

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 Brandenburg* (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 strategies¹ (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 (STEM²) 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 MBSJ 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 (MBSJ, 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. MVAE 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.

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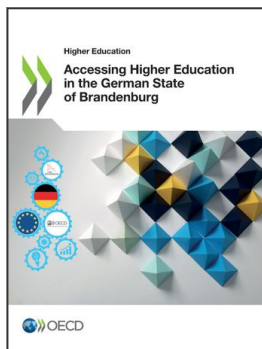
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Notes

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.



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