learning and discussions with diverse others;
- experiences with faculty, e.g. student-faculty interaction and effective teaching practices;
- campus environment, e.g. quality of interactions and supportive environment.

Responses provide institutions and higher education agencies with detailed information about students and higher education institutions (HEIs). This information is useful to HEIs as they seek to improve learning, teaching and overall quality. Several universities have publicly documented their actions to improve quality in the wake of their NSSE results. Many of these actions are provided to NSSE for dissemination to other HEIs.

In 2018, around 500 American HEIs participated in NSSE. It has also been administered in HEIs in other OECD countries, such as Canada, Mexico and the United Kingdom. In addition, Ireland developed the Irish Survey of Student Engagement based on the NSSE to gain a better understanding of its students and higher education system.

Source: OECD (2018[20]), *Higher Education in Norway: Labour Market Relevance and Outcomes*, OECD Publishing Paris, https://doi.org/10.1787/9789264301757-en.

Public funding to HEIs

Brandenburg has adjusted its performance funding model to reward HEIs for the number of graduates (Chapter 3) but does not evaluate whether this measure has affected completion. Following Austria's example, Brandenburg's funding model could include an indicator related to student study progression. For example, it could measure the number of "examination-active students" (i.e. those who obtained at least 16 ECTS credits per year) – if data are available – along with the number of graduates (see Box 5.3).

The state government also needs to assess the institutional model to ensure it increases in line with student numbers, enabling HEIs to maintain capability and quality as they grow.

Policy recommendations

Box 5.6. Policy recommendation to increase student preparedness for higher education and ensure students complete their study programmes

Study offerings

- Maintain opportunities for students – especially those who are working – to tailor their studies to their learning preferences by, for instance, offering more flexibility in teaching and learning formats (particularly building on the pandemic experience to offer more teaching in hybrid models, which combine virtual and in-person classes, and to use blended learning).

Non-financial support and information

- Enhance peer support programmes at HEIs to provide individual advice to disadvantaged students during their studies and help them develop a network at the HEI.
- Take steps to increase the visibility of the information and counselling offer at HEIs and consider potentially offering these services from a single office.
- Provide information to students about life on campus and in the city where HEI sites are located to motivate some to relocate.
- Use the framework contracts with HEIs to collect data on student engagement, such as academic challenge, learning with peers, teaching methods, and experiences with faculty. A survey on student engagement could be managed state-wide by MWFK, with the results provided to HEIs to feed into their quality improvement work.
- Monitor the *College* programmes in place.

Financial support

- The Brandenburg state government (and MWFK in particular) should advocate for a comprehensive, principle-based review of student financial aid systems, in particular to assess alignment of the federal assistance for continuing education and training (*Aufstiegsfortbildungsförderungsgesetz, AFBG*) and the *BAföG* schemes in light of the newly adopted Federal Strategy for Lifelong Learning, and to ensure that rules for their use are transparent, and that application procedures are user-friendly and efficient.

Public funding to HEIs

- Consider including an indicator related to student study progression rates (such as the number of "examination-active students" based on obtained European Credit Transfer and Accumulation System credits, for example) or qualification completion rates along with the number of graduates in the performance funding model.
- Assess the institutional funding model to ensure it appropriately increases in line with student numbers, enabling HEIs to maintain capability and quality as they grow (e.g. through hiring new teaching staff with increasing student numbers).

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Notes

[1] For comparability between universities and UAS, the figure of 32% for master's degrees in universities excludes enrolments in teaching degrees, which are only offered as a university programme in Brandenburg.

[2] Preliminary results for 2020/21 indicate a particularly strong increase in female students at Brandenburg's UAS (5.5 % vs. 0.7% for universities).

[3] The approach is based on the two elements: derivation of academic success (or failure) from the structure of the final exams passed in an examination year; and the resulting compilation of a corresponding group of new students from different years of the beginning of the course.

[4] The numbers in this paragraph refer to the following HEIs (University of Potsdam, FH Potsdam, Film University, TH Wildau and TH Brandenburg) and not the whole of Brandenburg's higher education sector.

[5] Students who are not German but who hold a settlement permit or have a prospect for permanent residency under the EU Freedom of Movement Law are also eligible to apply for the federal government's BAföG financial assistance scheme.

[6] To be eligible for funding under the BAföG, students must have started their higher education by 30 years of age. For master's study courses, the commencement age limit is 35 years.

[7] Borrowing under this scheme is only open to students under the age of 36 years and before the end of the 12th semester of study. Those restrictions exclude an important share of Brandenburg's student population. The loan accrues interest as soon as it is paid out. However, interest is automatically deferred until repayment commences.

6 System performance in terms of graduate pathways

This chapter profiles Brandenburg's higher education graduates, examining their ease in entering the labour market, pathways for higher education graduates and job prospects. The different perceptions of job quality among graduates from different fields are also explored. In addition, this chapter assesses the challenge of "brain drain", including trends of higher education graduates taking up jobs in Berlin or in other states. The assessment and policy recommendations propose strategies for Brandenburg to capitalise on its proximity to Berlin, while encouraging skills created in the state to contribute productively to its economic development.

Skills and professional experience

Graduates of Brandenburg's higher education institutions are well equipped with work-related experience at entry into the labour market

Brandenburg's higher education graduates are well equipped with work-related experience at entry into the labour market (Figure 6.1). Among all graduates, 63% have completed a mandatory internship, 30% have experience from voluntary internships and 52% have worked in a field-related job alongside studies. One-third have been abroad for education-related purposes and one-quarter have completed vocational training before their higher education studies. Compared to the whole of Germany, Brandenburg's graduates are less likely to have had a mandatory internship but more likely to have completed a voluntary one. Mandatory internships are less common in the state than elsewhere in Germany, especially for graduates of science, technology, engineering and mathematics (STEM). Graduates of the humanities – where studies are typically seen as less relevant for the labour market – have fewer opportunities for mandatory internships, irrespective of region. However, humanities graduates from Brandenburg participate more in voluntary internships and international education exchanges. Box 6.1 describes the data underpinning the results in this chapter.

Box 6.1. Data on recent graduates from Brandenburg's higher education institutions

The Graduate Panel 2013 was the nationwide survey of German higher education graduates by the German Centre for Higher Education Research and Science Studies (DZHW).

The survey population

The sample was representative of all higher education graduates who earned a first higher education degree qualifying for a profession (*Staatsexamen* – bachelor's degree), or a degree in creative or performing arts) or a master's degree in the winter term 2012/13 or the summer term 2013 at a state-approved higher education institution in Germany. Graduates from universities of the *Bundeswehrhochschulen* (German Armed Forces) from technical colleges for *Verwaltungsfachhochschulen* (public administration) and graduates from dual, part-time or distance-learning programmes were not part of the target population.

The survey approach

Respondents were interviewed for the first time between March 2014 and March 2015, approximately one to one-and-a-half years after graduation. This first interview collected retrospective information on the studies and detailed information on current employment. In addition, the basic employment history since graduation was assessed. Data from the second survey wave were not available.

The Graduate Panel sample does not allow reliable analyses at the federal state level. Therefore, the analysis on Brandenburg draws on data from the Graduate Survey of the University of Potsdam, combined with survey data on graduates from the Technical University of Applied Sciences Wildau and the Brandenburg University of Technology Cottbus-Senftenberg. The latter surveys are part of the German Graduate Tracer Studies Co-operation Project (*Kooperationsprojekt Absolventenstudien, KOAB*), administered by the International Centre for Higher Education Research-Kassel (Krücken and Flöther, 2015[1]) (International Centre for Higher Education Research, 2015[2]).

The Graduate Survey of the University of Potsdam of 2013 (Potsdamer Evaluationsportal, 2013[3]) included graduates who obtained a bachelor's or a master's or equivalent degree between 2010 and 2012. The analysis was restricted to respondents who graduate one to one-and-a-half years prior to the interview. KOAB-data on TU Wildau included graduates of 2012 and 2013 who were interviewed in

2014 and 2015. Similarly, data on Cottbus graduates stemmed from two surveys (from 2015 and 2013) and contained respondents from the graduate cohorts of 2013 and 2011.

All surveys use questionnaires nearly identical to those in the Graduate Panel Survey of the DZHW. This allows for combining data from the different Brandenburg surveys and comparing the empirical results to national benchmarks from the nationwide Graduate Survey of the DZHW.

Focus of the analysis

Given the transition from higher education to the labour market is of central interest, all analyses are restricted to master's and equivalent degree graduates and to bachelor's graduates who do not continue on to master's studies after graduation. In Germany, less than one-third of bachelor's graduates enter the labour market instead of pursuing master's studies. Accordingly, the number of bachelor's graduates in the sample is small, which does not allow for detailed analysis by subject. Taken together, the sample consists of 1 848 bachelor's and master's and equivalent degree graduates from Brandenburg (from the surveys of Potsdam, Wildau and Cottbus), 1 378 respondents from East Germany and 3 488 from West Germany (from the DZHW Graduate Panel 2013).

Sources: (Hoffstätter and Vietgen, 2020[4]), *DZHW-Absolventenpanel 2013. Daten- und Methodenbericht zur Absolvent(inn)enkohorte 2013 (1. Befragungswelle), Hannover*, DZHW; (Krücken and Flöther, 2015[1]), Generation Hochschulabschluss: Vielfältige Perspektiven auf Studium und Berufseinstieg. Analysen aus der Absolventenforschung, Waxmann; (International Centre for Higher Education Research, 2015[2]), *Kooperationsprojekt Absolventenstudien (KOAB)*, https://istat.de/de/koab_a.html; (Potsdamer Evaluationsportal, 2013[3]), *Absolventenbefragung, Universität Potsdam*, https://pep.uni-potsdam.de/articles/absol.html.

Within all subject groups, Brandenburg's graduates have less experience in jobs related to their field of study. Yet a field-related internship increases the prospects of employability after graduation (Figure 6.2). In Brandenburg, as in the rest of Germany, a field-related job during studies is linked to lower chances for being neither in employment, nor education or training (NEET) or casual employment after graduation; this relationship is controlled for academic achievement, field of study, type of institution, age and gender. There is a similar relationship between a mandatory internship and protection from the risk of being NEET in East Germany but not in other regions.

Higher education graduate pathways

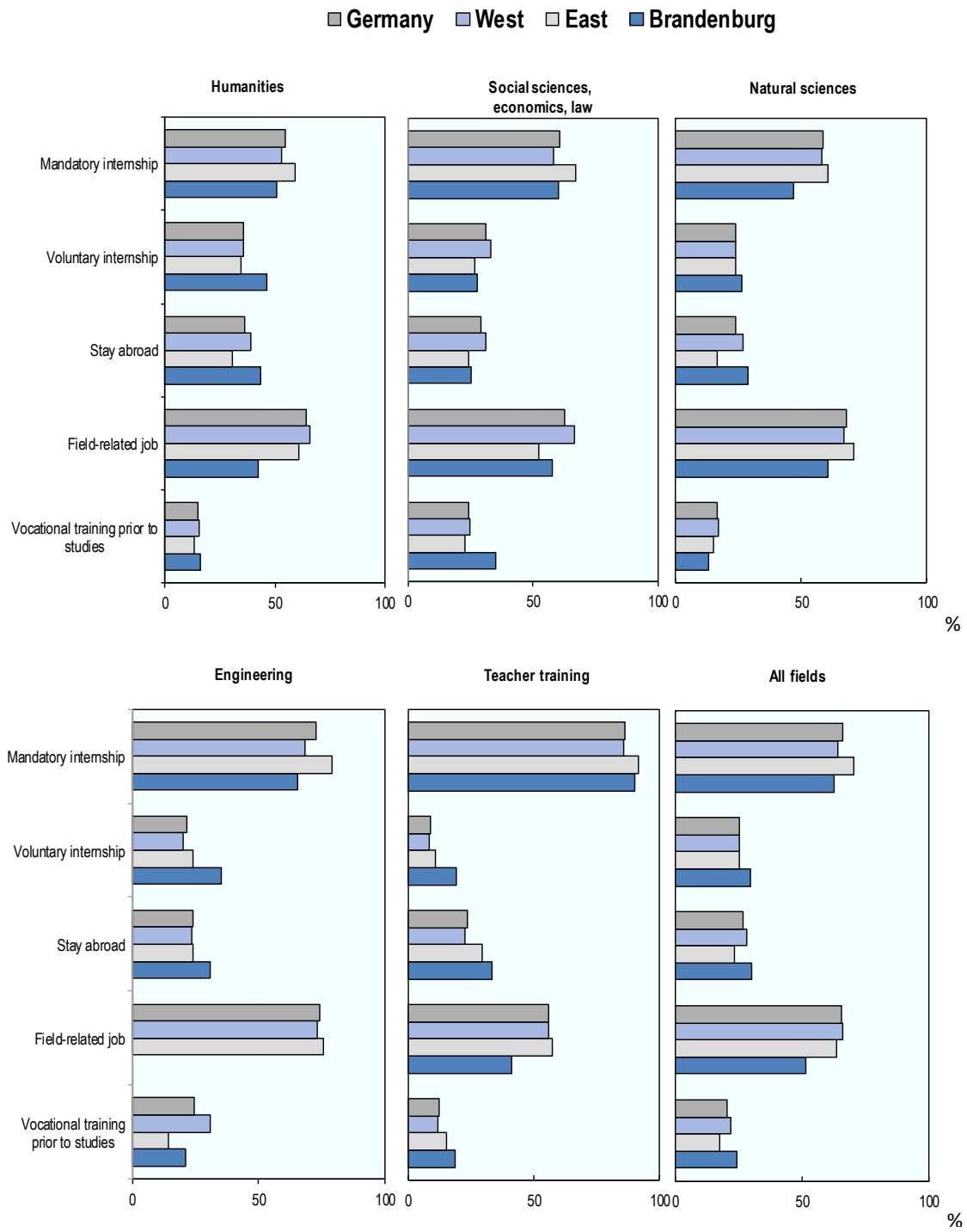
Higher education graduates have overall positive job prospects with some variations by level of education and field of study

Brandenburg's higher education graduates enjoy comparatively strong employment outcomes at entry into the labour market. One to one-and-a-half years after graduation, most of Brandenburg's graduates are employed (61%) or in further education (13% PhD and 10% *Referendariat,* see Figure 6.3, lower right panel). Only a small proportion of graduates are neither employed nor in education and training (NEET) (6%) or have a casual job (2%). Both in West and East Germany, the average employment rate of recent graduates is lower and the unemployment rate higher than in Brandenburg.

In Brandenburg, the employment outcomes of holders of master's or equivalent degrees do not differ significantly from graduates with a bachelor's degree who do not pursue master's studies (Figure 6.3). Graduates with bachelor's degrees are more likely to be NEET (10% vs. 6% for master's and equivalent degrees). However, casual employment is more common among the master's graduates (2% for bachelor's versus 4% for master's and equivalent). Overall, Brandenburg's graduates perform slightly better than graduates at the same degree level in the West and East, on average. For instance, NEET rates in East Germany are 20% for those with a bachelor's degree vs. 11% for those with a master's degree

or equivalent. Meanwhile, in West Germany, the figures are 16% for those with a bachelor's degree compared with 8% for those with a master's degree or equivalent.

Figure 6.1. Labour market relevant experience of recent graduates, by field of study and level of education

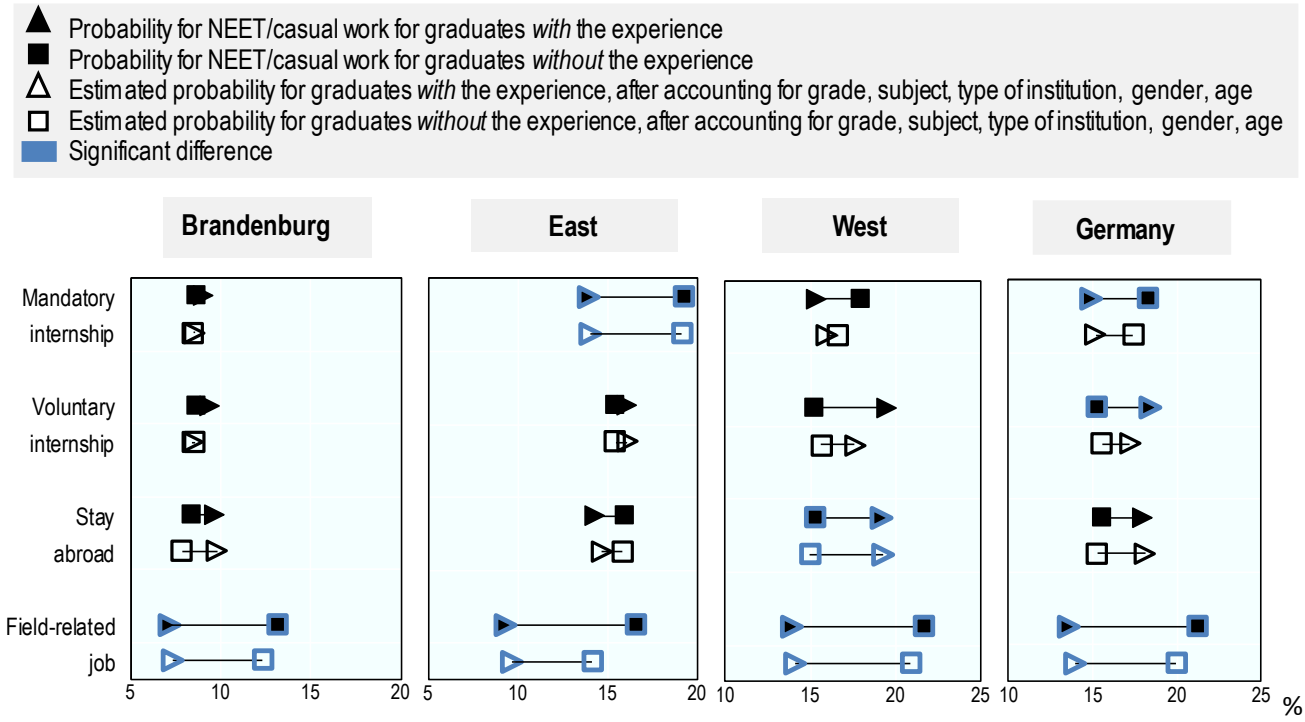


Note: KOAB-data does not contain information on field-related work.
Source: OECD calculations based on the DZHW Graduate Survey 2013, KOAB Graduate Survey 2015, and the Potsdam Graduate Survey 2013.

StatLink https://stat.link/p5tfco

Figure 6.2. Relationship between labour market relevant experience from studies and being in NEET or casual employment after studies

Predicted probabilities before and after accounting for final grades, subject, type of institution, gender and age



Note: Graduates of teacher training excluded.
Source: OECD calculations based on the DZHW Graduate Survey 2013, KOAB Graduate Survey 2015, and the Potsdam Graduate Survey 2013.

StatLink https://stat.link/mlrnty

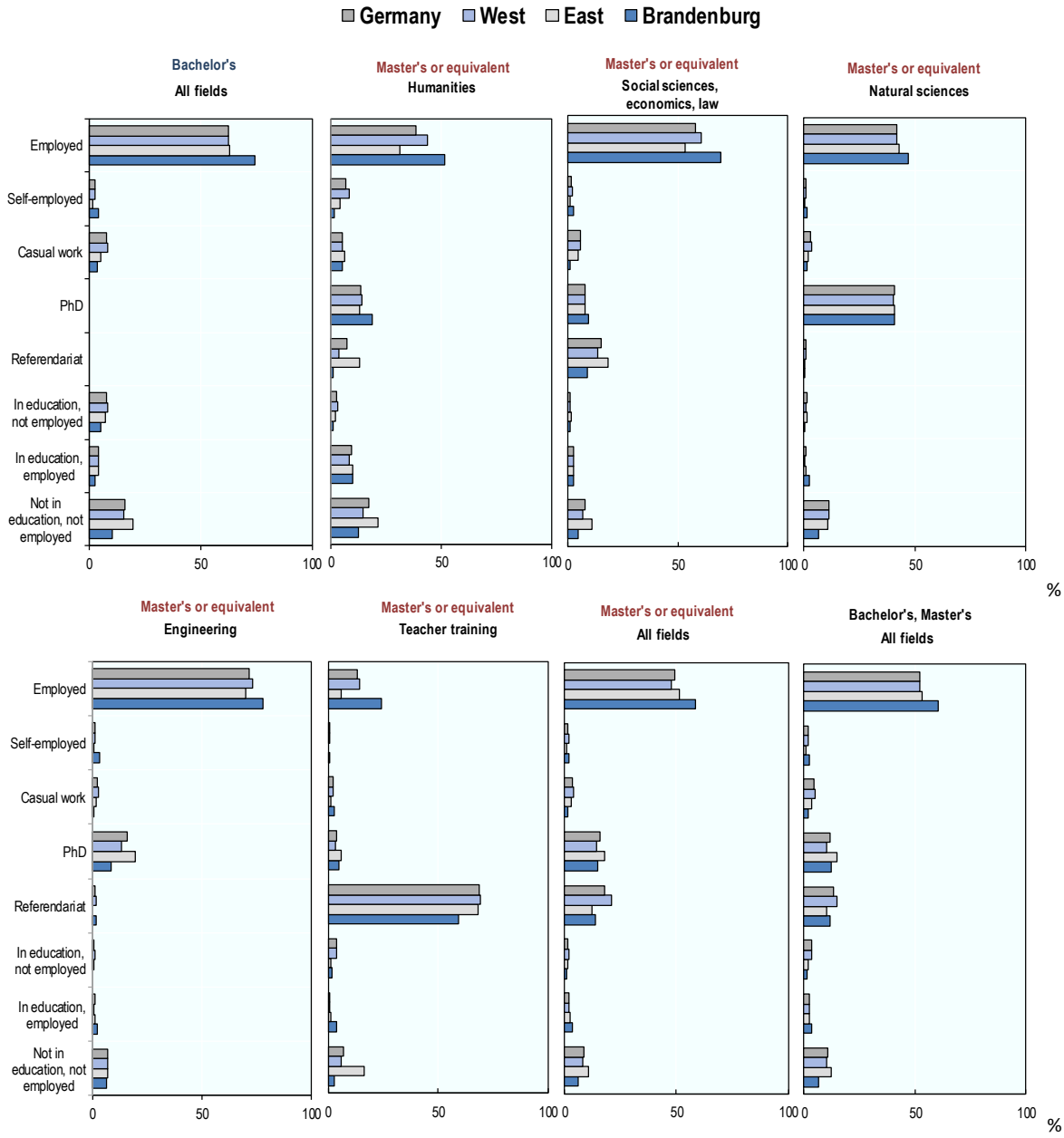
Graduates of universities are more likely to advance to higher levels of study than graduates from universities of applied sciences (UAS), with bachelor's graduates of UAS more likely to enter the labour market directly.

Master's and equivalent degree graduates from different fields of study follow different employment patterns. Graduates in the humanities have lower employment rates and higher non-employment rates than graduates of other fields. Graduates in the natural sciences, the humanities and engineering are more likely to progress to higher-level studies than those in other fields.

There are regional differences in graduate employment by field of study. For example, in the humanities, the social sciences, economics and law, Brandenburg graduates have higher employment rates than their Western counterparts whose employment rate, in turn, exceeds the East German average. Graduates aiming at the teacher profession are usually still completing their *Referendariat* (mandatory preparatory service) one to one-and-a-half years after graduation.

Figure 6.3. Employment status of higher education graduates, by degree level and field of study

Approximately one to one-and-a-half years after graduation



Source: OECD calculations based on the DZHW Graduate Survey 2013, KOAB Graduate Survey 2015, and the Potsdam Graduate Survey 2013.

StatLink https://stat.link/yugwr9

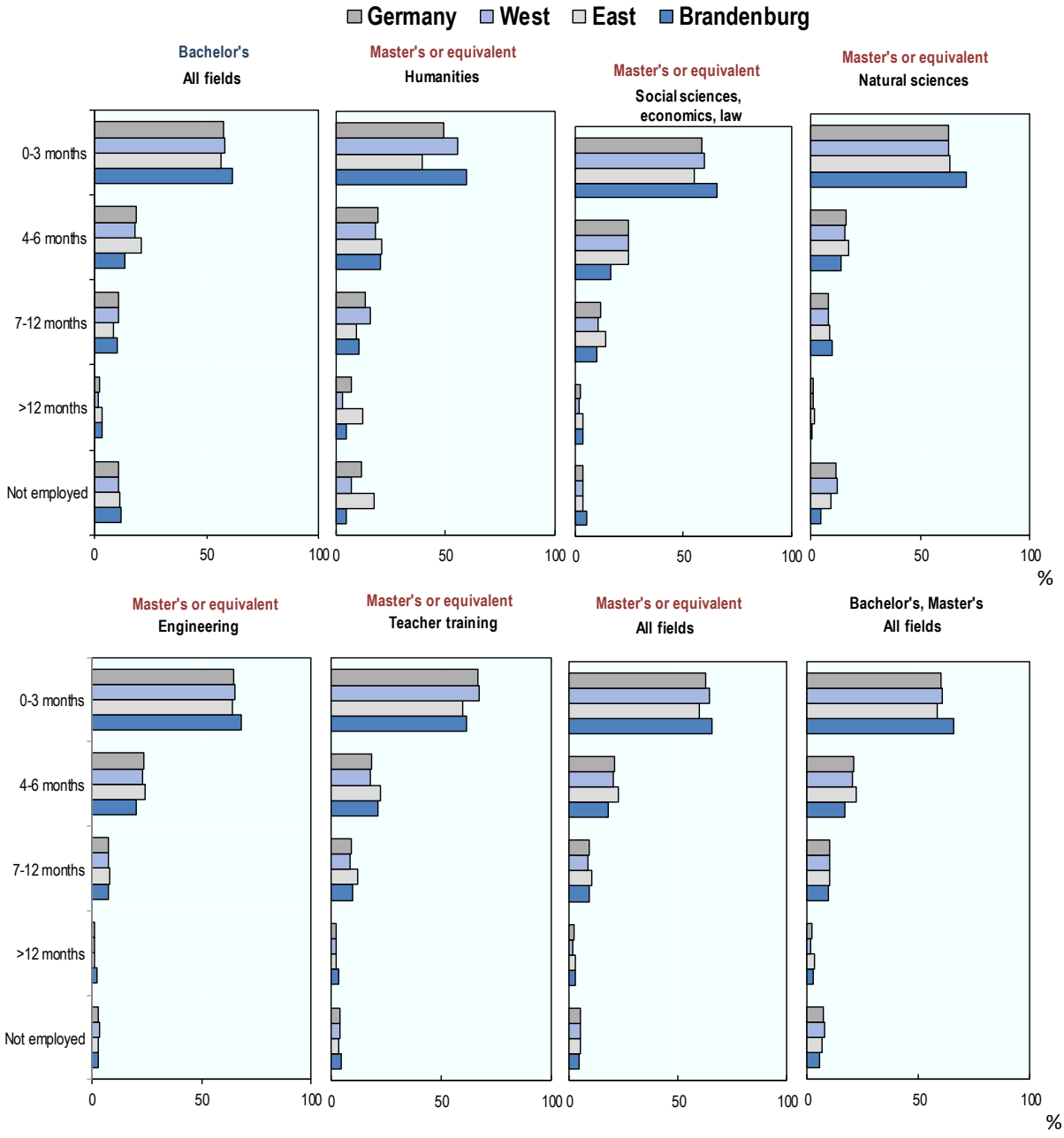
Brandenburg's graduates tend to find their first job faster than their peers in the rest of Germany

Brandenburg's graduates, on average, find their first job faster than graduates from other parts of Germany (Figure 6.4). Among the 2011-13 graduate cohorts, 66% of those surveyed reported finding a first job within three months of graduation. In East and West Germany, these shares amount to 58% and 61%, respectively. The relatively shorter job search time among Brandenburg graduates holds for both

bachelor's graduates (61% of whom find a job after a maximum search of three months) and master's graduates.

Figure 6.4. Job search duration of higher education graduates, by degree level and field of study

Self-reported duration of search for first job after graduation



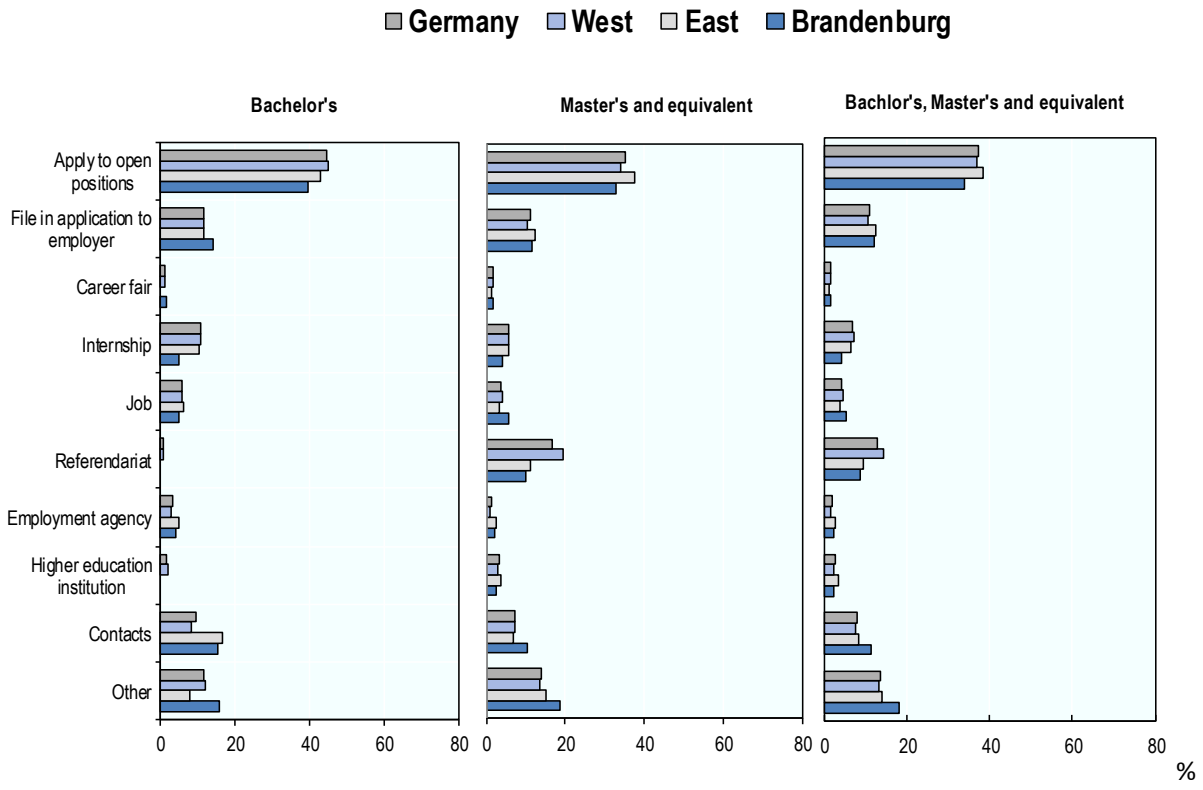
Source: OECD calculations based on the DZHW Graduate Survey 2013, KOAB Graduate Survey 2015, and the Potsdam Graduate Survey 2013.

StatLink https://stat.link/8q6v3m

The role of job search for employment status of recent graduates

Most German graduates find their first job after graduation by applying for open positions or to an employer (Figure 6.5). Some graduates use internships, side jobs or personal contacts as a stepping stone to the labour market. The use of career services and advice at the higher education institution (HEI) is rare. Differences in job search methods across regions are small. Unsurprisingly, *Staatsexamen* graduates are more likely to get a job through their *Referendariat*. With the exception of *Staatsexamen* graduates, bachelor's graduates are more likely than master's or equivalent degree graduates to find a first job through contacts, internships or prior jobs. One reason may be that, in the period studied, bachelor's graduates were still relatively new to the German labour market. Consequently, employers may have preferred to "screen" their skills within internships or temporary employment arrangements before hiring them.

Figure 6.5. Job search method leading to first job after graduation, by degree level



Source: OECD calculations based on the DZHW Graduate Survey 2013, KOAB Graduate Survey 2015, and the Potsdam Graduate Survey 2013.

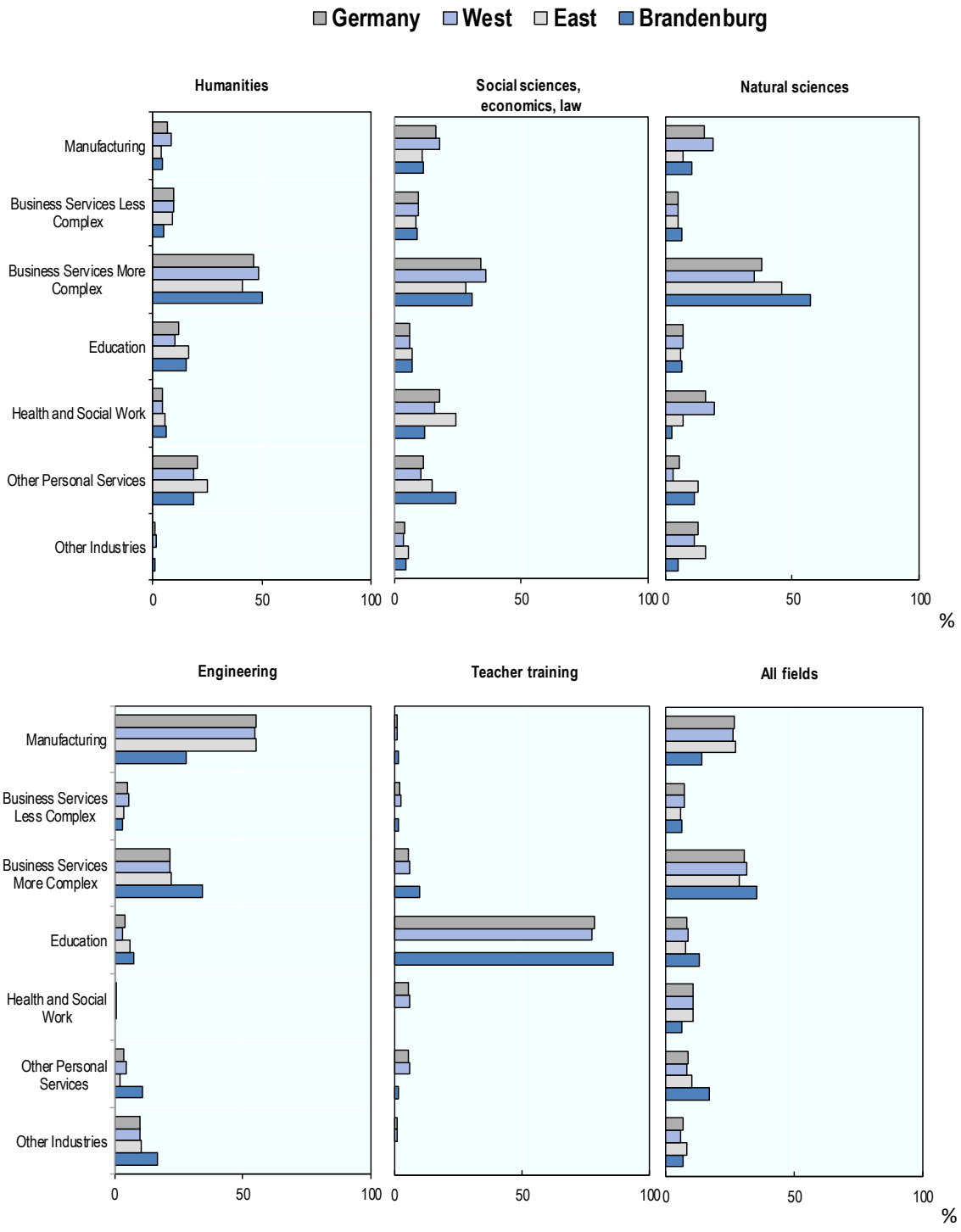
StatLink https://stat.link/mv3tz1

The services sector employs graduates across all study fields

Approximately one recent graduate in three from Brandenburg's HEIs finds work in the business service sector (information and communication; finance and insurance; real estate; professional, scientific, and technical activities). Meanwhile, nearly one in five graduates is employed in the public administration and other services sector (Figure 6.6). Only 14% of Brandenburg's recent graduates work in manufacturing compared to 28% in East Germany and 27% in West Germany. This small relative share of graduate employment in manufacturing is due to the state's industrial structure, where there are fewer high-skilled jobs in manufacturing. As a result, graduates in natural sciences and engineering are more likely to work in the services sector than their peers elsewhere in Germany.

Figure 6.6. Industry of occupation of recent higher education graduates, by field of study

Approximately one to one-and-a-half years after graduation, only employed graduates



Source: OECD calculations based on the DZHW Graduate Survey 2013, KOAB Graduate Survey 2015, and the Potsdam Graduate Survey 2013.

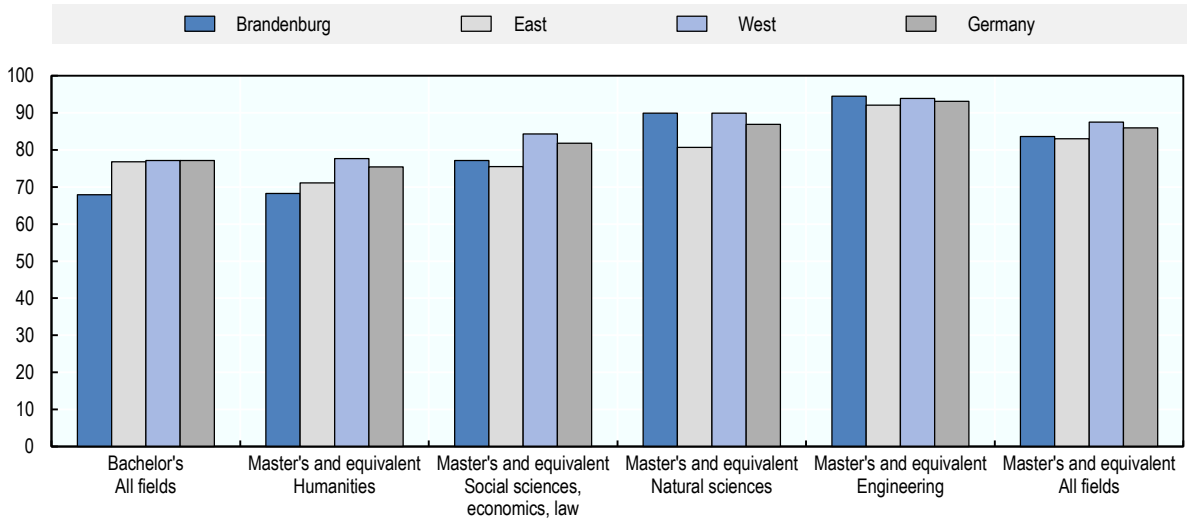
StatLink https://stat.link/95kv7h

The perceived job quality is high among graduates with a master's degree in natural sciences and engineering but lower for other fields and graduates with a bachelor's degree

Most of Brandenburg's recent graduates hold jobs well matched to their qualifications in terms of performance expectations and level of position. In other words, a position is considered "matched" to qualifications if it demands skills and/or knowledge appropriate to the graduate's qualification (Figure 6.7). The shares of graduates with a matching job are highest for those with a master's or equivalent degree in the natural sciences and engineering. Conversely, the share is lower for graduates with a master's and equivalent degree in the humanities, social sciences economics, and law, as well as for graduates with a bachelor's degree. Within the latter three groups, Brandenburg's graduates are less likely to be employed in a matching job than comparable graduates from HEIs elsewhere in Germany. This may provide insight into the relatively high employment rates and fast transitions to a first job of graduates with bachelor's degrees in humanities and social sciences in Brandenburg shown above. Such graduates may be more likely than graduates from other regions to compromise on employment quality in terms of job match instead of remaining not employed until they find a well-matching job.

Figure 6.7. Job match of higher education graduates, by field of study and level of education

Approximately one to one-and-a-half years after graduation, only employed graduates



Notes: For respondents of the DZHW and Potsdam Graduate Survey, job match is operationalised with the question: Would you say that your higher education qualification corresponds to your employment? In terms of position level (1 "to a very high degree" to 5 "not at all"); In terms of task level (1-5); In terms of professional qualifications (1-5). A job is defined as matching education if respondents' values on the mean of the three items is less than 3. For KOAB respondents, the following question is used: If you consider all aspects of your current employment situation (status, position, income, work tasks, etc.), to what degree does your employment situation adequately fit your education? (1 "to a very high degree" to 5 "not at all"). A job is defined as matching education if respondents have values of 1 or 2.
Source: OECD calculations based on the DZHW Graduate Survey 2013, KOAB Graduate Survey 2015, and the Potsdam Graduate Survey 2013.

StatLink https://stat.link/q8elz0

Several caveats should be applied to the interpretation of results. First, the fields of study with the highest match are engineering and natural sciences. In these fields, there is more likely to be a call for the application of knowledge (as opposed to skills) acquired in the survey respondents' studies. Respondents will always recognise when they are applying advanced knowledge. However, they may not recognise the application of skills. This is especially true of generic skills transferable between tasks and contexts such as the ability to think critically, analyse and communicate complex ideas. It is not clear employees will

recognise when they apply intellectual resources developed as a result of and during the HE studies. Further, the phrasing of the survey questions may not prompt respondents to recognise the contribution to their work of social/emotional and other non-cognitive skills that graduates acquire during their studies.

The challenge of "brain drain"

The state labour market suffers from "brain drain" as many of Brandenburg's higher education graduates take up jobs in Berlin or elsewhere

Brandenburg has the highest outflow of students eligible for higher education among the German federal states but also for its higher education graduates. Only 34% of graduates work or reside in Brandenburg one to one-and-a-half years after completing studies (Table 6.1). This finding complements the observation, made in Chapter 2, of an outflow of people aged 25-65 from Brandenburg: that outflow contributes to a forecast reduction in the working age population over the next 20 years. In East and West Germany, the corresponding shares are 57% and 72%. Most Brandenburg graduates who remain to work in the state have also completed their secondary education there – this represents 23% of the graduates from Brandenburg's higher education system. Conversely, 54% of German higher education graduates have completed their secondary and higher education and started a job in the same federal state. Among graduates from Brandenburg who work outside the state, most take up a job in Berlin.

Table 6.1. Mobility patterns of recent higher education graduates

		Brandenburg	East	West	Germany
Mobility between higher education and work/residence	Work/reside in the same state as higher education	34%	57%	72%	66%
Mobility between secondary education, higher education and work/residence	Work/reside in the same state as higher education and secondary education	23%	41%	59%	54%

Notes: Data relate to graduates in the 2013 graduate panel. Data on higher education graduates who do not take up work use their place of residence in the year/year and a half following graduation.
Source: OECD calculations based on the DZHW Graduate Survey 2013, KOAB Graduate Survey 2015, and the Potsdam Graduate Survey 2013.

Some regional business stakeholders interviewed by the OECD review team spoke about employees' reluctance to relocate to Brandenburg as described in the below examples:

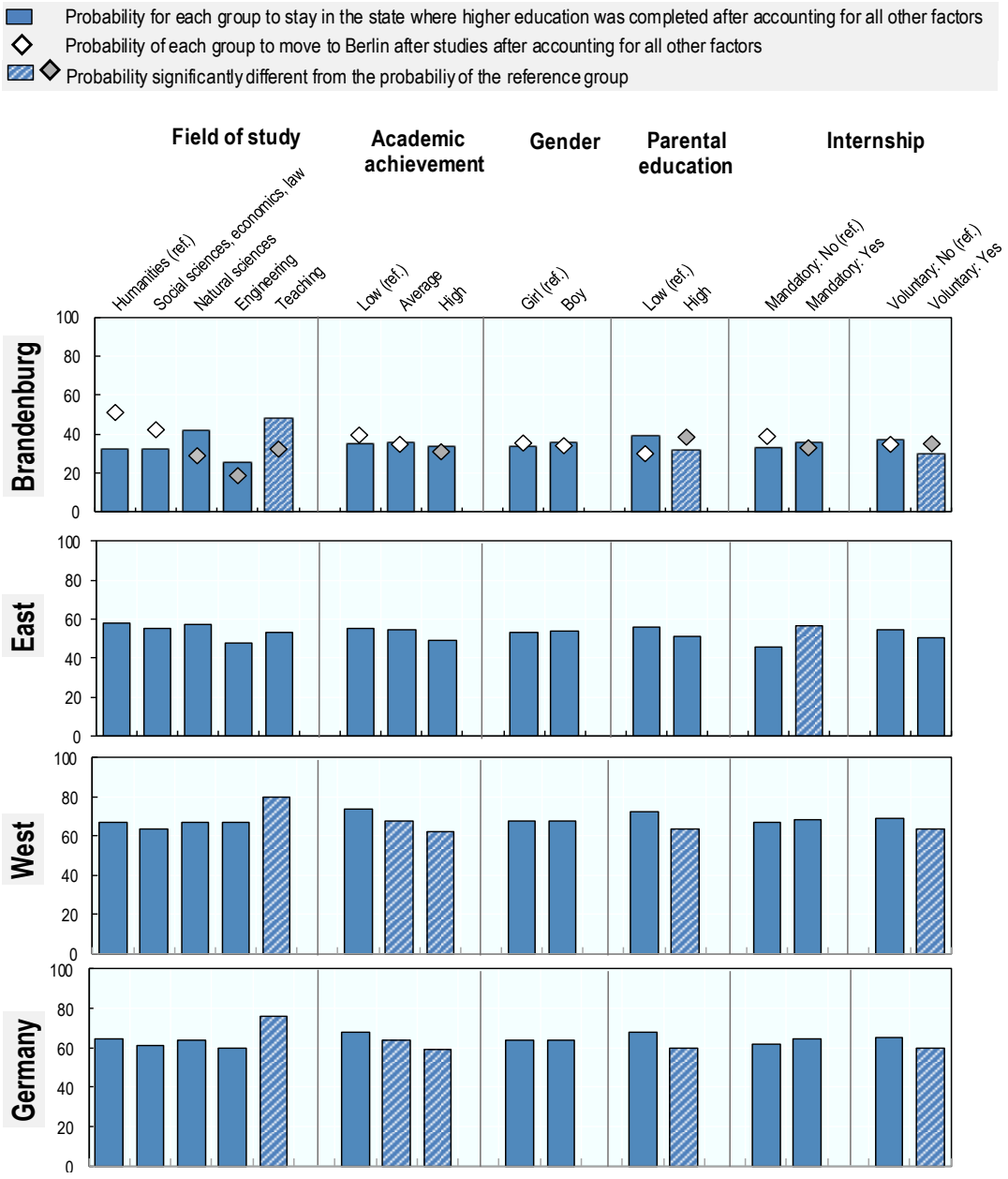
- A company whose headquarters is located in a rural region in Brandenburg operates an office location in Berlin for staff who do not want to move away from Berlin.
- Another company enabled a young employee to study at a university in Berlin while working on-site in Brandenburg. After graduation, the young man did not return to the company.
- A third company reported that many employees who studied in other parts of Germany and hold a degree do work at the company's location in Brandenburg. However, they live in Dresden and accept regular commuting. The company even leased offices in a co-working space in Dresden to help free employees from commuting.

HEIs have been generally closed since the COVID-19 pandemic. Hence, study from home or at a distance is common, leading many students to return to their parental homes in and outside Brandenburg. Many Brandenburg businesses believe there is a risk that not all students will return to their places of study following the pandemic.

Brandenburg graduates are more likely than those from other states to move out of state following graduation

Figure 6.8 shows the probability of graduates' intentions to move from or remain in the state in which they pursued higher education. Brandenburg stands out as being at high risk of graduates leaving.

Figure 6.8. Factors related to the probability to stay in the state where studies were completed



Notes: Predicted probabilities from logistic regressions for each region. The outcome is having a job in the state where higher education was completed approximately one to one-and-a-half years after graduation. For graduates who are not employed at this time point, the place of residence is used. Each model contains all six factors.
Source: OECD calculations based on the DZHW Graduate Survey 2013, KOAB Graduate Survey 2015, and the Potsdam Graduate Survey 2013.

StatLink https://stat.link/l64597

Voluntary internships seem to be a stepping stone for Brandenburg's graduates to a job in the state, as well as outside state borders, particularly in Berlin. While mandatory internships in East Germany seem to bind graduates to the local labour market, the relationship between mandatory internships and working in the state after graduation in Brandenburg is not significant.

In addition, both the field of study and the graduate's socio-economic background appear to play a role in the decision to work in the state after graduation. Students with highly educated parents are less likely to stay in Brandenburg and more likely to move to Berlin than graduates with non-tertiary educated parents (other factors held constant). In addition, many STEM graduates leave the Berlin-Brandenburg region for better opportunities in the Western federal states. Meanwhile, many humanities graduates relocate to Berlin for their first job, after accounting for academic achievement, gender, socio-economic background and internships. By contrast, law graduates often stay in Brandenburg because of employment prospects in the state's judicial system. Brandenburg's future teachers, similar to teaching graduates from West Germany, also usually stay in the state where they studied due to state-specific regulations for the profession. In addition, the decision to remove civil servant status for teachers in Berlin is expected to encourage more Brandenburg teaching graduates to remain in the state. However, few teaching graduates are willing to move to rural areas despite the demand being strongest there.

The place of international graduates

As noted, Brandenburg has a high proportion of international students, second only to Berlin. Most international students in Brandenburg study STEM and business – fields in demand in the state labour market. This compensates largely for declining domestic student demand in these fields of study. International students could contribute significantly to the state labour market once they graduate. They represent a potential pool of human capital that could be invaluable in light of changing demographics and the need for advanced skills to transform Brandenburg's economy. These students could also make a better transition into German society and the labour market than other immigrants because they have the experience of living, studying and working in Germany.

Assessment and policy recommendations

Being adjacent to the federal capital is both an asset and a liability to Brandenburg. On the one hand, it provides a home for firms, entrepreneurs and professionals who wish to share in the economic strength of Berlin while avoiding some of the costs of location in the federal capital. On the other hand, Berlin acts as a magnet for the talent that Brandenburg has grown, leading to the outwards migration of higher education students and skilled professionals. The challenge for Brandenburg is to capitalise on the asset, while creating an environment that encourages the skills created in the state to contribute productively to the state economic development.

Enhance practice-oriented learning and entrepreneurship in the system

Building relationships between HEIs and the world of work is mutually beneficial to HEIs and to employers. Understanding the needs of employers helps programme leaders in HEIs to make their teaching programmes more practice-oriented. This, in turn, helps make graduates more work-ready and more able to add value to their employers more quickly. Brandenburg's employers need to learn how they can benefit from co-operation with HEIs. HEIs can act as a source of expertise and research information. They can also provide education and continuing education and training (CET) to a firm's workers, which can lead to better use of people's skills (and therefore, greater demand for advanced skills) and increased productivity. Such a situation will increase the quality of local jobs in terms of salaries and the possibility for career progression. This, in turn, will facilitate graduate retention in Brandenburg and help attract highly skilled

people to the state. Many higher education graduates take up jobs outside of the state, particularly in Berlin, and strain the state's skills system.

Internships

Internships are one way to strengthen the relevance of higher education programmes to employers and to build relationships between HEIs and firms. Internships give employers the chance to build a relationship with a student who may then work in that firm after graduation. At the same time, understanding the needs of employers encourages HEIs to make their teaching programmes more practice-oriented. This helps make graduates more work-ready and more able to add value to their employers more quickly.

Public-sector agencies such as government departments and local authorities do not systematically offer internships to higher education students. However, the nature of government work means they can contribute usefully to interns, particularly to those in less vocation-oriented studies such as the humanities, social sciences and natural sciences.

As noted, firms often prefer longer, mandatory internships integrated into the study programme because they do not have to pay the intern. Smaller firms often lack the financial resources to recruit interns despite the possibility of high returns on investment. Most Brandenburg students, however, need to earn during their studies; therefore, most students prefer paid voluntary internships.

Students also appear not to receive information from their HEI's career services on local internship opportunities. Stakeholder interviews with the OECD review team suggest that links between HEIs and companies are often established at the personal level – between individual academics and individual company representatives, rather than at an organisational level.

The state government is addressing recognised deficits in career guidance at HEIs. The *Gute Arbeit* (good work) initiative, for example, is examining the career orientation and development of post-docs. In 2018, the state's four universities joined forces in the Brandenburg Postdoc Network to provide targeted help with the academic career path, career advice, coaching and mentoring programmes for post-doc researchers. Within this structure, contacts for entry into the non-academic job market are conveyed to interested post-doc researchers. This recognises that not everyone can stay or is willing to stay in academia.

HEIs appear well connected to the state economic development agency and business associations

All of Brandenburg's HEIs have collaboration agreements with business associations and some local companies. Each HEI has arranged bilateral agreements with the chambers of commerce (see Box 6.2 for some examples), and the employment agency, as well as with public partners, especially the *Wirtschaftsförderung Brandenburg GmbH – WFBB* (Economic Development Agency Brandenburg). WFBB has co-operation agreements with all HEIs in Brandenburg, and conducts an annual review and planning session with them. It is also involved in other bodies that allow for contacts with HEIs, such as the advisory board for "dual studies" at the BTU Cottbus-Senftenberg.

Box 6.2. Collaboration between HEIs and chambers of commerce and crafts in Brandenburg

The chambers of commerce and crafts facilitate communication and collaboration between higher education institutions (HEIs) and local companies through a variety of initiatives and events. These complement the activities of the transfer offices and *Präsenzstellen* (presence centres). The most prominent among these initiatives has been the *PerspektivWechsel* project ("Change of perspectives").

PerspektivWechsel

Three chambers of industry and commerce in Brandenburg initiated *PerspektivWechsel* in 2007. Led by IHK Potsdam in co-operation with *Ministerium für Wissenschaft, Forschung und Kultur – MWFK* (Ministry of Science, Research and Culture) and the state universities, the initiative offers entrepreneurs and managers of small and medium-sized enterprises (SMEs) the opportunity to exchange their workplaces with researchers at HEIs for one day. The aim is to gain new insights and generate common projects ranging from student theses to innovative activities. This has resulted, for example, in projects funded by *Zentrales Innovationsprogramm Mittelstand* (Central Innovation Programme for SMEs) and *Brandenburgischer Innovationsgutschein* (Brandenburg Innovation Voucher). One recent project led to a new business in the agriculture sector (InterEnviroCon GmbH; see www.bodenbalsam.de).

Each year, about 12-14 professionals (5-7 entrepreneurs/SME managers and 5-7 researchers) take part in this project. This amounts to around 150 participants since the programme began. MWFK and ***Industrie- und Handelskammern –*** *IHKs* (Chambers of Industry and Commerce in Brandenburg) invite HEIs to participate each spring. In the subsequent weeks, "tandem couples" of one academic and one entrepreneur are formed. The participants meet and explore ideas and visit the company. Every two years, project participants are invited to share their experience and discuss its effect and comment on the future design of the project.

PerspektivWechsel is a low budget initiative with incidental costs met by the IHKs. Entrepreneurs and researchers cover costs of the mutual visits themselves. It was inspired by *Sichtwechseln*, a similar project of the IHK Lüneburg-Wolfsburg in the state of Lower Saxony. IHKs in other federal states such as Thuringia have now set up similar initiatives.

Other initiatives

The Chamber of Industry and Commerce East Brandenburg collaborates with TH Wildau in the "#talents" project. This is a competition in which small groups of students develop new digital applications in co-operation with local companies. Interviewed business stakeholders would welcome more projects like "#talents".

Since 2011, the Chamber of Crafts Frankfurt (Oder) and the HNEE (Eberswalde University for Sustainable Development) have organised workshops for targeted professional exchanges between scientists and practitioners from the field of woodworking. The discussions focus on aspects of digitalisation in crafts.

Sources: Industrie- und Handelskammer Potsdam (n.d.[5]), "*Forschung & Innovation*" (Research & Innovation), https://www.ihk-potsdam.de/ihk-service-und-beratung/innovation-forschung/perspektivwechsel-3907056, (accessed on 13 May 2021); Documents provided by the IHK Potsdam, July 2021.

SMEs need support to collaborate with the higher education sector

Brandenburg's small and medium-sized enterprises (SMEs) welcome external support in offering work placements for students. Local companies appreciate the state-run *Innovationsfachkräfte* programme,

which subsidises salaries for highly qualified graduates and *Werkstudenten* (student trainees). The programme has proven successful in attracting local students and HEI graduates to Brandenburg's labour market. The crafts sector, WFBB and MWAE should continue promoting this scheme and ensure its sustainability. HEIs support firms through initiatives such as *Mittelstand 4.0*, *Kompetenzzentrum Cottbus* and *InnoHub 13*. However, HEIs need to develop their capacity to provide such tailored support via their transfer centres and *Präsenzstellen*.

Public agents, such as chambers of industry and crafts and WFBB, encourage co-operation among SMEs. This would allow them to share administrative expenses and be better placed to offer internships, research projects, CET measures and other opportunities. Interviewed business stakeholders have praised WFBB's programmes "Students on Tour" and "Profs on Tour" for bringing students/academics to local companies. *Perspektivwechsel* also appears well suited to connect SMEs with potential new recruits and to help SMEs get to know the study offer and research facilities at HEIs. This programme can be enhanced to provide matching opportunities to many more researcher-entrepreneur couples per year state-wide.

The federal programme "Development of continuing education and training associations", established by the Bundesministerium für Arbeit und Soziales - BMAS (Federal Ministry of Employment and Social Affairs) within the frame of the recent Federal Strategy for CET, supports companies to maintain the employability of workers. *Weiterbildungsverbünde* (CET associations) are networks engaging several companies and actors in the CET landscape, including HEIs and regional labour market actors. This allows CET measures to be organised and carried out across company boundaries. The focus is on the exchange between partners of a network; identification of CET needs in the companies; and advice on, and research for, suitable CET programmes that meet those needs. The aid to participating companies can cover up to 70% of the participation costs in a CET measure.

Collaboration between Brandenburg's employers and the HEI sector may also result in targeted management training for SMEs that collaborate, or have the potential to establish connections, with multinational companies. Language skills are also especially important. Lack of English-speaking SME owners and employees with appropriate management and technical skills may prevent international players from involving local SMEs.

Strong entrepreneurial activities at Brandenburg's HEIs

Brandenburg's HEIs have been increasingly supporting entrepreneurship among their students and have become environments conducive for entrepreneurs according to data from the Start-up radar and EXIST-Gründerstipendien. Some HEIs are introducing (alone or jointly with regional business players and public agents) complementary support services. These include mentoring, active involvement of students in research activities, co-working spaces and incubation facilities (e.g. InnovationCampus Schwedt/Oder). However, these efforts would need further support via the state innovation or transfer strategies or through regional economic structures such as the clusters.

Optimise framework conditions for internationalisation of the system

The need for an international perspective

With the continued internationalisation of Brandenburg's economy, businesses have a greater need to recruit graduates with foreign language skills, particularly English. Consequently, HEIs need to instil language skills and intercultural competencies in their graduates. However, the take-up of international exchanges in Brandenburg HEIs (particularly UAS) is low (Schirmer, H., 2017[6]). Therefore, it is important to integrate international dimensions into the curriculum at HEIs. Apart from teaching intercultural and international knowledge and skills, HEIs need different approaches to learning. This should include English-taught programmes and courses, supplementary study materials in English, and engaging German students more actively in exchanging with their international peers. Moreover, it is important to assess

whether the funding model and institutional framework contracts are effective in promoting outward student mobility. If not, they should be adjusted.

International students making the adjustment to Germany

Many international students struggle to improve their German language skills, to get acquainted with new learning technologies and approaches, to build a professional network and social contacts, and to finance their studies. Brandenburg's HEIs help international students adjust to life in the state. Buddy programmes, for example, connect international students with domestic counterparts and courses to teach the German language and convey German history and culture. Some Brandenburg HEIs arrange stays with German host families and mentorship programmes to help alleviate social isolation.

Despite the German language courses, language skills remain a major barrier for international students to fully transition to the labour market. Many international students study in programmes that are offered in English and do not necessarily develop strong German language skills. This can make it difficult for them to find employment or operate effectively in the Brandenburg and German labour market upon graduation. SMEs also identify German language problems as the main reason for not employing international graduates. Lack of knowledge of the German working culture and worries about reputedly high efforts for administrative procedures and integration are additional barriers to employing international students in Brandenburg.

Box 6.3. Measures to retain international graduates in European member states

Retaining international graduates in Germany requires an opportunity to seek work after graduation. Pursuant to Article 25(1) of the Students and Researchers Directive, graduates from higher education institutions (HEIs) in most EU states qualify for a residence permit to seek employment or self-employment after completion of studies. In Germany, an Article 25 permit is for 18 months. The other most common retention measure includes exemption from labour market tests, salary thresholds and work permits.

Retention policies by HEIs generally aim at bridging the gap between graduation and finding employment. They do this by providing career counselling and helping to find internships and employment. HEIs often collaborate with companies to facilitate job seeking for international graduates.

In Sweden, HEIs have alumni programmes such as mentorships that could help students establish networks and contacts to employers. In Estonia, foreign students studying in HEIs can shadow employees from a variety of companies.

Common challenges encountered by EU states in retaining international graduates include lack of competitiveness of the conditions offered on the labour market; living standards; a high national unemployment rate; unfavourable economic situations; and long processing times for permit extensions.

At an individual level, the lack of the necessary national language level to enter the labour market and lack of professional and support networks are also found to hinder successful labour market integration.

Source: European Commission (2019[7]), "Attracting and Retaining International Students in the EU", https://ec.europa.eu/home-affairs/news/emn-study-attracting-and-retaining-international-students-eu-2019-09-04_en.

Europe-wide surveys indicate that international students in Germany expect support from HEIs tailored to their needs (European Commission, 2019[7]). Introducing international students to local employers via internships mediated by the HEIs and chambers of commerce, as well as WFBB's "Students on Tour", can

help bridge the culture and language gap. This, in turn, would facilitate smoother integration into the domestic labour market (see Box 6.3 for examples from Europe).

Discrimination and racism

A welcoming culture and anti-discriminatory social climate are essential to attract students from abroad to Brandenburg. The state government has created state commissioners to promote diversity and counter discrimination. The curriculum for teaching degrees has been revised to sensitise prospective teachers and school students about the problem of racism at Brandenburg's schools. MWFK also established anti-discrimination as a priority field of action. In addition, some HEIs have appointed anti-discrimination commissioners to serve as the contact point for students and employees who feel disadvantaged because of their ethnic origin, religion or beliefs.

Attracting top international researchers to Brandenburg

Attracting top international research staff to Brandenburg would further the internationalisation of the system. It would also increase the attractiveness of Brandenburg's HEIs as locations for quality studies and research. To attract international researchers, the HEI needs an impressive research track record in the relevant field. Offering guidance on potential visa sponsorships, providing clear information related to the potential relocation package and career prospects are important enablers. The Flanders Institute for Biotechnology (VIB) in Leuven, Belgium, is often referred to as best practice in attracting international researchers. It has extensive coaching for young faculty members, including training in language, communication, teaching and management skills. VIB also takes care to advertise the offer to the right scientific audience (VIB, n.d.[8]).

Policy recommendations

Box 6.4. Policy recommendations to enhance practice-oriented learning and entrepreneurship in the system and optimise framework conditions for internationalisation of the system

Practice-oriented learning

- *Ministerium für Wirtschaft, Arbeit und Energie – MWAE* (Ministry of Economic Affairs of Brandenburg) should ensure the continuation of the "Innovation Expert" support programme for both graduate and working student employment.
- The state government sector should establish more practice-oriented learning opportunities for higher education students, including voluntary paid internships.
- The Chambers of Commerce and Industry and *Wirtschaftsförderung Brandenburg GmbH* (Economic Development Agency Brandenburg) should continue to actively promote co-operation between small and medium-sized enterprises (SMEs) so they can share administrative expenses and work collectively with HEIs to increase (joint) offers of internships, and research projects, and bring SMEs and HEIs together.

Entrepreneurial activities and transfer of knowledge and technology

- Maintain HEIs' capacity to provide tailored advice and consulting to local SMEs via transfer offices and *Präsenzstellen*.
- Enhance financial support for HEIs' entrepreneurial activities via the transfer strategy. Consider introduction of an explicit performance indicator with regard to entrepreneurial activities in the funding model.

- Support joint initiatives of HEIs and local stakeholders to promote entrepreneurial activities through the state innovation strategy and regional economic structures, such as the clusters.
- Maintain the *PerspektivWechsel* programme and provide matching opportunities to more researcher-entrepreneur couples per year state-wide if possible.

Improve the conditions for internationalisation

- Work towards establishing and maintaining a welcoming culture and anti-discriminatory social climate across the broader state government, within the school and higher education systems. Ensure that anti-discrimination officers at HEIs are given sufficient resources and authority to issue complaints and sanctions.
- Mandate HEIs, Chambers of Commerce and *Wirtschaftsförderung Brandenburg GmbH* (Economic Development Agency Brandenburg) to collaborate with the aim to connect international students to local employers via internships and other forms of practice-oriented learning.
- Assess whether the funding model and institutional framework contracts are effective in promoting outward student mobility. Encourage HEIs and particularly universities of applied sciences, through the framework contracts, to integrate intercultural and international knowledge and skills into the curriculum, including foreign language skills for domestic students.
- Develop ambitious research projects; offer guidance on potential visa sponsorships; provide clear information related to the potential relocation package and career prospects; create detailed job descriptions that spark a candidate's interest, despite the location; offer training in language, communication, teaching and management skills; and advertise the offer among the right scientific audience to help Brandenburg's HEIs attract top international researchers.

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7 Strategies and policies for securing a skilled workforce

This chapter summarises the strategies used by the state government to address the challenge of developing, attracting and retaining skills in Brandenburg. It looks at the role of the higher education system to address challenges arising from the economic transition to advanced manufacturing and the shortage of skills. In particular, it highlights the role of state agencies, non-governmental organisations and industry groupings, analysing the alignment of their policies and approaches. It also looks at how the government's strategic priorities help shape its higher education policy and thus the priorities of higher education institutions. It gives special attention to the educational opportunities, careers and studies in science, technology, engineering and mathematics. Finally, the chapter offers an assessment and policy recommendations.

Brandenburg's higher education system needs to overcome three key challenges in response to the changing needs of the state economy and labour market:

1. maintaining a high student demand and encourage upskilling and reskilling;
2. improving the completion rate of students in Brandenburg's higher education institutions (HEIs);
3. retaining graduates of Brandenburg's HEIs to live and work in the state and attracting alumni to return to Brandenburg.

The state government, HEIs, and social and business partners have addressed these three interrelated priorities through a combination of distinct strategies, policies and initiatives beyond higher education. This chapter assesses how well the policy environment responds to these priorities.

Strategic planning and co-ordination

MWFK's strategic agenda on higher education is strongly oriented towards the needs of the state economy

Brandenburg has established a strategic agenda for higher education. It plays a role in steering higher education policy and links higher education to the state's labour market and economic development. Besides the 2013-25 *Hochschulentwicklungsplanung* (Strategy for the Higher Education Sector), *Ministerium für Wissenschaft, Forschung und Kultur – MWFK* (Ministry of Science, Research and Culture) steers Brandenburg's HEIs through the framework agreement developed every five years. This agreement identifies goals for the sector and sets out measures for achieving them. The most recent agreement, in effect for 2019-23, establishes the overall goal for Brandenburg as "to make better use of the HEIs' education, training and research potential for economic development by strengthening the performance of the HEIs". The overarching goals, as compiled from the various strategic documents, can be summarised under seven major topics (Box 7.1).

Box 7.1. Strategic thematic areas of Brandenburg's higher education policy

The thematic areas below summarise the goals and measures from the 2013-25 Strategy for the Higher Education Sector (*Hochschulentwicklungsplanung*); MWFK's contracts with higher education institutions (HEIs); and the state government briefing to the state parliament on the 2019-23 framework agreement.

1. Align the study offer to skills demand and assure quality

i) Continuously improve the institutional quality assurance systems to respond to changing needs; ii) develop further dual study programmes; keep their focus on the social, health and technical fields and expand the offer across the higher education system; iii) increase capacity of study fields and programmes in high demand from students and employers; iv) increase the attractiveness of less popular study programmes to ensure professional training in domains needed by the state economy; and v) assess the offer of scientific continuing education programmes, expanding it in alignment with skills demand.

2. Reduce dropout rates

Further develop measures and support structures for study orientation and preparation (such as college structures, orientation studies, etc.) without lowering standards (*fachliche Anforderungen*).

3. Strengthen research and technology & knowledge transfer

i) Strengthen collaboration among HEIs and with (if possible), in-state research institutions; ii) strengthen the knowledge transfer culture and contribute more to regional economic and societal development; and iii) establish structures for collaboration with partners from the business sector, non-governmental organisations and civil society.

4. Strengthen the position of universities of applied sciences

i) Strengthen the attractiveness of professorships at universities of applied sciences (UAS) through the establishment of research professorships; ii) increase the number of these professorships so that UAS can fulfil their roles as partners of the regional economies in meeting the needs for a skilled workforce, and in efforts to grow and innovate; and iii) reconsider the rights of UAS to award doctoral degrees, currently facing opposition from the universities.

5. Prepare for and advance digitalisation

i) Improve the digital infrastructure at HEIs, particularly through establishment of a Centre for Digital Transformation; ii) develop and expand the offer in digital teaching and learning formats; and iii) develop research capacity in the domain of digitalisation.

6. Promote sustainable development

i) Promote sustainable development in education, research, knowledge transfer and institutional governance; ii) establish a cross-institutional working group on the topic under the leadership of the University for Sustainable Development Eberswalde.

7. Promote inclusiveness and good working conditions

i) improve the study-work-family balance for students and HEI employees; ii) ensure equal opportunities for all and women in particular; iii) develop structures to address and sanction discrimination and racism, in particular; iv) improve the career development structures for young academics in order to attract and retain talent in Brandenburg; v) align institutional job offers with the skills of post-docs via a cross-institutional network; vi) employ more people with disabilities; and vii) improve institutional health management.

Note: OECD compilation from several state strategic documents on higher education.
Source: Landtag Brandenburg (2019[1]), *Rahmenvereinbarung 2019 - 2023 zwischen dem Land Brandenburg und den Hochschulen des Landes Brandenburg, Unterrichtung der Landesregierung, Drucksache 6/9167*; MWFK contracts with the HEIs, https://mwfk.brandenburg.de/mwfk/de/wissenschaft/rechtliche-grundlagen-zentrale-dokumente/#; MWFK (2013[2]), *Hochschulentwicklungsplanung des Landes Brandenburg bis 2025 Potsdam, März 2013, Ministerium für Wissenschaft, Forschung und Kultur*.

The state's HEIs have several elements to their mission. In addition to serving the skill needs of the regional economy, HEIs prepare their graduates for national and global labour markets and to succeed in the global competition in research and innovation. These factors, in turn, can support regional economic development through knowledge and technology transfer.

Recently, MWFK has been driving extensive consultation with HEIs to meet a number of sector-wide objectives through working groups and consultative bodies. This dialogue seeks to achieve objectives such as maintaining demand for study places, strengthening HEIs' research performance and building stronger links with the state and regional economy. This has the potential to make higher education policy making more transparent and to build trust between HEIs and the ministry. Recently launched initiatives include semi-annual meetings of the minister with HEIs' presidents, the working group with HEI presidents on higher education development and funding, and sub-groups with the chancellors on the state funding

model. Consultative bodies and boards also guide, support and evaluate the work of joint centres and networks of the state HEIs:

- Several networks such as *Netzwerk Studienorientierung* (Study Orientation Network), *Netzwerk Studienqualität* (Study Quality Network), *Erfolgreicher Studieneinstieg für internationale Studierende in Brandenburg* (Network for a Successful Start in University Studies for International Students) and *Netzwerk Zukunft. Schule und Wirtschaft für Brandenburg* (Network Future).
- *Qualitätsnetzwerk duales Studium* (Dual Studies Quality Network), *Zentrum für Medienwissenschaften or ZeM* (Centre for Media Sciences) and the Sustainability Centre at the HNE Eberswalde.
- The "*Digitalwerk*", which supports the digitalisation of SMEs in Brandenburg allowing them to test digital technologies in this centre (which is operated by the Institute for Innovation and Information Management at the TH Brandenburg).
- The HEIs' *Präsenzstellen* (presence centres) with a co-ordination centre at the TH Brandenburg.

MWFK stimulates collaboration between the HEIs to help achieve its strategic objectives. However, as many of these projects are run through fixed-term funding programmes and evaluations are rare, the continuity of the results is at risk. Moreover, the heterogeneity of the higher education sector makes cross-institutional co-operation in Brandenburg difficult. This difficulty is exacerbated by the small size of HEIs (except for the University of Potsdam), which makes their capacity limited.

UAS seem more interested in local collaboration than universities, which prefer co-operation with international or national peers. This is understandable since UAS usually act in a more practice-oriented way and maintain contacts with regional businesses and stakeholders. The University of Potsdam is often expected to lead regional co-operation efforts, even though it is big enough to implement many of the projects alone.

In addition, while MWFK welcomes collaboration in the higher education sector, it rarely funds bottom-up initiatives. A good example of successful cross-institutional collaboration, initiated by HEIs themselves and supported by MWFK, is in the field of study quality. The new European Regional Development Fund programme, *StaF-Verbund*, aims to fund joint application-oriented, technological research projects between HEIs and between HEIs and non-university research institutions. This approach could foster stronger cross-institutional collaboration.

MWFK's strategic agenda, coupled with the goals set in the framework agreement and the networks and structures, address many aspects of the three key challenges. They also create a framework to design and implement specific policies and programmes to achieve the high-level goals. However, action beyond the HEIs and MWFK is also needed.

Several state ministries are involved in skills development, but their efforts are not fully aligned

While MWFK co-ordinates Brandenburg's efforts to develop its higher education system, other state agencies, often working in partnerships with non-government actors, are involved in the broader policy field of skills development. Key among these are the *Ministerium für Bildung, Jugend und Sport – MBJS* (Ministry for Education, Youth and Sports), *Ministerium für Wirtschaft, Arbeit und Energie – MWAE* (Ministry for Economic Affairs, Labour and Energy), *Wirtschaftsförderung Brandenburg GmbH – WFBB* (Economic Development Agency Brandenburg), *Bundesagentur für Arbeit – BA* (Federal Employment Agency) and its regional office in Berlin-Brandenburg, ***Industrie- und Handelskammern***, *IHKs* (Chambers of Industry and Commerce in Brandenburg) and the clusters.

Each of these bodies has its own institutional strategy and its own perspectives on the role of higher education in skills development:

- MWAE develops a skilled workforce in alignment with the state's economic policy. It focuses on dual studies, which make up a small share of the higher education offer in Brandenburg. MWAE is also responsible for the state's Strategy for a Skilled Workforce.
- MBJS focuses on school education and vocational education and training (VET) and is responsible for the career and study orientation at Brandenburg's schools.
- WFBB offers "a range of relocation services and support … in finding an appropriate site and skilled workforce, applying for business incentives and getting in touch with technology-oriented partners"; the agency, along with others, recruits skilled labour and advances training measures for employees.
- IHKs are responsible for the design and final examination of many VET qualifications and connecting local companies and apprentices in VET.
- BA focuses, to a large extent, on supporting individuals with low skills to access relevant training and employment. BA also connects local companies with skilled workers as needs arise, offers VET opportunities to HEI dropouts and provides financial support for VET.

Several regional and local partners provide information about labour market opportunities or training and study programmes in Brandenburg. These include the cluster management offices and regional growth areas (*Regionale Wachstumskerne – RWKs*), which each carry its own agenda. The 15 RWKs spread over Brandenburg were established in 2004 as areas of special economic and research potential. They were set up to strengthen growth, secure employment and ensure a more efficient deployment of resources. Furthermore, the RWKs are expected to drive development of the region and to have a positive impact on surrounding regions. The RWKs benefit from preferential treatment in the state's development-related funding programmes.

The large number of players and the differences in the focus of their agendas means there is "product clutter" with several similar programmes operating independently. It also creates the risks of agencies operating in an unco-ordinated way. Stakeholders interviewed by the OECD review team suggested greater co-ordination was needed between these groups and agencies. The interaction between ministries is said to be limited. However, there are opportunities for greater clarity and complementarity. While MWFK's agenda is focused on higher education and stresses the need to focus on developing advanced skills, MWAE and MBJS focus on developing middle, vocationally-oriented skills, while BA supports those with low skills.

Higher education is not a priority in the government's overarching strategic agenda on skills development

Since the 2000s, Brandenburg has pursued the development and retention of a skilled workforce in the state under the leadership of MWAE. *Fachkräftestrategie* (Strategy for Skilled Workforce), launched in 2012, aims at developing, retaining and attracting skilled workers. Adjustment for the legislative period 2015-19 defined five overarching topics and concrete supportive measures for their implementation (Box 7.2). The coalition agreement signed in October 2019 provides for further development of the strategy, especially around digitalisation, into a comprehensive skills development strategy for Brandenburg. This will be partly implemented with the state of Berlin (Land Brandenburg, 2019[3]). MWAE is updating the strategy and will ask for inputs from other state ministries.

Box 7.2. Brandenburg's strategic agenda for securing a skilled workforce since 2012

2012 Strategy "Developing, retaining and attracting skilled workers for Brandenburg"

In 2012, the state of Brandenburg adopted its first comprehensive workforce development strategy "Developing, retaining and attracting skilled workers for Brandenburg" and backed it up with a plan of action. This was preceded by a fundamental analysis of the manufacturing, health care and tourism sectors, including an estimate of future skill needs. The strategy comprised eight fields of action:

- Improve career guidance and transition to further learning.
- Increase motivation to study.
- Expand quantitatively and qualitatively initial training.
- Promote skills development in companies and qualification of employees.
- Improve labour market perspectives for unemployed through needs-based qualification.
- Improve collaboration and transfer between the research and economy sectors.
- Promote business start-ups.
- Development and structural measures.

Strategy for 2015-19 and beyond

The strategy was updated in 2015 to consider challenges related to demographic development, the rising shortage of skilled workers and, most recently, digitalisation. To this end, it defined five key topics:

- **Skilled workforce in clusters**: This topic is integrated as a cross-sectional task into all nine clusters (see Chapter 2).
- **Transition from school to work, including career and study orientation**: This aims to help inform each pupil and young person about the various post-secondary training and education paths so they can acquire a career-related qualification.
- **Expansion of dual study offerings at HEIs**: This topic, managed by MWFK, promotes expansion of dual study offerings. MWFK established the Dual Studies Agency at the *Technische Hochschule Bradenburg* (Brandenburg University of Applied Science), which facilitates co-ordination among HEIs, businesses and other stakeholders.
- **Strengthen vocational training and further education**: Skill shortages are forecast primarily in technician and professional occupations. Continuous individual and on-the-job training is considered important for the career prospects of employees, as well as for the competitiveness of the companies.
- **Good work and changing work practices**: The state government is working on this topic with social partners. The rationale is the view that establishing fair processes for handling the fallout from changes such as digitalisation and artificial intelligence technologies and setting fair working conditions will determine the attractiveness of Brandenburg as a place to work.

MWAE is updating *Fachkräftestrategie* (Strategy for Skilled Workforce).

Source: MSGIV (n.d.[4]), *Fachkräfte bilden, halten und für Brandenburg gewinnen: Die Strategie des Landes Brandenburg zur Fachkräftesicherung* [Train, retain and recruit skilled workers for Brandenburg: The state of Brandenburg's strategy for securing skilled workers], *Ministerium für Soziales, Gesundheit, Integration und Verbraucherschutz*.

By committing to five key topics, the state government wants to make its support measures and activities visible, to be efficient and to strengthen co-operation with relevant partners. The most important partner is *Bündnis für gute Arbeit* (Alliance for Good Work), a successor to *Arbeitskreis für Fachkräftesicherung*

(Working Group for Securing a Skilled Workforce). *Bündnis für gute Arbeit* was constituted in 2016 as the highest employment policy body in the state of Brandenburg, led by MWAE in co-operation with MBJS and *Ministerium für Soziales, Gesundheit, Integration und Verbraucherschutz – MSGIV* (Ministry for Health and Social Policy). Participants are representatives from the business sector, chambers of commerce and crafts, trade unions, the state parents' council, HEIs, school authorities, the state district council, the regional directorate of the BA, LIGA of the central associations of independent welfare, the Berlin Senate Department for Labor, Integration and Women as well as departments of the Brandenburg state government (MWAE, n.d.[5]).

The state government offers several funding programmes, co-financed with the European Social Fund (ESF), with the following aims:

- promotion of on-the-job continuing education and training in SMEs;
- support for VET through the *Programm zur qualifizierten Ausbildung im Verbundsystem* ("Programme for qualified training in the network system");
- promotion of the career entry of students and university graduates to Brandenburg's companies through the *Brandenburger Innovationsfachkräfte* programme (Brandenburg's innovation experts).

Brandenburg will continue to use predominantly ESF funds to finance strategy-related measures for 2021-27. In alignment with the ESF overarching priority "Building a more social and inclusive Europe", the state government has defined "inclusive education and better development of the workforce potential" as one of its four political priorities according to the 2019 coalition agreement. The "inclusive education" part aims at improving i) literacy and basic education; ii) career and study orientation; iii) *Bildungsmaßnahmen* (training at HEIs); iv) *kulturelle Bildung* (educational offer that brings children and adults closer to culture); and v) foreign language and intercultural competences. The second part focuses on the career and study orientation for young people and their transition from school to VET or higher education; other measures include, for instance, attracting returnees and skilled workers from abroad, and preparing workers for the ever-changing world of work (especially as related to digitalisation).

Brandenburg's *Fachkräftestrategie*, led by MWAE, contains limited and narrow reference to higher education except for the focus on dual studies. It is to be complemented by the clusters' master plans, the transfer strategy and the strategic priorities of the RWKs. Some clusters focus on higher education with respect to skills development and graduate retention in alignment with the state's innovation strategies[1] (Table 7.1).

Brandenburg's Transfer Strategy, launched by MWFK in 2017, also adopted three concrete measures: i) enhancing the offer of dual studies; ii) advancing the *Brandenburg's Innovation Experts* funding programme; and iii) better connecting graduates with local companies, in support of skills development and higher education graduate retention (MWFK, 2017[6]). The strategy is being implemented mainly by the technology and knowledge transfer offices and the *Präsenzstellen* of the state HEIs. The RWKs can also finance measures to secure skilled workers with their budgets. In November 2019, the State Chancellery of Brandenburg took responsibility from MWAE for the RWK process and the associated inter-ministerial working groups.

Table 7.1. Reference to higher education in clusters' master plans

	Brandenburg-Berlin joint clusters					Brandenburg-specific clusters			
	Energy technology	Life sciences and health care	ICT, media and creative industries	Photonics	Transport, mobility and logistics	Food industry	Plastics and chemistry	Metal	Tourism
1. Co-operation between companies, HEIs and other education/training providers in the development and design of study and training offerings		X						X	
2a. Preparing and motivating school students for studies, training and work in relevant fields (such as natural sciences, mathematics, information technology and engineering)		X					X	X	
2b. targeting women			X				X	X	
3. Informing HE and VET graduates about related in-state job offers			X					X	
4. Co-operation between companies and HEIs in research			X						
5. Strengthening relevant applied research at HEIs				X					
6. Enhancing the study offer, including in continuing education and training at HEIs and other educational institutions in related domains			X	X			X	X	
7. No specific reference to higher education					X	X			

Sources: Berlin Partner and WFBB (2020[7]), *Berlin-Brandenburg – Zukunft der Gesundheit: Masterplan Gesundheitsregion Berlin-Brandenburg, Berlin Partner für Wirtschaft und Technologie GmbH, Wirtschaftsförderung Brandenburg GmbH*; WFBB (2020[8]), *Masterplan Cluster Metall Brandenburg: Allein stark, gemeinsam stärker, Wirtschaftsförderung Brandenburg GmbH*; WFBB (2014[9]), *Brandenburg hat Geschmack: Masterplan für das Cluster Ernährungswirtschaft Brandenburg, Wirtschaftsförderung Brandenburg GmbH*; Berlin Partner and WFBB (2020[10]), *Masterplan Cluster Verkehr, Mobilität und Logistik Berlin Brandenburg, Berlin Partner für Wirtschaft und Technologie GmbH, Wirtschaftsförderung Brandenburg GmbH*; WFBB (2020[11]), *Masterplan Kunststoffe und Chemie: Nachhaltige Entwicklung in der Hauptstadtregion Berlin-Brandenburg, Wirtschaftsförderung Brandenburg GmbH*; Berlin Partner and WFBB (2017[12]), *Die Region voller Energie: Masterplan für das Cluster Energietechnik Berlin-Brandenburg, Berlin Partner für Wirtschaft und Technologie GmbH, Wirtschaftsförderung Brandenburg GmbH*; Berlin Partner and WFBB (2020[13]), *Masterplan für das Cluster IKT, Medien und Kreativwirtschaft Berlin-Brandenburg, Berlin Partner für Wirtschaft und Technologie GmbH, Wirtschaftsförderung Brandenburg GmbH*; Berlin Partner and WFBB (2019[14]), *Masterplan Optik und Photonik: Optische Technologien und Mikrosystemtechnik in Berlin und Brandenburg, Berlin Partner für Wirtschaft und Technologie GmbH, Wirtschaftsförderung Brandenburg GmbH*; WFBB (2016[15]), *Landestourismuskonzeption Brandenburg: Wir machen Lust auf Land, Wirtschaftsförderung Brandenburg GmbH*.

Attracting and retaining a skilled workforce

Initiatives have been developed to inform and attract skilled workers to Brandenburg

Within the framework of the state's strategy for workforce development, the government finances several advisory structures that provide information on labour market and skills-related topics:

- WFBB's *Arbeit Fachkräfte & Qualifizierung* (Employment, Skills and Qualifications) unit, which maintains several regional offices, informs and advises local companies on how to develop and retain their workforce. This includes using available funding programmes and facilitating networking and collaboration among regional labour market actors.
- *Weiterbildung Brandenburg* (Continuing Education and Training for Brandenburg project) has advisory services for continuing education for companies and individuals, including maintenance of a database on continuing education options in Brandenburg.
- *Servicestelle Arbeitswelt und Elternzeit – SEA* (Service Point) offered until 31 December 2021 advisory services for employees, parents-to-be and companies on legal and organisational issues with regard to a better work-life balance.
- *Fachkräftemonitoring* (Brandenburg's skills monitoring) provides information for regional companies and other stakeholders to serve as basis for developing targeted options for action.
- *Fachkräfteportal* (Brandenburg Skills Portal) lists job vacancies and apprenticeship opportunities in the state of Brandenburg, as well as with other useful information for newcomers, returnees, prospective students and other groups.

A 2017 evaluation of the first three support schemes concluded the projects had met their qualitative goals, and in some cases, had significantly exceeded quantity targets. Users of these services appeared highly satisfied with the offer (Wirtschaftsregion Lausitz GmBH, 2020[16]).

Agencies throughout Germany and Brandenburg develop a wide range of labour market information. However, these data sources are not easily accessible to policy makers, employers and individuals. Nor are they used jointly and systematically for the skills assessment and anticipation process. The Brandenburg Skills Portal attempts to bring together labour market information about Brandenburg, as well as information about the study offer and other related topics in Brandenburg (WFBB, n.d.[17]). However, the effectiveness of the portal in achieving its goals and serving its target groups has not been evaluated.

Another programme aims to introduce dental students to Brandenburg as a place to work and live. Since Brandenburg has no university that offers dentistry courses and degrees, the Dental Association Schwedt reached an agreement with the University of Greifswald (Zahnärzte Schwedt, 2022[18]). For one week each year, a group of students gets the opportunity to complete a week of practical training in dental surgeries in Schwedt. This provides students with an idea of everyday professional life in a dental surgery, as well as the economic, legal and other requirements of a self-employed dentist. Furthermore, the association wants to introduce the city and the region as a place to live and work. Each day, students visit surgeries and laboratories, as well as selected places in the city; they learn more about the dental association; and they get to know returnees who grew up in Schwedt and returned to Brandenburg. Participants are positive about the benefits of the project.

The state has also made efforts to attract graduates and young skilled workers from other parts of Germany and abroad, including returnees and alumni to Brandenburg. The information offer of the Skills Portal describes 16 initiatives relevant for people considering a permanent move to Brandenburg (WFBB, n.d.[17]). In addition, marketing campaigns are run to spark interest in jobs in Brandenburg among people who have left the state. Between 1992 and 2015, around 800 000 people left Brandenburg for another federal state. This presents an enormous potential for the state if many decide to return.

In 2018, the state chancellery started the campaign *"Brandenburg. Es kann so einfach sein"* ("Brandenburg. It can be so easy."). The objective is to present the state of Brandenburg as a place worth living in, to raise the confidence of the people who already live there and to attract people from elsewhere. The campaign includes press releases, television and radio features, posters and a web portal *www.es-kann-so-einfach-sein.de*. In a representative online survey, one in ten people in Germany said they knew the campaign slogan; in Brandenburg, almost one in three knew it. Three-quarters were convinced the slogan and the campaign will be remembered and 79% considered the slogan fits well to Brandenburg (Brandenburg State Marketing, n.d.[19]).

All Brandenburg's HEIs maintain alumni networks and services. These could be further developed to engage alumni in spreading the word about Brandenburg as a valuable state for studying, working and living, and for attracting returnees. Most HEIs have a dedicated contact person for alumni issues. The EUV Frankfurt/Oder, for instance, organises regular alumni meetings in cities around the world. The BTU has a special association of and for alumni, *Alumni Club der BTU Cottbus-Senftenberg e.V.* Others invite their alumni to become members in their friends' associations, such as *Universitätsgesellschaft Potsdam e.V.* at the University of Potsdam, *Gesellschaft von Freundinnen und Freunden* of the Film University or the *Eberswalder Hochschulgesellschaft e.V*. at the University for Sustainable Development (HNEE). Some HEIs invite their alumni to make use of HEI facilities and services: for instance, the start-up service of the University of Potsdam is open to alumni free of charge. The same is true for alumni of HNEE who have free access to start-up consulting services of the HEI up to seven years after graduation. Meanwhile, TH Wildau allows its alumni to use its start-up centre, library and sports facilities. Regional business stakeholders consider alumni "a treasure for Brandenburg that has not been discovered yet".

Improving education opportunities in STEM, particularly in engineering, is high on governmental and institutional agendas

Engineering graduates are in high demand in Brandenburg; stakeholders acknowledge the high level of skills of Brandenburg's engineering graduates. After a steady decline in graduate numbers since 2015, student numbers began to increase in winter semester 2019/20 driven largely by international students. Brandenburg's five technical HEIs face serious competition from technically oriented and much bigger HEIs in Berlin and other neighbouring federal states.

Brandenburg's technical HEIs have restructured their study offer, refocusing research activities to become more attractive to students and better connected to the economy. HNEE has made a name in wood engineering and FH Potsdam specialises in construction engineering. BTU, TH Brandenburg and TH Wildau offer a relatively wide range of subjects, and show some overlaps and similarities. Many of those programmes are underpinned by research that offers potential. Many also have relevance for future skills needs, even if student demand for those is currently limited.

Many different actors in government and stakeholder groups, acting jointly or independently, offer activities related to science, technology, engineering and mathematics ($STEM^2$) at different educational levels. These aim to increase young people's STEM competences and raise awareness about STEM careers (Box 7.3). MWFK has been involved in various cross-national committees (such as the federal-state roundtable on STEM regions and the national pact for women in STEM professions), benefiting from the expertise of other federal states. MWFK is supporting the establishment of a STEM co-ordination office at *Netzwerk Studienorientierung* in 2022 to guarantee better links with the various actors.

Box 7.3. Initiatives to promote careers and studies in STEM subjects

Several national and state-specific initiatives aim to instil science, technology, engineering and mathematics (STEM) competencies in young people and to raise their interest in STEM careers. The goal is to increase the number of students, (particularly women) in STEM programmes at German higher education institutions (HEIs) and to improve the skills of STEM graduates. Brandenburg's schools also participate in many STEM initiatives and competitions. These are advertised nationally but also in state networks and platforms (for example, mintnetz.de and mint-lausitz.de).

MINT – Zukunft schaffen

MINT – Zukunft schaffen (STEM – creating the future) is the largest German STEM-network comprising most initiatives and activities of German companies, designed to win more qualified professionals for STEM subjects. It offers a platform for STEM activities and initiatives. The goal is to present STEM-related topics to the wider public and to inspire and interest young people in STEM.

Since 2011, in co-operation with partners, national employers' associations and HEIs, the network has identified the schools that set STEM priorities. It awards the "STEM-friendly school" label to those taking first, important steps in that direction rather than to the "best" STEM schools. In a nationwide application process, STEM-friendly schools must demonstrate they meet at least 10 of 14 criteria. The network's goal is to reach 10% of secondary schools.

In 2017, the network founded the new "digital school" programme, which uses five evaluation criteria: the school's pedagogy and learning culture; the qualifications of teachers; regional networking; concept development and continuation; technology and equipment. In Brandenburg, eight schools were awarded "STEM-friendly school" and five the "digital school" certification in 2021.

***MINT*-EC certificate**

MINT-EC is the German national excellence network of 339 secondary schools that have an excellent STEM school profile. The network includes eight schools in Brandenburg. It aims to support the schools with offers for students, teachers and school administrators to turn the schools into STEM talent academies. The network offers research events over several days for students in co-operation with schools, HEIs, research institutes and companies; competitions for students and school administrators; principals' meetings; conferences and training for specialist teachers; development of a digital teaching and learning platform, including the MINT-EC schools; and an alumni network.

TuWas! Technik und Naturwissenschaften an Schulen

TuWas! Technik und Naturwissenschaften an Schulen! ("Do Something! Technology and Natural Sciences at Schools!") was founded in 2007 by the Berlin-Brandenburg Academy of Sciences and the Free University of Berlin. It aims to inspire primary school children to take up studies and careers in science and technology. Four federal states have implemented TuWaS!

The Bertolt Brecht school in Schwedt/Oder in the Uckermark region of Brandenburg has participated in the project since 2008. Since the 2016/17 school year, several other schools in Brandenburg have joined, initially supported by the *Ministerium für Bildung, Jugend und Sport* and Cluster Chemistry and Plastics. The project offers experimentation and teaching materials on curriculum-relevant topics in science and technology for grades one to six. School children develop hypotheses, experiment in teams, and document and discuss their results. With hands-on experience, they get to know scientific working methods, acquire teamworking skills, improve their reading and writing skills, and expand their science-related vocabulary in a fun environment. Training courses on every topic are offered to teachers to prepare them to teach these classes.

Sources: MINT Zukunft e.V. (n.d.[20]), *MINT Zukunft Schaffen: Kategorie: Brandenburg* (accessed on 15 March 2021), https://mintzukunftschaffen.de/category/deutschlandweit/brandenburg/; MINT-EC (n.d.[21]), *MINT-EC-Zertifikat, MINT-EC - Das nationale Excellence-Schulnetzwerk*, https://www.mint-ec.de/angebote/schuelerinnen-und-schueler/zertifikat/ (accessed on 15 March 2021); TuWaS! (n.d.[22]), *Willkommen bei TuWaS!, TuWaS! – Technik und Naturwissenschaften an Schulen (*accessed on 15 March 2021), https://tuwas-deutschland.de/.

Teacher education

There is a persistent shortage of teachers in Brandenburg; the current capacity in teacher education programmes produces only half of the demand for new teachers (approximately, 600 graduates). To address this problem, the state government has allocated substantial funds to the University of Potsdam to further expand the study offer and student places and to improve infrastructure and capacity. Bringing the University of Potsdam's offer closer to prospective students who live far from the city might be worth considering as well. Brandenburg's universities seem also well prepared to train teachers for the VET schools if the state government would provide them with the mandate and funding for that.

In the meantime, an MBJS programme is recruiting lateral entrants, especially in rural areas if no teachers with a university-based teacher education apply for an open position at a specific school. All lateral entrants go through basic pedagogical training before they teach in a classroom. The prerequisite for lateral entry into the Brandenburg school system is usually a degree from a university or a UAS (diploma or master's degree). The basic pedagogical qualification is organised within the area of the responsible state school authority. Seminar leaders and advisers from the Advisory and Support System (BUSS) provide lateral entrants with knowledge, skills and abilities on essential processes of everyday school life and teaching design (MBJS, n.d.[23]).

Assessment and policy recommendations

Co-ordinate skills development across the state government

The state and federal government are setting the course for structural change in the economy and labour market in response to the programmed closure of coal production in the Lausitz region. At the same time, Brandenburg needs to prepare to benefit from the fourth industrial revolution, Industry 4.0, instead of seeing it as a risk. In addition, the COVID-19 pandemic has changed the ways that society functions, with implications for modes of working.

Skills imbalances present the major challenge to Brandenburg's economic development today and structural changes will exacerbate that mismatch. The state needs to invest in education and training in response to these changing skills needs. It has the potential to become a centre for research and innovation. However, that would need a comprehensive agenda to enhance and better use the skills of the population, involving all the relevant state ministries and agencies, employers and education providers.

Higher education plays a key role in this transformation process, more than envisaged in the strategy papers (most notably *Fachkräftestrategie*). State strategies for skills and economic development contain limited reference to higher education. A high-performing higher education system is needed to develop the skills and build the research, development and innovation capacity for a more knowledge-intensive economy. HEIs should therefore be enabled to prepare a strong skills base for the labour market – local, regional, national and global – and to excel in research and innovation. This, in turn, will support regional and local economic development through knowledge and technology transfer.

MWFK and other departments responsible for skills and economic development are already consulting. Good co-operation was reported during the development of contributions from Brandenburg to the Federal

Advanced Training Strategy. In addition, inter-ministerial working groups exist on issues such as securing the supply of skilled workers via dual studies. MWAE is revisiting the state's *Fachkräftestrategie*; it will ask other state ministries and agencies to contribute. These existing forums can deepen co-operation between relevant policy agencies.

The importance of skills development to Brandenburg and its centrality in the state's strategic planning have led to an array of initiatives. Many state government ministries and agencies have a stake in this agenda. Non-government entities and networks (like chambers of industry and social partners) are involved. As a result, there are multiple networks and plans. Inevitably, these networks have advanced their own takes on the broader agenda.

To support the ongoing skills strategy development process, Staatskanzlei, Brandenburg's State Chancellery could entrust a multi-partite committee to establish a State Skills Council, including its structure, mandate and financing. This committee would encompass MWFK and the HEIs along with other relevant ministries and the chambers of industry and commerce. Ultimately, the new council would offer a permanent co-ordination forum similar to Norway's experience (Box 7.4). The council should collect data on skills needs for knowledge-based decision making; provide or commission analysis; and give recommendations to state authorities on the education system and labour market. Analysis on the education system would encompass school, VET and higher education, as well as continuing education and training (CET). Stakeholders would need to carry jointly the vision for Brandenburg, embrace its long-term objectives and respond to recommendations.

Box 7.4. Skills Strategy Development in Norway

As part of its Strategy for Skills Policy 2017-21, Norway strengthened the governance of its skills system. To that end, it established two governance bodies: the Skills Policy Council and the Future Skills Needs Committee.

The Skills Policy Council introduced an overarching co-ordination body for the previously fragmented field of skills policy, applying a whole-of-government approach. The council includes traditional tripartite partners (government, employers and representatives of the workforce), as well as social enterprises, non-governmental organisations and charities.

The Future Skills Needs Committee improved information systems by providing political decision makers with shared understanding of the skills needs data and a coherent, shared definition of the challenges in skills policy. These were anchored both in scientific analysis, as well as social partner expertise.

Source: OECD (2020[24]), Strengthening the Governance of Skills Systems: Lessons from Six OECD Countries, OECD Skills Studies, OECD Publishing, Paris, https://doi.org/10.1787/3a4bb6ea-en.

Build policy evaluation strategies

Many policy initiatives in Brandenburg have fixed-term funding. In addition, policy initiatives are rarely evaluated. As a result, there is no guarantee that successful programmes will be continued. Formal evaluations are important but are long and costly. Evaluative, ongoing monitoring is equally important. This enables policy makers to identify and discontinue missteps faster, and help identify programme design issues; and, most importantly, help target and design evaluation. Building monitoring and evaluation strategies into the design of policy initiatives should enable more informed decisions about the continuation and funding of these programmes. It should also identify areas for changes in their design and implementation.

The established dialogue between MWFK and Brandenburg's HEIs permits discussion – and adjustments – of policy initiatives in real time. HEIs welcomed the newly established working group on higher education planning and the sub-group on the HEI funding model. MWFK may need to consider establishing a working group on the federal fund for Lausitz. It may also wish to revive the working group on CET, as HEIs play an important part in dialogue and clarification on these topics.

Policy recommendations

Box 7.5. Policy recommendations to co-ordinate skills development across the state government and to develop policy evaluation strategies

Co-ordinate skills development across the state government

- *Staatskanzlei des Landes Brandenburg* (State Chancellery of Brandenburg) should nominate a multi-partite committee, including MWFK and all other relevant ministries and stakeholders, and entrust them with the establishment of a State Skills Council, including its structure, mandate and financing. That council should develop a long-term vision for Brandenburg as a location for research and innovation and advise the state government on how to develop the skills needed to realise this vision.
- Maintain strong links to public agencies and social partners to address the distinct skills and economic challenges of different regions. Ensure the sustainability of the HEIs' *Präsenzstellen* (which have pioneered innovative forms of co-operation between HEIs and local social and business partners).

Build policy evaluation strategies

- MWFK should build monitoring and evaluation strategies into the design of state policy initiatives and commission independent evaluations of policies and programmes.
- MWFK should consider establishing a working group on the federal fund for Lausitz and reviving the state working group on continuing education and training, as HEI demand for dialogue and clarification on these future-determining topics is strong.

References

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Notes

1 In addition, HEIs can benefit from special cluster-related funding programmes such as StaF Guideline (promotion of measures to strengthen technological and application-oriented research in scientific institutions in Brandenburg) and ProFIT Brandenburg (financing of research and development projects).

2 In German, **S**cience, **T**echnology, **E**ngineering, **M**athematics (STEM) is often abbreviated to MINT, standing for **M**athematics, Computer Science (**I**nformatik), Science (**N**aturwissenschaft) and **T**echnology.

Higher Education

Accessing Higher Education in the German State of Brandenburg

Brandenburg's economy is undergoing structural change, which opens exciting new prospects for highly skilled workers. The state has intensified efforts to diversify the economy towards cleaner and more knowledge-intensive industries, including the development of advanced manufacturing, spill-over effects from the start-up scene in Berlin, fostering entrepreneurial activities at its own higher education institutions, promoting innovative places for working and living, and phasing out of coal production in favour of next-generation technologies. As the engine of skills development and research, the higher education system will play an important role in helping the state unleash these opportunities. The German State of Brandenburg has therefore entrusted the Organisation for Economic Co-operation and Development – in close collaboration with and supported by the European Commission's Directorate-General for Structural Reform Support – with the development of recommendations on how to enhance the visibility of its institutions' programme offer, align this offer with the skills and innovation demand, and make it more attractive to prospective students from the state and beyond.

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