



Dual Apprenticeship and Continuing Vocational Education and Training in Central and Eastern Europe

Opportunities and Obstacles for German Family Businesses



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Summary of main results

The economic importance of Central and Eastern Europe (CEE) to Germany and German businesses can be seen, for example, from figures on trade intensity or the ranking of trading partners in foreign trade. Germany's imports from Poland (ranked 4th), for instance, today exceed those from Italy (5th) or France (6th).

Our analysis includes seven countries: Poland, the Czech Republic, Hungary, Romania, Bulgaria, Slovakia and Serbia. Between them, these countries are home to no fewer than 4,442 branches of German businesses, employing over 1.4 million people. This indicates the considerable potential for German businesses in the region.

While Germany also suffers from a shortage of skilled workers, a variety of factors have conspired to make the problem even greater in Central and Eastern Europe: economic growth with full employment, labour migration, demographic change, a still inefficient VET system and a low rate of CVET.

It is unsurprising, then, that 89.6 percent of family businesses surveyed for our study indicated that they have problems finding potential employees with the requisite qualifications on the labour market. 74.1 percent of family businesses also cited their willingness to take on social responsibility as a motivation for establishing their own VET provision in these countries. Labour market-related reasons and social responsibility are thus the key motives for involvement in VET in Central and Eastern Europe.

Of the businesses surveyed, 73.6 percent have already taken practical action by providing training. This strong figure is set to increase further to an anticipated 89.0 percent of the companies surveyed by the end of 2023. By comparison: studies by the World Bank (World Bank Group, 2019) have shown that, on average, 20 percent of firms in Bulgaria, 21 percent in Romania, 22 percent in Poland, 25 percent in Hungary, 38 percent in Serbia, 43 percent in Slovakia and 44 percent in the Czech Republic offer formal training for their staff. German family businesses' commitment to training provision is thus well above the national averages for these countries.

Over 60 percent of the businesses surveyed expect to further increase their involvement in VET by the end of 2026, and where CVET is concerned, the figure is as high as 71 percent.

VET is a firmly established fixture of the education system in Central and Eastern Europe, though participation rates are falling in some countries (e.g. Hungary). Today, some 50 percent

Shortage of skilled workers in Central and Eastern Europe even more severe than in Germany

Family businesses show strong engagement in VET.

of each age cohort in Hungary, Poland and Bulgaria attend a vocational programme, and around 70 of each age cohort in the Czech Republic, Slovakia and Serbia.

*Local involvement
in VET should now
be stepped up.*

Legislation creating dual VET programmes has been passed in the last decade in Hungary (2011), Bulgaria (2015), Slovakia (2015), Poland (2016), Romania (2016) and Serbia (2017). These laws largely took effect only a year or two after these dates and require the creation and expansion of structures and processes. The dual VET system in Central and Eastern Europe is thus still under construction, with all the teething troubles this implies. Nevertheless, it has established its presence in the region, making now the right time to intensify involvement in VET in these countries. There is already a shortage of skilled workers, and a similar shortage of qualified trainees also looms, making good positioning in this market essential.

*Measures to
improve dual VET
need political
support.*

Dual VET provision in CEE (still) consists of school-based apprenticeships in contrast to the company-based apprenticeship in Germany. It is therefore crucial to factor the schools into any measures for improving dual VET in CEE. This requires political backing. Of the countries studied, Hungary's VET model comes closest to the German approach. Increasing efforts have been made here to move from a school-based to a company-based model.

While CVET has a positive public image, participation rates ranging from 1.8 percent (Bulgaria) to 5.9 percent (Hungary) are extremely low and fall considerably short of the EU-27 average of 10.8 percent. CVET is not only a useful instrument to tackle the shortage of skilled workers but also creates visibility and would assist in the recruitment of skilled people on the labour market.

Advanced vocational training is growing in importance, with 35.8 percent of the businesses surveyed already involved in VET at the level of master craftsman. Another 21.2 percent have begun putting such training programmes in place. Work-study degree programmes (degree apprenticeships, dual study programme) are still in their infancy. Only 8.3 percent of businesses surveyed are currently involved in these; however, the number is increasing: 22.8 percent have begun to build the necessary partnerships, and another 15.5 percent plan to do so.

*Searching for talent
is not a self-starter.*

It is not cooperation with schools that poses the greatest challenges for VET in CEE; over 85 percent of teachers in the region, for example, are open to collaboration, which suggests good prospects for cooperation between the places of learning – schools and businesses. Instead, the major issues are the poor public image of VET, poor basic education (including poor reading literacy and mathematical literacy) and the sometimes low motivation of trainees, all of which can complicate the search for talent.

The average reading skills of students completing secondary level education in Bulgaria, Romania, Slovakia and Hungary are insufficient to successfully complete a VET programme without support. The 2018 PISA study, for instance, found that students were unable to correctly interpret a short piece of text. This is a situation that needs to be specifically addressed in vocational programmes.

While the three-year vocational schools have some weaknesses – as the example of reading literacy shows – they also have strengths in terms of cooperation opportunities with companies. When it comes to higher vocational schools (such as the technical secondary school in Poland or the upper secondary vocational school in Hungary), the situation is reversed: opportunities for cooperation are more limited, but the basic skills of the students are better. These different strengths and weaknesses call for broad-based cooperation, and this is precisely the route that family businesses are taking, as the case studies clearly show: The family businesses presented are cooperating not only with different VET schools of the same type, but also with VET schools that differ in their orientation (three-, four- and five-year programmes or stage-one and stage-two VET schools).

Based on our analysis, we have formulated nine action recommendations that address both the quality and appeal of VET and CVET:

1. Action recommendation: VET partnerships

The German Federal Ministry of Education and Research funds VET innovation and development projects around the world. However, projects in Central and Eastern Europe are the exception rather than the rule. The BMBF should therefore reactivate existing bilateral partnerships (Slovakia) and create new ones (Poland, Czech Republic, Romania, Bulgaria, Serbia) so that it can initiate joint research and development projects – e.g. to train teachers for the shortage occupations in CEE identified in this study (mechatronics technician, electronics technicians specialising in automation technology and industrial engineering, information technology specialists, skilled metalworkers and industrial mechanics) – with stakeholders in CEE and Germany (e.g. Federal Institute for Vocational Education and Training). A funding line focused on CEE to implement Germany's existing objective is also required: "Support for German enterprises abroad with providing VET and CVET for skilled workers is a key objective of the Federal Government's engagement in international VET cooperation." (BMBF, 2019 [our translation]).

2. Action recommendation: Business and social partners

In the school-based apprenticeship-type training in CEE, business and social partners have played a central role since the introduction of dual VET (e.g. advising on the scope and nature

of the schools' offerings). The international potential of German business and social partners, the German Chambers of Commerce Abroad and the existing funding instruments of the BMBF (e.g. WiSoVET: financial support for business and social partners) should be tapped in order to build cross-border, needs-based collaboration with business and social partners in Central and Eastern Europe.

3. Action recommendation: Cooperation between workplaces and vocational schools

German family businesses in CEE should build and expand cooperation with their vocational schools and other local VET institutions (e.g. sharing information on the content and timing of the company training plan and school curriculum, setting assignments involving both places of learning, offering work experience at the training company for school teachers).

4. Action recommendation: Curriculum reform and development

Teaching in vocational schools should be oriented on vocational spheres of activity and areas of learning rather than academic subjects. School curricula should include vocational spheres of activity and areas of learning relating to working in an international and digital world (e.g. "international project work", "digitalisation of work", "data protection and information security"). Action-oriented curricula can also promote action-oriented teaching that develops 21st century skills (including communication, critical thinking and collaboration). Curriculum reform would require the involvement of government ministries in CEE and the national sector skills councils. Curriculum development could be initiated in a bottom-up process via collaboration between businesses and vocational schools.

5. Action recommendation: Regional stakeholder networks

Stakeholder networks enable family businesses providing training to work together in addressing areas for improvement in VET: e.g. promoting VET to parents and recruiting young people, improving equipment in vocational schools, joint training, strategic planning of cooperation between schools and workplaces, and involvement in education policy (e.g. via sector skills councils). In a further step, stakeholder networks could be expanded into regional innovation and competence ecosystems through the inclusion of educational institutions, research centres, development agencies and employment agencies.

6. Action recommendation: Learning mobility

In CEE, just 5 to 8 percent of apprentices take advantage of opportunities for learning mobility. In Germany, the figure is also only around 8 percent, and countries in CEE are not a common destination. Given how economically intertwined CEE and Germany have become, it is surprising that there is no appreciable mobility of apprentices between them.

German family businesses can and should use their presence in CEE and Germany and make learning mobility a core part of their VET in these countries. This could involve various forms of international mobility: company (CEE) to head office (Germany) and/or vocational school (Germany) and vocational school (CEE) to company (German head office) and/or vocational school (Germany). In addition, family businesses could facilitate contact between vocational schools in CEE and Germany. Mobility would also make apprenticeships more international and attractive. This would benefit vocational education and training not only in CEE but also in Germany, where the dual education system still lags behind in terms of internationalisation.

7. Action recommendation: Job shadowing and training

Over 50 percent of teachers in Central and Eastern Europe are aged over 50. They were “educated and trained at a time when teaching emphasised a very different approach, focused on memorisation and knowledge transfer” (OECD, 2020c). International mobility in the form of a job shadowing programme offers a way for teachers from CEE to familiarise themselves with action-oriented forms of teaching in a German vocational school. This exchange could form the nucleus of an international Community of Practice. In addition to this, local, action-oriented teacher training formats are required.

8. Action recommendation: Skills competitions

High-publicity national, European and international skills competitions have the potential to increase awareness of VET and boost its appeal. Teams (trainees, instructors, teachers) should be created at the head offices and local branches of German family businesses to enable participation in national, European (EuroSkills) and potentially global (WorldSkills) competitions. Preparation could also take place internationally, offering an opportunity for learning mobility.

9. Action recommendation: Duality plus

Alternance learning in accordance with the dual system has been implemented in dual VET in Central and Eastern European countries (with the exception of the Czech Republic). There are also initial moves in Poland, the Czech Republic, Bulgaria and Serbia to transfer this principle to university education (work-study degree programmes/degree apprenticeships). This is not yet the case, however, for CVET or vocational orientation. Promoting and intensifying vocational orientation in general education offers potential to help recruit people into a subsequent vocational education and training programme. The principle of collaboration, which makes alternance learning possible, should be incorporated into all phases of vocational education (vocational orientation, training, study, CVET) as a basic principle, both across institutions (e.g. dual VET, work-study degree programmes) and within institutions (e.g. professional and inter-professional collaboration by teachers).

A. Introduction

German family businesses have a long tradition of providing vocational education and training for their workforce. In Germany today, family businesses account for “more than 60 percent of all jobs and 80 percent of training places” (Langenscheidt & May 2020, p. 12). This study uses the European Commission definition of family businesses (European Commission, 2009; Stiftung Familienunternehmen, 2022a).

The efforts of these businesses are motivated primarily by the need to ensure that the company has access to skilled workers and by a desire to take on social responsibility. The larger the company and the greater the influence of the family owners, the more significant the role of the social responsibility motive (Tänzler et al., 2011). The particular commitment of family businesses is also recognised by the public and appreciated by job applicants, for example, who believe that family-owned companies offer better training opportunities than non-family businesses (Stiftung Familienunternehmen, 2020). Interest in vocational education and training is set to grow further: 95 percent of next-generation family entrepreneurs (NextGens) describe employee training as their top priority, and 93 percent of German speaking NextGens cite the shortage of skilled workers as the key risk to the growth of their business, motivating them to work particularly hard on this issue (PwC, 2020). Today, 74.5 percent of family businesses are already actively involved in continuing vocational education and training in Germany (Stiftung Familienunternehmen, 2022b).

The annual vocational education and training report published by the German Federal Ministry of Education and Research clearly illustrates the link between the size of a company and its level of engagement in vocational education and training: the larger the business, the greater its activity in this area (BMBF, 2022a). A less reported factor is the decision-making structure within companies: the willingness to be actively involved in vocational education and training is significantly higher among large family businesses, where the majority of the decision-making powers rest with the family owners or a family representative is involved in managing or supervising the company, than among similarly sized non-family businesses (Keese et al., 2010).

The double motivation of training skilled workers and taking on social responsibility clearly results in a high level of engagement in vocational education and training among large German family businesses. At over 80 percent, the proportion of businesses with vocational trainees is already traditionally very high among large companies.

This figure is indicative both of the demand for skilled workers and of businesses’ willingness to train them. So how do companies view the supply and demand for skilled labour? An economic



*Study: “Personalmanagement
in Familienunternehmen:
Recruiting, Arbeitsbedingungen,
Weiterbildung” (2020)*



Study: "Fachkräftemangel aus Unternehmenssicht: Auswirkungen und Lösungsansätze – Jahresmonitor der Stiftung Familienunternehmen" (2022)

survey by the Association of German Chambers of Industry and Commerce (Deutscher Industrie- und Handelskammertag – DIHK) in early 2022 gathered companies' views on the current business climate. It included questions about the risks to business performance in the coming 12 months. The respondents cited higher energy and commodity prices as the number-one risk. This was followed by the risk posed by the shortage of skilled workers, with the risk of higher labour costs in third place. In concrete terms, this means that 61 percent of companies surveyed fear that they will be unable to find the skilled workers they need (DIHK, 2022a). Moreover, 86.9 percent of companies surveyed in the latest Annual Monitor of the Foundation for Family Businesses report that the workload required to recruit skilled workers has risen sharply or even very sharply in the last three years (Stiftung Familienunternehmen, 2022b).

The AHK World Business Outlook – a survey by the Network of German Chambers of Commerce Abroad, looking at German companies active in other countries – came to a similar conclusion. In the spring report based on survey data from March and April 2022, the lack of skilled workers was ranked as the joint fourth most significant issue, together with demand risks, behind raw material prices, energy prices and the economic policy framework (DIHK, 2022b).

Study – Focus and structure

Given the context described – the VET efforts of large family business in Germany on the one hand, and the risk of the shortage of skilled workers for internationally active German businesses on the other – this study looks at the involvement of German family businesses in vocational education and training in Central and Eastern Europe (CEE). More specifically, it explores the potential and opportunities of initial and continuing vocational education and training in Central and Eastern European countries of major significance to the German economy, sets out the obstacles that exist and examines where action is needed. The study focuses on industrial and technical occupations, since a significant portion of German family businesses in CEE are industrial companies with a particular need for personnel in this field. The potential, opportunities, obstacles and the need for action that we have identified in this study result from the particular local contexts in Central and Eastern European countries – contexts that differ considerably from country to country. While a high degree of similarity between the countries might initially be assumed, a closer examination reveals major national differences in the existing environments for vocational education and training. It was therefore necessary to begin by looking at each country's education and training system.

The report opens with country analyses based on documentary research. Seven countries were selected for the study: Poland, the Czech Republic, Hungary, Romania, Slovakia, Bulgaria and Serbia (the choice of countries is explained in the next sub-chapter). The country studies were conducted using documentary research, interviews and the involvement of national experts.

Next, the report looks at the extent to which German family businesses are involved in vocational education and training in the seven countries. Although companies were widely presumed to have such involvement, there were no pre-existing studies of this for Central and Eastern Europe. This is surprising when we consider that the training efforts of German companies outside Europe have been analysed in depth, for instance in the USA, South Africa, China, Mexico and India (Gessler, 2017b; Peters, 2019; Pilz & Wiemann, 2021). The next step, which forms the second part of this study, was therefore an empirical survey of German family businesses (n=193).

We used this survey to explore the structures of companies' involvement in vocational education and training. The final part of the picture was an impression of what this looks like on the ground. We therefore prepared case studies examining concrete implementation and the considerable work being done by German family businesses in their branches in Central and Eastern Europe. Though not representative, case studies are the method of choice when it comes to capturing a complex issue in a complex, real-life environment as they enable a qualitative rather than quantitative analysis. We use them here to explore the involvement of branches of various German family businesses in Central and Eastern Europe, looking at their training efforts in Poland (Gühring), the Czech Republic (Mubea) and Hungary (Festo) as well as at a partnership between German companies in Romania (including the family businesses Dräxlmaier and Schaeffler). The case studies are based on eight guided interviews with representatives of schools and companies.

Building on the findings of the country analyses, the empirical survey and the case studies, the final section of the study identifies where action is needed. Where is there room for improvement? What political support should be provided from the EU, from government and administration in the countries themselves and from Germany? What action recommendations can be offered to family businesses?

I. German businesses in Central and Eastern Europe

The enormous economic importance of Central and Eastern Europe to Germany and German businesses can be seen, for example, from figures on trade intensity or the ranking of trading partners in foreign trade (DeStatis, 2022a). Germany's imports from Poland (ranked 4th), for instance, today exceed those from Italy (5th) or France (6th), while exports to the Czech Republic (ranked 11th) are higher than those to Spain (12th) or Sweden (15th). To illustrate the importance and potential of the selected countries, the table below lists them by population (EuroStat, 2022c), ranking in terms of importance to Germany's foreign trade (DeStatis, 2022b), gross domestic product (EuroStat, 2022f) and GDP per capita (EuroStat, 2022j).

Table 1: Figures

Country	Population in millions	Ranking		GDP in € billion	GDP per capita, in €	EU
		Export	Import			
Poland	37.8	6	4	570.21	13,480	2004
Czech Republic	10.7	11	8	238.71	17,920	2004
Hungary	9.7	13	14	154.12	13,660	2004
Romania	19.2	19	21	240.15	9,380	2007
Slovakia	5.4	21	19	97.12	15,660	2004
Bulgaria	6.9	44	37	67.87	6,690	2007
Serbia	6.8	49	48	53.32	5,890	2012*

*Accession candidate

By far the largest country in the study is Poland with a population of 37.8 million, followed by Romania with 19.2 million inhabitants. Poland also has the largest GDP in the sample, at 570.21 billion euros, again followed by Romania with a GDP of 240.15 billion euros. In terms of GDP per capita, the Czech Republic leads the pack at 17,920 euros. Slovakia is ranked second with a figure of 15,660 euros. Unlike the other countries, which were admitted to the EU in 2004 and 2007, Serbia is not an EU member. It also has the lowest GDP in the sample. Serbia's inclusion in our study is justified by its growing importance to the German economy, which can be seen from the figures on direct investment by German companies abroad (see Table 2).

Table 2: German branches and employees

Country	German branches by country		Employees	
	Number ¹	Increase since 2015 ²	in thousands ¹	Increase since 2015 ²
Poland	1,426	+8.3 %	434	+23.3 %
Czech Republic	1,066	+10.0 %	346	+7.8 %
Hungary	788	+4.8 %	213	+14.5 %
Romania	472	+19.2 %	224	+7.2 %
Slovakia	489	+38.9 %	139	+11.2 %
Bulgaria	162	+14.9 %	55	+27.9 %
Serbia	117	+41.0 %	52	+92.6 %

Sources: ¹Deutsche Bundesbank, 2022; ²Deutsche Bundesbank, 2020.

Poland and the Czech Republic are each home to over 1,000 branches of German companies. These branches are expanding considerably. In Poland, for example, the number people they employ has risen by 23.3 percent since 2015. Hungary has also seen similarly fast growth of 14.5 percent. German companies employ over 200,000 people here and a similar number in Romania. Slovakia, Bulgaria and Serbia all have relatively small populations (< 7 million). However, there is a substantial quantitative difference between Slovakia on the one hand and Bulgaria and Serbia on the other in terms of the number of German companies and their employees (Deutsche Bundesbank 2020 and 2022).

The countries listed in Tables 1 and 2 will be the focus of this study. Our analysis does not include EU Member States with low population numbers (Croatia with approximately 4 million or Slovenia with approximately 2.1 million inhabitants) or Central and Eastern European countries with few German companies (e.g. Albania, Bosnia and Herzegovina, Kosovo or North Macedonia). Serbia, however, has been included in the study on account of the considerable growth taking place here: the number of branches of German companies has risen by 41.0 percent since 2015, and the number of people employed by them has swelled by 92.6 percent (Deutsche Bundesbank 2020, p. 48, and Deutsche Bundesbank 2022, p. 50).

II. Vocational education and training in Central and Eastern Europe

As recently as the 1990s, training in the workplace was an important and well-respected part of the education system in Central and Eastern Europe. University education, meanwhile, was highly regimented. The end of the Soviet era opened up free access to universities – a step which triggered high demand for university education. This trend was also reinforced by political calls, including from the OECD, to increase the low proportion of academics by expanding the university system itself as well as programmes and institutions that enable the transition to university. At the same time as this development was unfolding, state-owned enterprises were collapsing, taking workplace-based training opportunities with them. Quality began to deteriorate: schools were forced to take on the full burden of vocational training by themselves, yet received little political support to do so given the focus on expanding general and university education. With quality sliding, demand both from potential students and from companies fell too (Petrescu & Negut, 2016; Wołodźko et al., 2021).

The low appeal of vocational education and training (VET) in Central and Eastern Europe today can still be attributed to the decline in vocational provision during this period, which persisted until the Global Financial Crisis of 2007. It took the dramatic rise in youth unemployment around the world to trigger a rethink among policymakers. In 2010, the OECD for the first time praised countries with a dual education system (including Germany), noting that by

better preparing students for the labour market, they were able to boast comparatively low youth unemployment rates (OECD, 2010). That same year, government ministers responsible for VET, together with social partners and the European Commission, published the Bruges Communiqué. This called for the participating countries to develop apprenticeship-type training (European Ministers for Vocational Education and Training et al., 2010). The Bruges Communiqué was followed in 2015 by the Riga Conclusions, which proposed that European countries set a common objective of strengthening work-based learning with a special focus on apprenticeships and with the involvement of social partners, companies, chambers and VET providers (European Ministers for Vocational Education and Training, 2015).

This political commitment, combined with legislation to reform education and training (Hungary: 2011, Bulgaria: 2015, Slovakia: 2015, Poland: 2016, Romania: 2016 and Serbia: 2017), good employment opportunities and attractive starting salaries for those graduating from VET, has begun to shift public attitudes. However, considerable problems with quality still remain, including the obsolete infrastructure and ageing workforce in schools and the low level of involvement by businesses. These still pose an obstacle to broad social acceptance.

1. Students on vocational programmes

The table below shows the number of students at secondary level in 2020, broken down into programmes with general and vocational profiles.

Table 3: Students at secondary level

Country	All upper secondary level	General		Vocational	
		absolute	in percent	absolute	in percent
Poland	1,614,772	756,751	46.86	858,021	53.14
Czech Republic	394,406	116,384	29.51	278,022	70.49
Hungary	407,753	205,281	50.34	202,472	49.66
Romania	719,050	313,014	43.53	406,036 ¹	56.47
Slovakia	179,587	58,664	32.67	120,923	67.33
Bulgaria	274,024	132,989	48.53	141,035	51.47
Serbia	251,974	66,786	26.51	185,188	73.49
Germany	2,398,670	1,229,069	51.24	1,169,601	48.76

¹ Including people on “second chance programmes”

Source: EuroStat, 2022L.

In the countries studied in Central and Eastern Europe, at least half of each year group at upper secondary level are on courses with a vocational profile. The figure is highest in Serbia and the Czech Republic, at over 70 percent.

2. Basic education: 15-year-olds

Since the year 2000, the OECD's Programme for International Student Assessment (PISA) has measured the basic education of 15-year-old students in reading, mathematics and science in OECD member and partner countries. The most recent PISA test in 2018 focused on reading proficiency. Reading proficiency describes the ability to understand, use and reflect on texts. The table below shows an international comparison of test results and education programmes (general versus vocational).

The difference between general and vocational programmes is largest in Hungary (117) and smallest in the Czech Republic (16). For comparison: in the ranking of 37 OECD countries (Costa Rica was not included), Estonia had the highest average score (523 points) and Columbia the lowest (412 points). The difference between first and last place equated to 111 points, while even a difference of "only" 80 points (Bulgaria) was equivalent to more than 25 places in the ranking (Weis et al., 2019, p. 59).

Table 4: Reading proficiency compared

Country	Vocational education (VE) ¹		General education (GE) ¹		Difference between GE and VE	Country average ³
	Points	P ²	Points	P ²		
Hungary	390	1	507	3	117	486
Romania	339	1	447	2	108	434
Serbia	416	2	506	3	91	440
Slovakia	378	1	462	2	84	458
Bulgaria	379	1	459	2	80	420
Germany	432	2	500	3	68	499
Czech Republic	480	3	496	3	16	490
Poland	-		511		-	511

Sources: ¹OECD, 2019c; ²Weis et al., 2019; ³OECD, 2019b; P = proficiency level.

In qualitative terms, the difference between vocational and general educational programmes generally equates to one proficiency level. The proficiency levels reported in the table above are defined as follows:

Proficiency level 1: "Readers at Level 1 can understand the literal meaning of sentences or short passages. Readers at this level can also recognise the main theme or the author's purpose in a piece of text about a familiar topic, and make a simple connection between several adjacent pieces of information, or between the given information and their own prior knowledge." (Weis et al., 2019, p. 54 [our translation])

Proficiency level 2: "Readers at Level 2 can identify the main idea in a piece of text of moderate length. They can understand relationships or construe meaning within a limited part of the text when the information is not prominent by producing basic inferences, and/or when the text(s) include some distracting information." (ibid)

Proficiency level 3: "Readers at Level 3 can represent the literal meaning of single or multiple texts in the absence of explicit content or organisational clues. Readers can integrate content and generate both basic and more advanced inferences." (ibid)

The ability to read at proficiency level 1 – i.e. being able to "recognise the main theme or the author's purpose in a piece of text about a familiar topic" (ibid) – does not provide sufficient basis for successful vocational learning. The implication of this is that vocational programmes in Hungary, Romania, Slovakia and Bulgaria should begin with a high proportion of school-based learning (and less workplace-based training) in order to first improve students' basic education. The workplace-based component should then be gradually increased each year. In Hungary, this problem has been addressed by reintroducing preparatory, school-only learning components at the beginning of VET programmes. In Romania, the proportion of workplace-based training gradually increases with each year of the programme. Crucially, including a high proportion of workplace-based training in the first year of study in Hungary, Romania, Slovakia and Bulgaria would be counterproductive, as it would worsen deficits in basic education and jeopardise successful learning in the workplace.

3. Public image of vocational education and training

The proportion of young people entering vocational education and training is high, but what is the public image of VET in the different countries? The data in Table 5 below has been taken from the European public opinion survey on vocational education and training, a study conducted by CEDEFOP – the European Centre for the Development of Vocational Training. The study surveyed more than 35,000 over-15-year-olds across Europe using face-to-face interviews.

Table 5: *Image of vocational education and training*

	Poland	Czech Republic	Hungary	Romania	Slovakia	Bulgaria	Germany
Employment opportunities: Vocational education allows you to find a job quickly after obtaining a qualification or diploma (n=35,645)	76.0 %	72.0 %	62.0 %	71.0 %	67.0 %	64.0 %	76.0 %
Well-paid jobs: Vocational education leads to well-paid jobs (n=35,645)	76.0 %	66.0 %	54.0 %	66.0 %	60.0 %	61.0 %	77.0 %
Advising against VET: Did anyone advise you against taking vocational education? (n=14,242)*	34.0 %	19.0 %	51.0 %	48.0 %	23.0 %	38.0 %	16.0 %
Average**	62.0 %	52.3 %	55.7 %	61.7 %	50.0 %	54.3 %	56.3 %

*Answers by people who decided against VET.
 **The question on advice against VET was recoded in order to calculate the average (100-x).
 The percentages shown indicate the proportion of people agreeing with each statement.
 Source: CEDEFOP, 2017a.

Of the young people surveyed, 60 to 70 percent agreed with the statement that vocational education allows people to find work quickly. The proportion agreeing was highest in Poland at 76 percent and lowest in Slovakia at 67 percent, Bulgaria at 64 percent and Hungary at 62 percent. Young people in Poland also largely believe that VET prepares them for well-paid jobs. This was the only country surveyed where the proportion agreeing was more than 70 percent. The figure was lowest in Hungary at 54 percent.

Acceptance of vocational education in young people’s social circles differs from country to country. Acceptance is highest in the Czech Republic and Slovakia, where people are least likely to be advised against vocational education. People in Hungary and Romania are often advised against vocational education, whereas they are relatively unlikely to receive such advice in Poland or Bulgaria. Given the importance of young people’s social environments in their decision-making processes, the figures for Hungary and Romania are troubling.

Ranking the countries using figures in Table 5 (based on the averages) shows that Poland and the Czech Republic are ranked in joint first place, Slovakia in third, Romania in fourth, Bulgaria in fifth and Hungary in sixth. While the responses for Poland, the Czech Republic and, to a lesser extent, Slovakia indicate that people are positively disposed towards vocational education, the figures for Romania and Bulgaria show that the vocational option is significantly less respected there. Hungary came last in the image ranking by some margin.

The question on advice against VET was only posed to people who had already decided against a vocational education. The sample size of 14,242 is therefore considerably smaller than for the other questions and means that the results only present part of the picture. However, there are indications of an image problem in every country (see the figures in bold in Table 5).

Another CEDEFOP study examined the image of adult learning (AL) and continuing vocational education and training (CVET). The study surveyed more than 40,000 over-25-year-olds by telephone interview (Table 6).

Reasons for participating in CVET can be divided into intrinsic and extrinsic motivations. Intrinsic motivations comprise development- and job-based motivations, such as an interest in personal development or the desire to understand and meet changing job requirements. Extrinsic motivations, meanwhile, are purpose-oriented, such as an interest in earning a higher income or improving job opportunities. This is an important distinction, since intrinsic motivations tend to be longer lasting and more stable than purely extrinsic motivations: where CVET does not lead to a higher income, for example, the extrinsic motivation to participate is considerably reduced. Encouragingly, the survey shows that intrinsic motivation is higher than extrinsic motivation in every country except Romania. Here, extrinsic motivation plays the larger role, although both motivations are at a high level. The lowest level of intrinsic motivation is seen in Slovakia.

Table 6: *Image of adult learning and continuing vocational education and training*

	Poland	Czech Republic	Hungary	Romania	Slovakia	Bulgaria	Germany
AL and CVET are important for personal development.	66.0 %	68.0 %	67.0 %	78.0 %	63.0 %	75.0 %	73.0 %
My job requires me to keep my skills constantly up to date.	62.0 %	74.0 %	71.0 %	53.0 %	51.0 %	64.0 %	70.0 %
Average 1	64.0 %	71.0 %	69.0 %	65.5 %	57.0 %	69.5 %	71.5 %
AL/CVET is important to achieve a better income.	43.0 %	45.0 %	59.0 %	74.0 %	44.0 %	65.0 %	57.0 %
AL/CVET is important when looking for a new job.	49.0 %	57.0 %	53.0 %	74.0 %	54.0 %	62.0 %	59.0 %
Average 2	46.0 %	51.0 %	56.0 %	74.0 %	49.0 %	63.5 %	58.0 %

The percentages shown indicate the proportion of people who “totally agree” with each statement.
Source: CEDEFOP, 2020c.

Given the largely positive perception of CVET, levels of participation, as recorded by the EU Labour Force Survey, are surprisingly low. The table below shows the proportion of people who reported participating in formal or non-formal general and/or vocational training in the four weeks prior to the survey.

The political leaders who attended the Porto Social Summit in May 2021 pledged in the Porto Social Commitment to increase the rate of participation in continuing education in their countries to a level where, by 2030, at least 60 percent of all adults take part in some form of continuing education each year (Portuguese Presidency of the Council of the European Commission, 2021). The table below shows that the countries in question are still a long way off from achieving this target.

Table 7: Participation in adult learning by 25-64 year-olds

Country	2010	2021	Change in percent
Bulgaria	1.6 %	1.8 %	+0.2 %
Serbia	4.0 %	4.8 %	+0.8 %
Slovakia	3.1 %	4.8 %	+1.7 %
Romania	1.4 %	4.9 %	+3.5 %
Poland	5.2 %	5.4 %	+0.2 %
Czech Republic	7.8 %	5.8 %	-2.0 %
Hungary	3.0 %	5.9 %	+2.9 %
Germany	7.8 %	7.7 %	-0.1 %
EU-27 average	7.8 %	10.8 %	+3.0 %
Slovenia	16.4 %	18.9 %	+2.5 %
Sweden	24.7 %	34.7 %	+10.0 %

Source: EU-AKE, 2022.

Participation in countries in Central and Eastern Europe is considerably below the EU average. However, the high rate of participation in Slovenia shows that this is not inevitable. It is also striking that participation across Europe rose by an average of 3 percent between 2010 and 2020. The only countries in Central and Eastern Europe to match this growth were Romania (+3.5 percent) and Hungary (+2.9 percent). The other CEE countries all saw below-average growth. In Germany, incidentally, participation even fell. We have included Sweden in the table above to illustrate the gap between these countries and the top of the field, both in terms of absolute participation levels and the improvement over the last decade.

4. Practical experience while studying

In a European labour force survey (EuroStat 2022e), many young adults aged 25 to 34 indicated that they had begun their career without prior practical experience. The survey comprised people who had completed vocational qualifications at upper secondary level or non-tertiary post-secondary education (Table 8).

The figures for vocational training in the form of apprenticeships, for example in the Czech Republic (25.0 percent), Poland (15.9 percent) and Hungary (13.0 percent), show that this model is relatively uncommon. Numbers entering the workforce from programmes involving a mandatory traineeship were higher: e.g. Hungary (70.6 percent), Slovakia (48.4 percent) and Czech Republic (38.4 percent). 86.4 percent of those surveyed in Romania and 70.1 percent of participants in Bulgaria indicated that they had begun their career without practical experience, followed by Poland in third place with 39.3 percent (EuroStat, 2022e).

Table 8: Work experience during VET

Country	Work-based learning			No work experience
	Apprenticeship	Traineeship	Other experience	
Poland	15.9 %	37.0 %	7.8 %	39.3 %
Czech Republic	25.0 %	38.4 %	17.8 %	18.8 %
Hungary	13.0 %	70.6 %	11.5 %	4.9 %
Romania	0.0 %	10.0 %	3.6 %	86.4 %
Slovakia	11.4 %	48.4 %	7.8 %	32.4 %
Bulgaria	0.0 %	22.7 %	7.2 %	70.1 %
Germany	76.9 %	1.8 %	14.2 %	7.1 %

Source: EuroStat, 2022e.

The figures not only illustrate how much practical experience people gain before beginning their careers but also how widespread apprenticeships are as a form of vocational learning. This is important, since there is a positive correlation between people's experience of work-based learning and their employment status. Employment rates for people graduating from education with work-based learning experience are generally higher than for those without such experience. Those whose work-based learning experience takes the form of an apprenticeship have a particular advantage in terms of their employment prospects (CEDEFOP, 2021b, p. 135).

School curricula often use the term "work-based learning". To avoid ambiguity, we differentiate in this study between "work-oriented learning" in school (e.g. in the school's own workshop)

and “work-based learning” in the workplace (e.g. at the company’s workshop or as part of a work placement).

5. Labour market and labour force potential

The comparison between 2011 and 2021 reveals that the unemployment picture in all countries has improved considerably over the past ten years. However, youth unemployment remains very high at over 20 percent in the 15-24 age group in Serbia, Slovakia and Romania. The Czech Republic has the lowest youth unemployment rate at 8.2 percent, putting it below the EU average of 16.6 percent. Poland, Hungary and Slovakia are also below this high average. Overall, it is striking that youth employment among 15-24 year-olds is in some cases three to four times higher than unemployment among those aged from 24 to 74.

Table 9: Unemployment and labour force potential

Country	Youth unemployment in percent ¹		Unemployment in percent ¹		People of working age as a percentage of the total population		
	2011	2021	2011	2021	2011 ²	2021 ²	2035 ³
Poland	26.0	11.9	8.2	2.8	71.1	65.8	63.9
Czech Republic	18.1	8.2	5.9	2.5	69.9	63.8	62.5
Hungary	25.3	13.5	9.6	3.4	68.7	65.1	63.4
Romania	29.4	21.0	7.3	4.5	68.0	64.9	62.4
Slovakia	34.8	20.6	11.6	6.1	72.0	67.0	63.7
Bulgaria	28.2	15.8	11.0	4.9	68.3	63.8	61.5
Serbia	53.1	26.4	22.3	9.9	68.4	64.5	-
Germany	9.1	6.9	10.5	3.2	65.8	64.2	58.6

Sources: ¹EuroStat, 2022; ²EuroStat, 2022d; ³EuroStat, 2022b.

The labour market is very tight in Poland, the Czech Republic and Hungary, with unemployment rates of 2.5 to 3.4 percent of the labour force. The situation is slightly better in Romania, Slovakia and Bulgaria. Even these countries have an unfavourable labour supply trend, however. Due to demographic change, the proportion of people of working age (15 to 64) is declining in all Central and Eastern European countries. Higher employment rates and demographic change are reducing supply just as German companies are expanding their presence and increasing their demand for labour in these countries. Given this, businesses face not so much a shortage of skilled workers as a constantly worsening skilled worker crisis. Initial vocational training and continuing training for their own employees therefore offer companies a practical way out of this. The quantity and quality of their internal labour markets will increasingly determine how these businesses are able to develop.

B. Analysis by country

I. Bulgaria

A business survey conducted by the World Bank found that only 20 percent of the Bulgarian companies surveyed offered formal training for their employees. At the same time, the companies cited "practices of the informal sector" as the biggest barrier to their business activities and an "inadequately educated workforce" as the second biggest (World Bank Group, 2020b).

In light of this, Bulgaria's innovation output as rated by the United Nations Global Innovation Index (GII) is rather impressive: Ranked 27th in knowledge and technology outputs (KTO) and 21st in creative outputs (CO), Bulgaria fares better than countries such as Norway (28th in KTO and 25th in CO). The GII does, however, confirm Bulgaria's weakness on the innovation input side: in the area of human capital and research, Bulgaria ranks 65th – between Uruguay in 64th place and Kazakhstan in 66th (WIPO, 2021). This poor workforce performance also extends to digital skills: when it comes to the indicator Internet user skills and advanced digital skills (IUS/ADS), Bulgaria occupies last place in the EU. In addition to the IUS/ADS indicator, the European Union's Digital Economy and Society Index (DESI) also includes connectivity, integration of digital technology, and digital public services as indicators. These four indicators together put Bulgaria in second-to-last place in the EU ranking (European Union, 2021).

Lack of integrity in public institutions is another major problem: in the Corruption Perceptions Index (CPI), Bulgaria stands in last place in the EU with 42 out of a possible 100 index points. At 24 points below the average score in Europe (66 points), this represents a considerable difference. To illustrate, the gap between the EU average and Bulgaria is roughly the same as the gap between Bulgaria (42 points) and the Democratic Republic of Congo (19 points) (Transparency International, 2022a).

The World Economic Forum's Global Competitiveness Index (GCI) also takes the indicators of human capital, innovation and institutions into account and confirms the identified trends by means of further indicators (e.g. limited judicial independence). Bulgaria is ranked 49th in the GCI – between Mexico in 48th place and Indonesia in 50th place (World Economic Forum, 2019). Its overall ranking in the Global Innovation Index is more positive: here Bulgaria comes 35th – behind Hungary in 34th place and ahead of Malaysia in 36th place (WIPO, 2021) – due in particular to its good innovation output.

The framework for establishing company-based initial and continuing training is correspondingly difficult in Bulgaria. Challenges lie in the lack of established in-company practices (World Bank Group, 2020b), the shortage of skilled workers (WIPO, 2021; European Union, 2021)

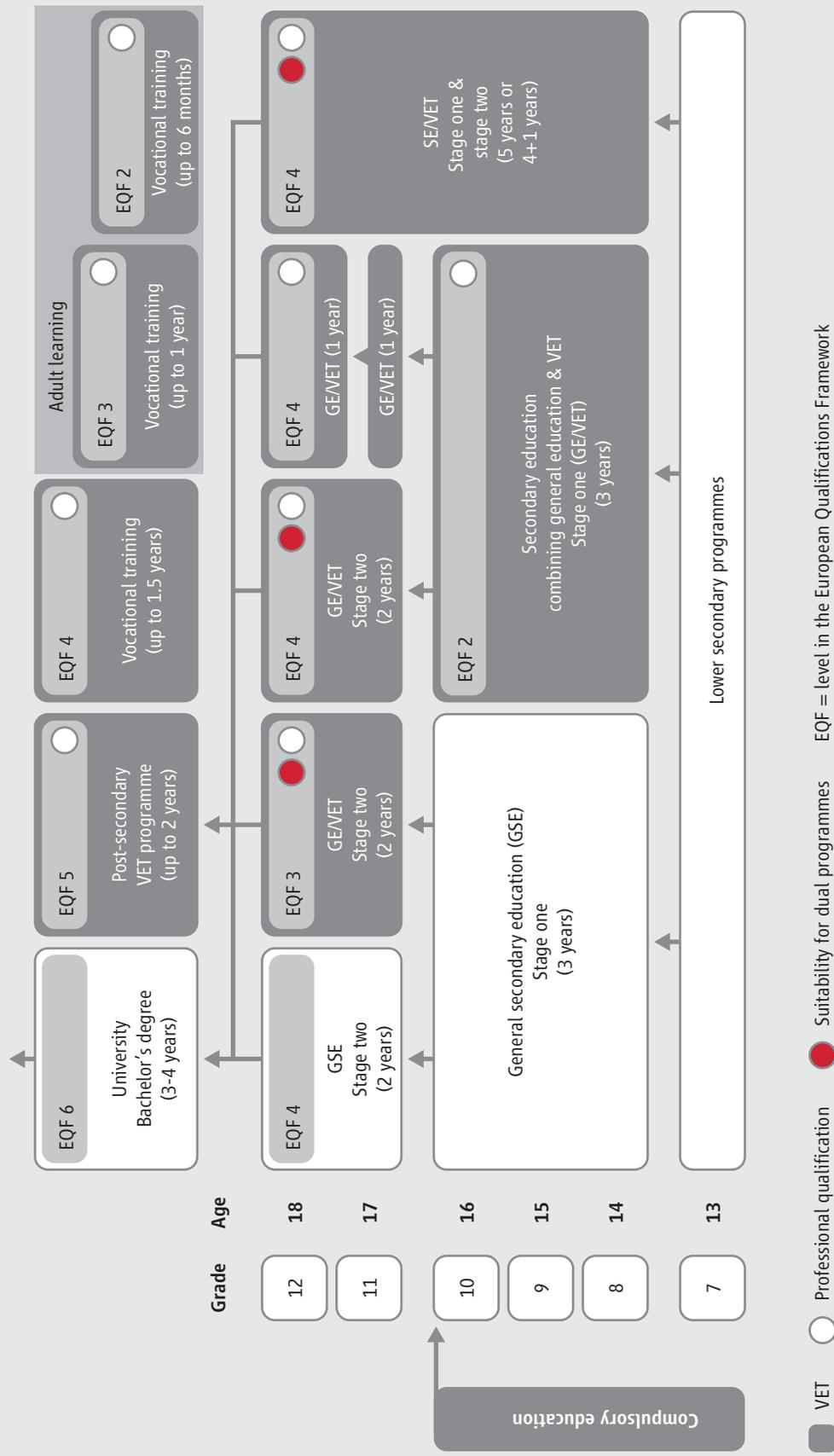
and the lack of support structures (Transparency International, 2022a; World Economic Forum, 2019). Moreover, company-based training is founded on a master-apprentice or trainer-trainee relationship, which means that experience-based knowledge is reproduced, but potentially also misconceptions and knowledge deficits. In light of the above-mentioned studies, prior continuing education and training among the workforce and especially among training staff is not only an enabler but a necessary condition for establishing quality training in Bulgaria.

1. Structure and status of initial and continuing vocational education and training

Most students enter vocational education and training at the age of 14 upon completing 7th grade, although they may also begin at the age of 17 once they have finished their compulsory education. Approximately 75 percent of all students who choose a VET programme opt for the five-year academic and vocational upper-secondary school, which includes three years of stage-one secondary education and a further two years of stage-two secondary education. At the end of the programme, the students can take a school-leaving examination (Matura), which gives them access to university. Until 2022, they had the option to acquire a vocational qualification in parallel. However, this option was only used by about a third of the students in each year group, a clear indication that the programme is primarily viewed as a general education programme. To achieve a better balance between general and vocational education, it became compulsory in 2022 to acquire a vocational qualification (Bergseng, 2019).

Bulgaria's VET system is oriented towards school-based education, even though the reported share of work-based learning is high. At the upper-secondary schools mentioned above, for example, the share is 50 percent according to the curriculum, with practical learning taking place almost exclusively at school. Since 2014, dual VET programmes have been expanded in Bulgaria (see also section 3).

Figure 1: Vocational education and training system in Bulgaria



Sources: CEDEFOP, 2021a; CEDEFOP & NAVET, 2022.

More than half of the young people in Bulgaria choose to take the vocational education and training route (Table 3). Daskalova and Ivanova (2018) point out that VET generally has a positive image. In their study, they debunk the country's widespread negative public discourse in which VET is characterised as a second-choice form of education: Although more than half of the Bulgarian respondents (60 percent) believe that vocational education has a positive image (ibid), interest in vocational qualifications was so low that they had to be made compulsory. Clearly, VET programmes are viewed more as means of getting into higher education than as a means of gaining the qualifications needed for an occupation.

Demographic developments as well as migration to foreign countries and Bulgaria's urban centres have led to school closures due to undersized cohorts, which is why the number of schools has been declining since 2013/14. There are currently around 450 vocational schools in Bulgaria, most of which are state-run. Only a small number of vocational schools are run privately (Bergseng, 2019).

Continuing vocational education and training (CVET) has a positive image in Bulgaria: according to a CEDEFOP survey, 75 percent of respondents believe that CVET is important for their personal development while 64 percent say that it is important to keep up to date on the latest developments in their profession (CEDEFOP, 2020c). Despite this positive view, however, the Labour Force Survey found that only 1.8 percent of the households surveyed had participated in formal or non-formal continuing education and training, whether general or vocational, in the four weeks preceding the survey (EU-LFS, 2022).

Selected industrial-technical training occupations

Bulgaria's List of Professions for Vocational Education and Training includes 240 professions with different specialities, which are divided into four qualification levels: EQF 2 (worker), EQF 3 (fitter, operator), EQF 4 (technician) and EQF 5 (technician, instructor, manager). Industrial-technical occupations (see Table 10) are listed in the professional field of engineering industries, metal working and metallurgy (NAVET, 2021).

The list forms the basis for all initial and continuing vocational education and training programmes in Bulgaria. The responsibility for maintaining and updating the list lies with the National Agency for Vocational Education and Training (NAVET). New professions or changes to existing professions are defined by a committee made up of representatives of employers, employees and the Ministry.

Table 10: Training occupations

Profession	Speciality (example)	EQF			
		2	3	4	5
Welder	-	×			
Locksmith	-	×			
Foundry worker	-	×			
Machine operator	Metal cutting machines		×		
Machine fitter	Welding machines and equipment		×		
Electronics technician	Operating equipment			×	
Electronics technician	Automation equipment			×	
Machine operator	CNC machines and systems			×	
Mechatronics technician	Mechatronics			×	
Electro-technician	Electrical machines and apparatus			×	
Electronic equipment technician	Industrial electronics			×	
Automation technician	Automated systems and robotics				×

2. Players and elements of regional and central governance

For the most part, VET policy is developed, coordinated and implemented by the Ministry of Education and Science. The Ministry of Labour and Social Policy is also involved in the implementation of VET policy, especially in relation to adult education. The Ministry of Youth and Sports and the Ministry of Culture are responsible for VET schools related to their respective fields (Bergseng, 2019; CEDEFOP, 2018).

The three main instruments that guide VET provision at the national level are the List of Professions for Vocational Education and Training, the state educational standards (SES) and the curricula. Together, they govern VET qualifications and teaching programmes. The Ministry of Education and Science is in charge of approving the list, adopting the SES and developing the curricula. The line ministries (Ministry of Youth and Sports, Ministry of Culture and Ministry of Health) as well as NAVET and the social partners are involved in these processes.

NAVET is an institution that falls under the responsibility of the Council of Ministers and fulfils two main tasks: it coordinates the process of developing and maintaining VET qualifications, and it is responsible for licensing adult VET centres which provide formal and non-formal training for people over the age of 16 (Bergseng, 2019).

Since 2014, the social partners have played an important role in VET at several levels. They take part in the Economic and Social Council and other national councils to help shape VET policy (CEDEFOP, 2018). Employers' organisations are also becoming more actively involved in the implementation of vocational education and training. Since the 2016 amendments to the Vocational Training Act, they can propose changes to the List of Professions for Vocational Education and Training (CEDEFOP & NAVET, 2019a). The representatives of employers' organisations and trade unions are members of the examination boards established by VET providers and participate in the development of national curricula.

VET schools are predominantly state-run schools under the supervision of the Ministry of Education and Science. In the last 20 years, reforms have been introduced with support from the European Union and the World Bank to strengthen the local decision-making powers of the 28 regions, 260 municipalities and over 350 schools. On the one hand, progress has been made here: today the regions are responsible for school inspections on behalf of the ministry while the municipalities are responsible for financing the buildings and equipping the schools. On the other hand, many of the decisions relevant to running the schools on a daily basis are still made at the national level, leaving little room for local decision-making and placing too much strain on the ministry when capacities are tight. The ministry is responsible, among other things, for approving school budgets, updating the list of professions (see above), revising state educational standards and developing and adopting curricula (Bergseng, 2019).

More than half of all teachers in Bulgaria are over 50 years of age. At the same time, many jobs are unfilled, partly as a result of low pay. Between 2017 and 2021, starting salaries were therefore nearly doubled. They are now 11 percent higher than the average salary of educational professionals in the EU (European Commission, 2021a).

3. Funding and quality assurance

Most VET schools are state schools (Bergseng, 2019). For their funding, the Ministry of Education and Science works together with the Ministry of Finance to determine the funds that will be paid out to the schools per student (Bergseng, 2019). In the 2017/2018 school year, the amount ranged from 1,000 to 1,500 euros, depending on the education programme (CEDEFOP & NAVET, 2019a). This covers such items as the cost of school buildings and infrastructure, teachers' salaries and social security. In addition to funding from the state budget, the schools also receive funds from municipalities and from donations.

To ensure that the quality requirements are met, the Ministry of Education and Science has adopted the European Quality Assurance in Vocational Education and Training (EQAVET) reference framework. This 2015 quality assurance regulation mandates VET providers to organise self-assessment based on a set of indicators (CEDEFOP, 2018).

The Bulgarian National Qualifications Framework for Lifelong Learning (BQF) aims to make the levels of the Bulgarian education system clearer and easier to understand by describing them in terms of learning outcomes (CEDEFOP, 2020b). It is hoped that this will raise trust in qualifications, and support mobility and the recognition of qualifications. At the same time, the BQF is seen as a driver for national reforms. The VET Act was updated in 2014 and 2018, introducing learning outcomes units, a procedure for validation of competences acquired in non-formal and informal learning, and arrangements for credit transfer and accumulation in VET (ibid). State education standards and examination requirements, especially those for acquiring vocational qualifications, have been updated and new ones developed using the learning outcomes approach. NAVET designs the state educational standards for VET qualifications and is involved in developing and updating the list of vocational qualifications included in the BQF.

4. Reform activities and dual approaches

The municipalities are responsible for aligning the availability of education and training programmes with the actual demand or need for education and training. This also means that they are responsible for vocational guidance. As no education and labour market data is available to make appropriate decisions, supply and demand do not correspond with each other, and national abstract analyses, such as Skills forecast Bulgaria (CEDEFOP, 2020d), are no help either. This is a problem that all school-based VET systems face due to their market distance. In dual systems of vocational education and training, on the other hand, supply and demand are aligned locally in the companies concerned.

To give learners the opportunity to gain real work experience and to better understand what skills employers expect, Bulgaria has been promoting a dual system of vocational education and training since 2014. Practical training at a company alternates with theoretical training at a school or other VET provider. In-company trainers (mentors) are responsible for the practical training. To be able to serve in this capacity, they must have completed vocational training or a university degree, have at least three years of experience in the workplace and be certified as a trainer (CEDEFOP, 2018).

The legislative amendments introducing a dual system of vocational education and training in Bulgaria came into force in 2016. The first cohort comprised 353 apprentices. By 2019/2020, the number had risen to 5,261 (European Commission, 2020a). While this represents a massive increase, the dual education model is still very much a niche product and not yet system relevant given the 141,035 students enrolled in VET programmes in total (Table 3).

Local support services of the German Chamber of Commerce Abroad (AHK)

In 2005, the German-Bulgarian Chamber of Industry and Commerce (DBIHK) set up the Expert Committee for Vocational Education and Training, which was renamed Expert Committee for Skilled Workers and Talent Development in 2021. The committee supports reforms to Bulgaria's dual VET system, promotes exchanges of experience between participating members and advises member companies on questions of vocational education and training. Since 2020, the DBIHK – in cooperation with the state-owned company Deutsch-Bulgarisches Berufsbildungszentrum (DBBZ, German-Bulgarian VET Centre) – has also offered employees of the chamber's member companies continuing education opportunities in the form of dual VET programmes. In Pleven, Pazardzik and Stara Zagora, this offer extends to electrical and metal-working professions. And lastly, the DBIHK is also active in other areas through projects under the European Erasmus+ programme. Examples include the development of work-study degree programmes between 2017 and 2020 and the development of human resources capacities in the field of intergenerational digital learning between 2019 and 2021 (AHK Bulgaria, 2022a).

Training in cooperation with other companies

German family businesses often cooperate with other companies in the context of local vocational training under the dual system. One example is the Vocational School of Electrical Engineering and Electronics in Plovdiv, which organises VET programmes in cooperation with the family-owned business Liebherr and thirteen other national and international companies. This vocational school was founded in 1962 and offers various vocational training programmes in the field of electrical engineering (PGEE, 2022).

Another example is the Vocational High School of Electronics John Atanasov in Sofia, an academic and vocational upper-secondary school at which the family-owned business Bosch runs a dual VET programme in partnership with four other companies. One focal point of the school, which was founded in 1968, is information technology training courses (AHK Bulgaria, 2021; SPGE, 2022). In addition, since 2022, the Bosch Engineering Center Sofia and the Technical University of Sofia have been trialling a cooperative degree format as part of the bachelor's degree in Intelligent Systems and Artificial Intelligence (Bulgarian Business Leaders Forum, 2022).

According to an assessment by the German-Bulgarian Chamber of Industry and Commerce, some large Bulgarian companies also use cooperative forms of training. Small and medium-sized Bulgarian companies, however, are not involved in this type of training yet (AHK Bulgaria, 2022b).

5. EU projects and cooperation at country level

In recent years, major EU projects (large-scale investments worth more than 50 million euros supported by the EU's cohesion policy funding) have targeted in particular the areas of infrastructure and transport, information and communication technologies and a low-carbon economy (European Commission, 2022d). In the educational area, projects have been funded that support young entrepreneurs and help Roma enter the labour market. The European Social Fund (ESF), for example, helps children at risk of social exclusion to learn the Bulgarian language (European Commission, 2022b).

ENNE (European National Networks for the Enhancement of VET) is an ERASMUS+ project supported by the creation of five national VET networks. The project involves providers from five countries: Italy, Bulgaria, Germany, Portugal and Belgium. It aims to enhance the quality and attractiveness of VET, with a specific focus on mobility opportunities (Enne, 2022). Another example project is CVETNET (Continuing Vocational Education and Training Network), which is also an ERASMUS+ project and aims to build networks for CVET providers and their members. The idea is that organisations and trainers will be able to better support SMEs in reskilling and upskilling their managers and employees with respect to intergenerational learning and adaptation to digital transformation (CVETNET, 2022).

Bilateral agreements in the areas of education, science and culture provide a political framework for the development of various scholarship programmes and serve to improve admission opportunities for university students, cooperation between educational institutions and mutual recognition of qualifications and study periods abroad. Often the bilateral cooperation in place is complemented by multilateral initiatives, thus adding a European dimension as well as a European context. Particular emphasis is placed on project and research development.

Bulgaria has concluded more than 20 bilateral agreements on educational cooperation, including with China, the USA, Korea and Mexico. Although Germany, Austria and Switzerland do not cooperate directly with Bulgaria at the level of the ministries of education, there are bilateral framework agreements: From 2014 to 2019, Switzerland supported the DOMINO project aimed at implementing a dual system of vocational education and training in Bulgaria based on the Swiss model. A total of 32 schools, 170 companies and 1,600 students took part in this project in Bulgaria (DOMINO, 2019).

II. Poland

The Polish economy has developed impressively since Poland's regime change in 1989. Thanks to rapid and extensive market liberalisation and the acquisition of foreign capital, Poland has been one of the most successful countries in Central and Eastern Europe, with an average annual economic growth of 4 percent. Per capita income rose to 64 percent in 2016 compared to the EU average of 32 percent in the early 1990s (European Commission, 2022b). Due to structural changes, including a decline in mining, growth of the service sector and an export-oriented market economy, Poland's catch-up process eventually began to lose steam, which is why it adopted a strategic, long-term action plan for responsible development, the Morawiecki Plan, in 2017 (Holtemöller & Kämpfe, 2017).

Among the country's greatest challenges are the shortage of skilled workers, low birth rates, an ageing population and limits to the rule of law (Kovács & Scheppele, 2021; Flis, 2021). Another challenge is its poorly developed innovation system: The European Innovation Scoreboard (EIS) assesses a country's innovation capacity using various factors such as framework conditions (including digitalisation), investments (including firm investments) and innovation activities (including international patent applications). In the EIS ranking, Poland is placed at the lowest level (emerging innovators) of a total of four levels (European Commission, 2021). This weakness is also reflected in the Community Innovation Survey (CIS) of companies in Europe: According to the 2018 CIS, 11.1 percent of Polish enterprises introduced a product innovation (European Union = 19.9 percent) and 15.4 percent introduced a business process innovation (European Union = 26.7 percent) (EuroStat, 2021).

1. Structure and status of initial and continuing vocational education and training

The Polish education system comprises eight years of primary school, which are compulsory for all students. After completing primary school, students can choose between three types of school:

1. the four-year general secondary school, which ends with a school-leaving examination;
2. the five-year technical secondary school, which ends with a school-leaving examination in combination with a vocational examination;
3. the five-year sectoral vocational school, starting with stage I, which ends with a vocational examination. Education and training in this type of school can take place in a dual system in combination with company-based training.

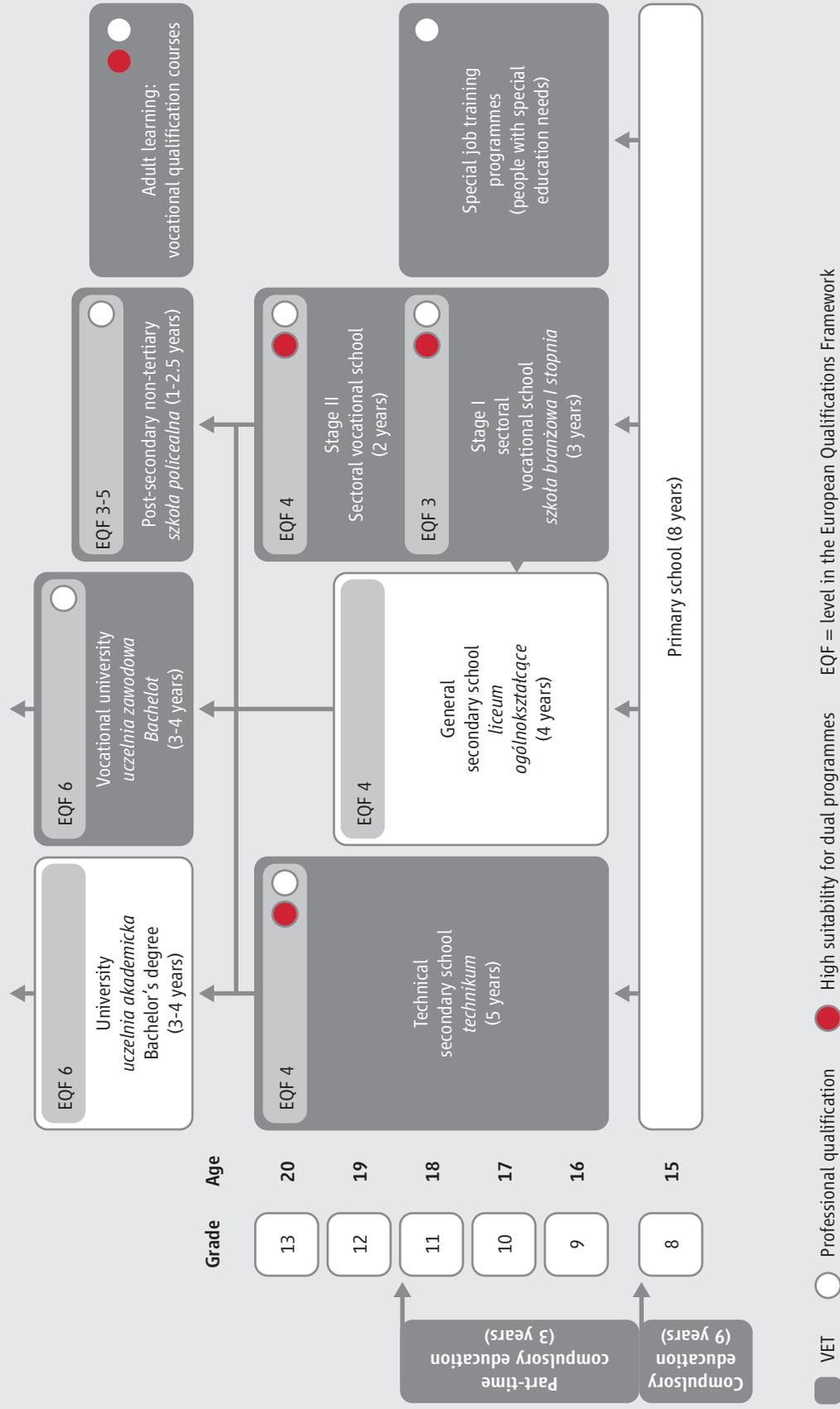
Approximately 44 percent of the students who have completed their eight years of primary school choose the four-year general secondary school, while 56 percent choose a vocational path (approximately 42 percent attend technical secondary schools and 14 percent attend stage I sectoral vocational schools).

Students who have graduated from the three-year stage I vocational school can either enter the labour market or continue on to a two-year stage II sectoral vocational school, which is comparable to the specialised upper secondary school in Germany. This two-year vocational school enables them to take a vocational examination in combination with a school-leaving examination. Students who have completed upper secondary education via the general or vocational pathway can enrol in a post-secondary school (*szkoła policealna*) that offers vocational education and training and ends with a vocational examination.

In Figure 2, VET programmes leading to state-recognised vocational qualifications are indicated by means of a white circle. The VET system offers training in approximately 210 professions (*zawody*). The content of the training for each profession is defined at two levels: national vocational curricula (*podstawy programowe kształcenia w zawodach*) and local school curricula. All VET schools develop their own school curricula according to the guidelines set out in the national curricula. The national curricula for vocational education and training contain only learning outcomes and assessment criteria. They are about 50 pages long, depending on the profession. It is the duty of vocational schools to prepare curricula based on the national curriculum for each profession.

At the five-year technical secondary schools, vocational education and training accounts for about 35 percent of the total teaching time. Half of the time allotted for VET is reserved for practical training (work-based learning), which usually takes place at school. The remainder of the learning programme, that is 65 percent, is devoted to the general education component (e.g. Polish language, foreign languages, history).

Figure 2: Vocational education and training system in Poland



Sources: CEDEFOP, 2021a; CEDEFOP & ERI, 2022.

At the three-year stage I vocational schools, the vocational component accounts for approximately 50 percent of the total learning programme. The remainder of the learning programme is geared towards general education. The vocational component comprises approximately 700-800 hours (depending on the profession). Of these, 60 percent are devoted to practical training (work-based learning), which usually takes place at the vocational schools.

VET examinations are standardised: All candidates have to perform the same job-specific tasks. The examinations are developed by a central examination board with support from the regional examination boards and marked by external examiners who are trained and accredited by the examination boards.

The vocational examination consists of a written part in the form of a sixty-minute test and a practical part lasting two to four hours. The problem to be solved in the practical part is based on a real-life job scenario (e.g. diagnostic and repair work). Students of the five-year technical secondary school usually take examinations in two qualifications, which means the vocational examination takes about eight hours.

Adults who wish to obtain vocational qualifications can enrol in professional qualification courses, which usually last a few months. Alternatively, they may take an extracurricular examination as part of a recognition procedure. This is possible if they are over 18 years of age, have completed primary or secondary school and have trained or worked for at least two years in a profession that is closely related to the qualification for which they are taking the examination. External recognition examinations are the same as those taken by regular apprentices. The Polish VET system offers no other validation methods for the recognition of informally acquired skills (e.g. portfolios, observation or document analysis). After successfully passing the exams, the adults receive a vocational certificate that is identical to the certificates obtained in VET programmes. The fee that applicants have to pay for the extracurricular examinations is low, amounting to just 40 euros (13 euros for the written part and 27 euros for the practical part). This is because the state subsidises the procedure. Thanks to the recognition procedure's open nature, it is possible to acquire qualifications whilst continuing to work in a company.

Social acceptance and prevalence of VET

In 2020, 53 percent of the students graduating from primary school after eight years opted for a vocational pathway and 47 percent for a general secondary school (lyceum). These proportions have been largely stable for a number of years. In the early 1990s, however, about 80 percent of primary school graduates still chose a vocational pathway.

Vocational education and training in Poland suffers from a lack of esteem compared with academic education. Despite promotional campaigns and efforts by the state to improve the negative image of VET among parents and learners, an apprenticeship is still considered the second-best option after the academic pathway. This situation is only now beginning to change due to high demand for professionally qualified personnel (EQF 3 and EQF 4) and the salaries that can be achieved on the labour market.

Selected industrial-technical qualifications

In 2019, two parameters were added to the national grants that VET schools receive: (1) the cost intensity of the training in a given profession and (2) the demand for labour in the labour market for a given profession. Industrial-technical professions (including mechatronics and electromechanics) are placed in the highest cost category, which means that VET schools providing training in these professions receive more funding than, for example, VET schools offering business-related VET programmes. As for the parameter of demand on the labour market, the situation is similar: Industrial-technical professions are in high demand on the labour market. Previously, vocational schools received state funding mainly on the basis of the number of learners, thus unintentionally creating an incentive to switch to training in low-cost professions.

Although the changes made to the funding algorithms in 2019 have yet to have a visible impact, industrial-technical professions are often chosen in vocational education and training. One reason for this could be that graduates of such apprenticeship and degree programmes are in demand on the labour market and receive correspondingly good salaries (Jasiński et al., 2017).

Below is a list of professional qualifications ranked by the number of examinations taken in 2021. The top 20 professional qualifications are:

Table 11: Top 20 professional qualifications in Poland

Rank	Professional qualifications	Number of examinations
1	Installation and operation of computer systems, peripheral devices and networks	25,211
2	Website and database programming, creation and administration	19,290
3	Preparation of food and drinks	14,627
4	Organisation of food and catering services	10,443
5	Organisation of transport/transport logistics	10,247

Rank	Professional qualifications	Number of examinations
6	Diagnosis and repair of components and assemblies of motor vehicles/car mechanic	10,027
7	Accounting	9,353
8	Provision of nursing and care services for a sick and dependent person	9,033
9	Installation, commissioning and maintenance of electrical equipment, machinery and appliances	6,918
10	Ongoing agricultural production	6,877
11	Warehousing services	6,674
12	Performance of sales	5,613
13	Guest service in an establishment providing hotel services	5,563
14	Performance of cosmetic procedures	5,529
15	Installation, commissioning and maintenance of mechatronic devices and systems	5,411
16	Record-keeping in an organisational unit	5,269
17	Organisation and implementation of the motor vehicle maintenance process	5,076
18	Operation and programming of mechatronic devices and systems	5,045
19	Performance and inspection of construction and finishing work	4,464
20	Organisation and inspection of construction work and preparation of cost estimates	4,169

Source: Calculations by Horacy Dębowski, Central Examination Board (CKE), Poland

This shows which professional qualifications are in demand among learners. However, it also reveals that professional qualifications are more narrowly defined in Poland than in Germany.

2. Players and elements of regional and central governance

In general, the content of VET programmes is defined at the central level through learning outcomes, and the implementation of VET programmes is delegated to the schools. The national core curricula (for both general education and VET) are set by the Ministry of Education, whereas the content of the examinations is determined by the Central Examination Board. As mentioned above, schools develop their own learning programmes and select textbooks to suit their preferences and needs. Administration is decentralised and delegated to the municipalities. The municipalities (local governments) are responsible for the administration of primary and secondary schools and receive funds from the state budget for this purpose. Herbst & Wojciuk (2016) note that Poland has implemented a balanced division of responsibilities among the different levels of educational administration: 50 percent of the decisions are left to the school directors and 25 percent each to the municipalities and the central government.

Within the VET system, social dialogue mechanisms ensure that the social partners are involved in decisions aimed at enhancing the training offered by schools. Since 2019, VET schools have been required to obtain the approval of the province's labour market council, which is composed of local employers and representatives of trade unions, the Chamber of Crafts and local authorities, before introducing an apprenticeship in a new profession. This is a significant reform, as all that was required previously were non-binding opinions of the labour market councils. At the central level, the social partners take on an institutional role and can initiate the introduction of new professions (Chłoń-Domińczak et al., 2016). Professional associations, social partners and other stakeholders can submit proposals for the introduction of a new professional qualification to the minister responsible for a particular economic sector (e.g. infrastructure, health, agriculture). In this way, they can shape educational provision in the formal VET system at the national level.

As recently recognised, it is vital to remove systemic barriers to the involvement and competences of the social partners in order to ensure the quality of education, address the skills mismatch in the labour market and establish a feedback loop in the design and implementation of VET programmes. Two initiatives at the central level in support of these goals are worth mentioning here:

1. The Integrated Qualification System (IQS) Act introduced the Stakeholder Council, a new institution that strengthens the role of social dialogue. It provides advice and support to the IQS minister coordinator (Minister of Education) and is a forum for employers and trade unions to express their expectations regarding the development of the IQS and qualification policy. The council holds a unique position in the qualification provision landscape due to its gatekeeping power in ratifying the NQF level of new qualifications in the system (Brůha et al. 2018: 402).
2. Sector Skills Councils (SSCs), which were established in 2016, actively participate in skills development initiatives in the context of IVET and CVET and support adult learning and the development of new qualifications in the IQS. By 2019, a total of 17 national SSCs were created, each consisting of 17 to 40 members. The SSCs institutionalise dialogue between social partners, ministries and other stakeholders, including professional associations, training providers, experts and research institutions. However, the impact of the SSCs on qualifications policy and qualification provision is limited because they do not have any legal instruments at their disposal.

3. Funding and quality assurance

Employers who take learners (from the three-year stage I sectoral vocational school) on as young workers can apply for a cost reimbursement of up to 2,000 euros from the county (powiat) labour office. This type of learning arrangement (referred to as juvenile workers)

is the classic dual education model for training craftsmen and craftswomen. The learner is employed by the employer for a period of three years on the basis of an employment contract. The employer provides practical training under the supervision of the school. What is interesting is that the employer is only reimbursed if the learner passes an independent external examination organised by the Central Examination Board; if the learner does not pass an examination, there is no reimbursement. If a profession is in high demand on the labour market, employers can apply for 2,500 euros (rather than 2,000 euros). The reimbursement rates are regulated by law at the national level.

Employers organising practical training for learners at the technical upper secondary school level can apply for reimbursement for all staff involved in training the learners as well as for any equipment used during the training. The amount to be reimbursed is prescribed by law, but less explicitly than in the case of the three-year stage one sectoral vocational school, thus leaving it up to local decision-makers and individual agreements between the vocational school and local authorities on the one hand, and the employer on the other. The practice in this respect varies. During the interviews conducted for this study, some school directors, for example in the Silesia region, stated that the employers they work with do not claim any reimbursement or only a small amount. By contrast, school directors in the Greater Poland region reported that employers ask for a significant amount of reimbursement that exceeds the cost of employing additional teachers. In general, however, there is agreement that employers have become much more willing to cooperate with schools.

Quality assurance instruments

All VET schools are integrated into external and internal quality assurance systems. External quality assurance is ensured by the system of pedagogical supervision. External pedagogical supervision is provided by the regional education authorities (kurator oświaty) under the responsibility of the Ministry of Education. It includes the following aspects: assessment, verification of compliance with legal provisions and support. The director of the regional education authority prepares an annual report on the results of pedagogical supervision and submits it to the Minister of Education.

School directors are required by law to develop and institute an internal quality assurance system but are free to design and implement these systems as they see fit. The internal assessment is conducted annually, with its results taken into account in the external assessment.

The system of external examinations is a key element in ensuring and improving the quality of vocational education and training and the qualifications acquired in the schools. They are organised by the Central Examination Board and eight regional examination boards, and the

external examination system is supervised by the Minister of Education. Under the external examination system, all candidates complete the same tasks with the aim of determining whether they have achieved the learning outcomes set out in the core curriculum. Trained examiners registered with the regional examination boards assess the examination results and the Central Examination Board analyses the entirety of the test and examination results. The results of the external examinations are included in both external and internal quality assurance within the framework of pedagogical supervision.

Another important element in ensuring the quality of qualifications is the collection and dissemination of information on the formal general and vocational school system by means of the School Information System. Each school and educational institution must submit data on the number and categories of students, teachers, facilities and expenses, among other things. The schools submit the data via a web application. This information is collected at the regional level and then forwarded by the regional education authorities to the Ministry of Education. Each user group (including ministries, Statistics Poland and local authorities) has access to whatever part of the database is relevant to it, and some information is even accessible to the public.

4. Reform activities and dual approaches

Between 2017 and 2019, important changes were made to the VET system with the aim of better linking VET to the world of work (Dębowski & Stęchły, 2022). The following changes were introduced:

1. Vocational schools must make formal cooperation arrangements with employers for the qualifications they offer, for example participating in dual education programmes, setting up fully equipped school workshops, offering mentoring classes or organising vocational examinations. Previously, this kind of cooperation was optional.
2. To introduce apprenticeship training in a new vocational qualification, vocational schools have to obtain the approval of the regional labour market council (voivodeship), which is composed of local employers as well as representatives of trade unions, the Chamber of Crafts and local authorities. Previously, it was optional to obtain an opinion.
3. A new form of internship (staż uczniowski) was introduced to add to the existing regulations aimed at increasing the involvement of employers in practical learning. A new element is that the scope of the school curriculum can be extended. In addition, employers can transfer funds directly to the schools if they wish to make them available to purchase equipment, for example. Previously, all funds had to be transferred to the local authorities.
4. Teachers in vocational education are now required to complete at least 40 hours of job-oriented continuing training in companies over a period of three years. Previously, no such

requirement existed. This is intended to help improve teachers' skills and competences, and to give them access to new technologies and enterprises in a particular labour market sector.

5. As already mentioned, the funding of state-run vocational education and training has been tied to the demand for labour in certain occupations as well as to the cost of training. This change is intended to create an incentive for school directors and local authorities to provide training in the occupations that are in the highest demand.

In 2017 and 2018, the concept for the above changes as well as specific solutions were discussed with employers and representatives of the school sector. The measures eventually introduced in 2019 found wide approval among employers and VET schools. Political tensions in Poland have influenced the dialogue on VET to a lesser extent than in other policy areas because policymakers left the dialogue on VET solutions to the experts.

Local support services of the German Chamber of Commerce Abroad (AHK)

The Polish-German Chamber of Industry and Commerce offers extensive services in the areas of training and qualification. In the training sphere, this includes in particular the following services: advice on legal matters, support when it comes to cooperating with local authorities, train-the-trainer programmes, selection of partner schools, programme development (development of the school curriculum as well as the company training plan), support for companies in their search for trainees, organisation of patron classes, administering of DIHK/AHK examinations and issuing of certificates. Its focus is on industrial and technical occupations, such as plant mechanic, electronics technician for automation technology, construction mechanic, mechatronics technician or cutting machine operator. In the area of seminars and workshops, the AHK specialises in the following subjects: legal and tax issues, marketing, cooperation in intercultural teams, and language courses and certifications (AHK Poland, 2022).

Dual provision

Cooperation between VET schools and employers (including German companies) depends to a large extent on how far the VET school and the local authorities responsible for running the school, as well as the employers themselves, are willing to cooperate. There are many examples of fruitful cooperation between VET schools and employers throughout the country, but there are also examples of such cooperation failing. However, the situation is improving as employers are becoming more receptive to cooperation – due in large part to the severe shortage of and high demand for skilled workers (Reegård & Dębowski, 2019).

For this study, seven interviews were conducted with school directors from the Greater Poland and Silesia regions, representatives of the regional examination board, vocational school

teachers and the Polish Chamber of Automotive Industry, all of whom have good knowledge of Polish-German cooperation in the automotive sector. The interview partners confirmed that cooperation with German family businesses works very well. In most cases, German companies do not ask for reimbursement when they take on students of the five-year technical secondary school for an internship. German companies organise mentoring classes and are often willing to invest time in developing programmes together with the VET schools. This level of commitment is still uncommon in Poland.

The family business Gühring in Dąbrowa Górnicza in the Silesia region was mentioned as an example of a company that is actively involved in the joint development of programmes and the provision of practical training for VET learners. Gühring also offers free German language courses for learners as well as study visits to Germany. The director of the vocational school commented on this situation as follows:

“We’re aware that Gühring could recruit employees not only for its Polish subsidiary but also for the German head office, but as we’re in the European market, we can’t forbid young people to go abroad. Besides, in this way, learners acquire advanced skills and competences, which is very good for them. We therefore try our best to accommodate the company’s wishes and have a good collaborative relationship with it in this regard.”

This example is described in more detail in the “Case studies” section (Chapter D.I).

5. EU projects and cooperation at country level

European Union initiatives have influenced VET decision-makers in Poland by providing ideas, policy insights and funding. Shortly after joining the European Union, Poland started to pay more attention to VET as a policy area. As Dębowski & Stechly (2015) have noted, since 2007 vocational education and training in Poland has regained a more prominent position in national politics after years of inattention. This is the result of changes in the occupational structure and the opening of European labour markets, which led to an increase in national demand for workers with qualifications in skilled occupations.

The instruments of the European Union, especially the European Qualifications Framework, but also the European Credit System for Vocational Education and Training (ECVET) and the validation of non-formal learning, were developed and proposed by the EU shortly after Poland’s accession. The countries of Central and Eastern Europe were involved from the beginning, alongside the old EU Member States. These instruments made it possible to compare the different education systems and gained wide support from policy-makers and social

partners in Poland. From 2010 to 2020, Poland – largely inspired by developments in the EU – introduced VET curricula based on learning outcomes. VET qualifications were organised in learning outcome units. As part of the 2019 reform, other significant changes were made to improve cooperation between schools and employers (see above).

The modernisation efforts were widely supported by systemic projects paid for by European Union funds. The Partnership Agreement between Poland and the European Union for the period from 2014 to 2020 identified the modernisation of VET as one of eleven priority areas, indicating its great importance. These systemic projects were implemented by the ministerial agencies (National Centre for Supporting Vocational and Continuing Education, Centre for Education Development, Central Examination Board, Educational Research Institute). EU funds were furthermore used to institutionalise dialogue between VET stakeholders and employers in the form of Sector Competence Councils.

EU-funded modernisation also took place at the local and school level. Local authorities responsible for managing the school network (including the VET school network) could, for example, apply for grants to modernise infrastructure or to fund employers' participation in vocational education and training in cooperation with VET schools. In the latter case, learners received remuneration for participating in in-service learning and employers were reimbursed for the cost of training the learners. Between 2014 and 2021, more than 4,000 VET projects at the national and local level were co-funded by the European Social Fund with an amount of approximately 2 billion euros.

VET schools in Poland actively apply for Erasmus+ grants from the European Union to support the mobility of VET learners. Polish VET schools are among the most active in Europe in this regard: according to the Erasmus+ National Agency in Poland, more than 1,200 VET schools applied for funding between 2014 and 2019 to organise mobility programmes. In 2019, more than 23,000 participants from Poland took part in VET exchanges under Erasmus+.

In summary, the EU funds distributed through different mechanisms (European Social Fund, European Regional Development Fund, Erasmus+) have played a very important role in promoting and modernising VET at the central, regional, local and school levels.

Cooperation at country level

Currently, Poland does not engage in explicit or systematic cooperation with any other country. During the preparation of the VET reform in 2017, the Ministry of Education organised study visits to Germany to learn more about its dual system of vocational education and training and the way cooperation between employers and VET schools is organised. The knowledge gained

during these study visits and peer learning activities was adapted to the national context. This entailed an adjustment to the capabilities of the social partners, which led, for example, to new types of internships. During the process, there was discussion of extending employers' compulsory participation in corporate self-governance to vocational education and training, drawing inspiration from German and French solutions. However, the government did not implement this idea due to employer resistance.

III. Romania

In the 1980s, foreign companies – most notably from the USA but also from EU countries – began to set up operations in Romania. With 19 million inhabitants, Romania is the largest market in Southeastern Europe. It boasts both a central location on the European continent and many raw materials (Zeigert, 2022). In 2002, Romania's gross domestic product per capita (GDP/capita) stood at 4,260 euros, one of the lowest in Europe. Today, its GDP has reached 9,380 euros per capita – an increase of 5,120 euros or 120 percent (EuroStat, 2022j). In 2019, the World Bank for the first time classified Romania as a high-income country (World Bank Group, 2021a). And Romania's ranking in the Global Competitiveness Index has improved from 77th place in 2012 to 51st in 2019 (World Economic Forum, 2019). Despite this positive development, the country's large budget deficit means that it will have to draw on EU funds if it wants to continue to develop positively in the long term. What is problematic in this context is the high level of perceived corruption: Romania ranks 66th (out of 180 countries) in the 2021 Corruption Perceptions Index, though the level of corruption is perceived to be even higher in Hungary (rank 73) and Bulgaria (rank 78) (Transparency International, 2022b).

Romania suffers from a severe shortage of skilled workers. This has several reasons: (1) The rate of students dropping out of school or VET prematurely is the highest in all of Europe, at 15.3 percent in 2021 (EuroStat, 2022g). (2) From 2000 to 2020, the country's labour force shrank by 16.4 percent due to migration and low birth rates (< 2.0) (OECD, 2022a). (3) There is a significant discrepancy between labour market needs and the available qualifications (skill mismatch): in company surveys, employers stated, for example, that 39.2 percent of their employees are not skilled in the field they work in and thus not employed in line with their qualifications (OECD, 2022a). (4) In addition, there is a high level of urbanisation, creating an urban-rural divide: 76 percent of the population – accounting for 97 percent of the country's economic output – live in a city or in an urban environment. Conversely, this means that 24 percent live in a rural environment and generate only 3 percent of the economic output (World Bank Group, 2021b). The share of the population at risk of poverty is correspondingly high, at 35.8 percent; only Montenegro and Albania score worse in the EuroStat database (EuroStat, 2022i). This in turn explains the high rate of students who drop out of school or VET prematurely. Vocational education and training would be able to resolve the shortage of skilled workers and the problem of social integration at the same time, though it is essential

to provide a certain amount of assistance to prevent early drop-outs (including help with accommodation and meals or with making up for deficits in basic education, such as literacy and numeracy skills).

1. Structure and status of initial and continuing vocational education and training

The Romanian VET system is illustrated in Figure 3. Four different VET programmes exist at upper secondary level (CEDEFOP, 2021a):

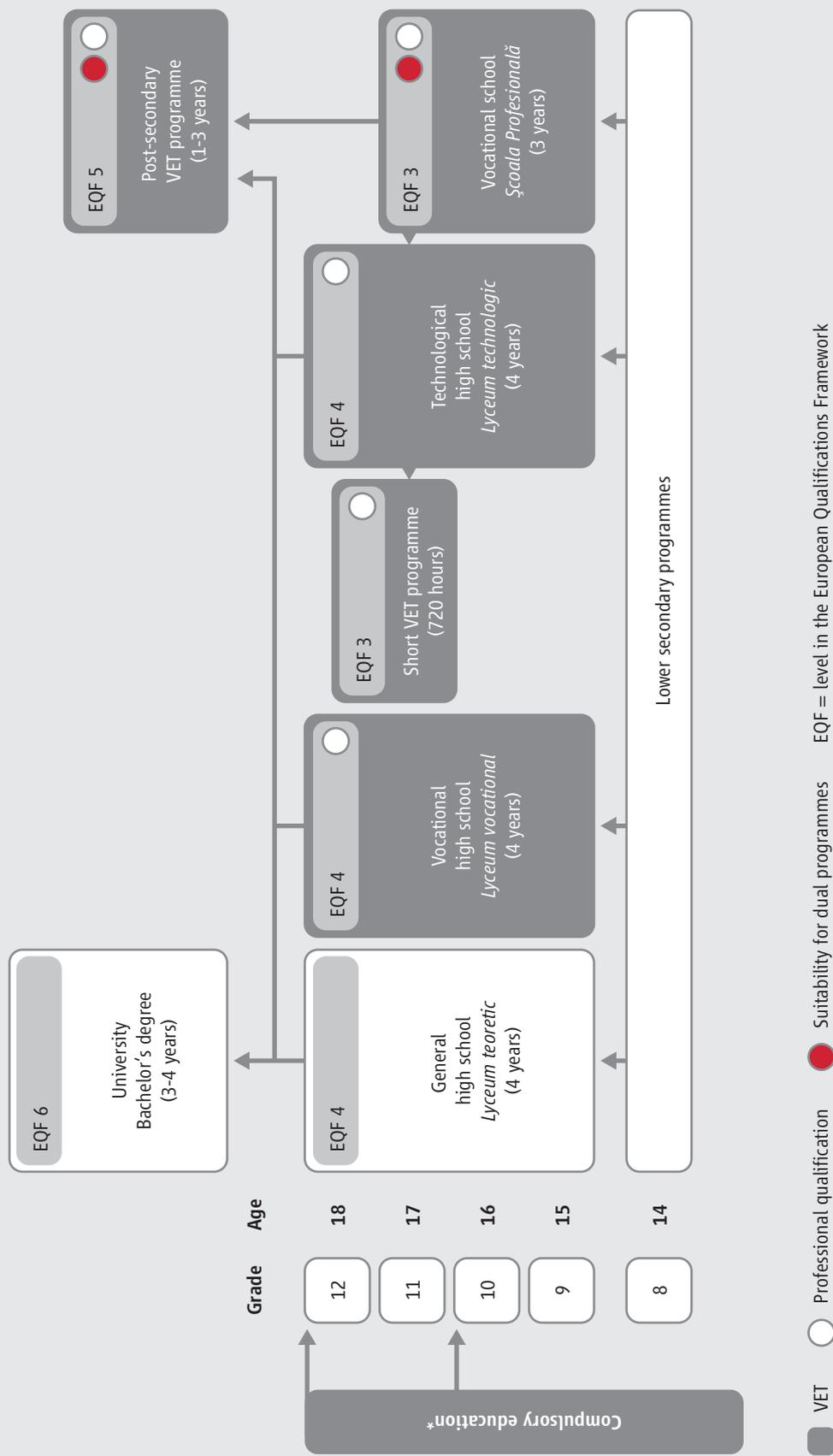
1. The three-year school-based VET programme ends with a professional qualification at skilled worker level (EQF 3). Training takes place in cooperation with employers who provide compulsory in-company training, which is combined with practical learning in school workshops. To carry out a programme together, vocational schools and employers conclude a partnership agreement that sets out the number of training places and the respective obligations. In addition to this partnership agreement, agreements are concluded between the individual parties involved, i.e. the vocational school, the employer and the learner (or the learner's legal representative). The share of in-company training and work-based learning at school increases with each year, averaging 50 percent. In addition to this form of training, a dual form of VET has been available at the national level since the 2017/2018 school year. This variant involves the municipality as a local authority, lending greater legitimacy and a more binding character to the partnership agreement concluded in this context. Under the dual education system, companies are obliged to pay learners a monthly allowance, though at 200 Romanian lei (about 40 euros) per month, this allowance is more akin to pocket money. Upon completing their three-year vocational training, students in both programmes have the option of entering the third year (or second stage) of the technological high school (see Figure 3) and reaching EQF level 4 through this programme.
2. Four-year VET programmes with a technical orientation (technological high school) provide graduates with a professional qualification at EQF level 4 as well as with a higher education entrance qualification. These programmes are comparable to the technical secondary schools in Germany. Practical work-based learning, which takes place at school, accounts for 25 percent of the training. The programme consists of two stages, each lasting two years. After completing the first stage, learners have the option of switching to a short VET programme of 720 hours. Graduates who have passed the upper secondary school-leaving examination may enrol in higher education.

3. In short VET programmes, learners can obtain a professional qualification at EQF level 3 after having completed grade 10. These programmes are coordinated by VET schools and provided by employers. They target both young people and adults.
4. The fourth option is another four-year programme (vocational high school), which provides a professional qualification at EQF level 4 in combination with a higher education entrance qualification. The programmes offered by these secondary schools are limited to the fields of military, theology, sports, art and pedagogy. Work-based learning makes up 15 percent of the programme. Graduates of this type of school usually go on to university.

Post-secondary vocational education and training comprises one- to three-year VET programmes leading to a professional qualification at EQF level 5. The programmes are organised by technological schools or by colleges/universities upon request (such requests may also come from companies). Access to these programmes is open to all secondary education graduates.

Young people (16+) and adults without a professional qualification may complete a one- to three-year apprenticeship under the Apprenticeships at the Workplace for Adults programme, leading to the same nationally recognised qualifications at EQF levels 1 to 4 as initial vocational education and training. At least 70 percent of the apprenticeship consists of work-based learning. This programme is supported by the public employment service and offered by employers in cooperation with authorised training providers.

Figure 3: Vocational education and training system in Romania



*Compulsory education up to grade 12 does not apply to vocational education.

Sources: CEDEFOP, 2021a; CEDEFOP & NCTVETD, 2022.

Social acceptance and prevalence of VET

Before 1990, vocational training was largely carried out by companies. With the downfall of the socialist economy and its transformation into a market economy, the traditional system of apprenticeship training largely disappeared. The government assumed responsibility for this task and founded state schools, but they were not held in high esteem by companies or society due to their lack of quality. In 2009, the government eliminated the possibility for students to enrol in school-based VET programmes, effectively abolishing the VET system and further accelerating its decline: the number of people enrolled in VET programmes dropped from 284,412 in 2005 to 12,382 in 2011. This downward trend was halted by the launch of technological high schools in 2011, but although the establishment of these three-year vocational schools has led to an increase in institutional provision, society at large still regards practical vocational training as less valuable than a theoretical course of education at a secondary school. Meanwhile, however, employers have adopted a different view: on average, they are more satisfied with the skills of VET graduates than with the skills of people who have graduated from a general high school (Președintele României, 2021). The Education and Training Monitor of the European Commission confirms the fundamental problem, but also the positive trend: “The attractiveness of vocational education and training (VET) has increased, but ensuring quality and labour market relevance remains a challenge.” (European Commission 2020d, p. 8).

During the 2019/2020 school year, according to the National Institute of Statistics, VET students accounted for 49.4 percent of the total number of students in upper secondary education, with 35.4 percent enrolled in four-year programmes and 14 percent in three-year VET programmes. As for the dual system of vocational education and training, which currently offers only three-year VET programmes, the number of enrolled students has increased every year: At the beginning of the 2017/2018 school year, i.e. the year in which dual VET was introduced at the national level, there were 2,568 students enrolled in grade 9; by the beginning of the 2020/2021 school year, the number had risen to 6,916 students. The number of companies participating in this dual form of VET has also increased significantly: from 227 in the 2017/2018 school year to 886 in the 2020/2021 school year.

Selected industrial-technical training occupations

The non-governmental organisation CivicNet, with support from the national government, has developed a platform that lists all three-year vocational schools (Școală profesională), three-year dual VET programmes (Învățământ dual) and technical high schools (Liceu tehnic/Lyceum tehnic/Colegiu tehnic), including the educational programmes they run (Meserii, 2022).

Figure 4: Dual VET programmes in Romania

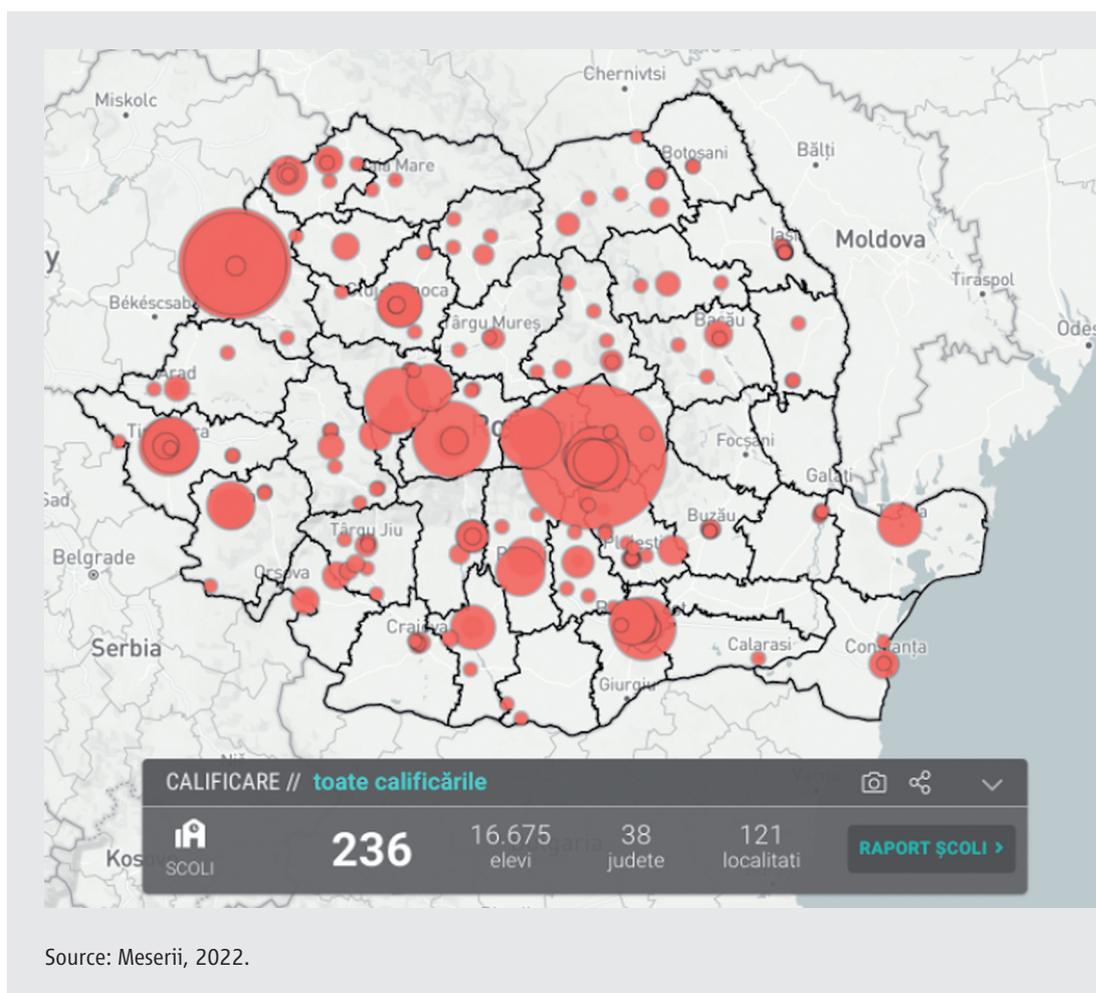


Figure 4 illustrates the VET programmes that are offered under the dual system. According to this database, the following vocational schools in particular offer dual industrial-technical training programmes:

1. Colegiul „Aurel Vijoli” Făgăraş
2. Colegiul Tehnic „Alexandru Domşa” Alba Iulia
3. Colegiul Tehnic „Emanuil Ungureanu” Timișoara
4. Colegiul Tehnic „Independența” Sibiu
5. Colegiul Tehnic „Mihai Bravu” București
6. Colegiul Tehnic „Mihai Viteazul” Oradea
7. Colegiul Tehnic „Traian Vuia” Oradea
8. Colegiul Tehnic de Transporturi „Transilvania” Cluj-Napoca
9. Colegiul Tehnic de Transporturi Brașov

10. Colegiul Tehnic Energetic „Remus Rădule” Braşov
11. Colegiul Tehnic Metalurgic Slatina
12. Colegiul Tehnic Reşiţa
13. Liceul Tehnologic Energetic „Regele Ferdinand I” Timişoara
14. Liceul Tehnologic „Anghel Saligny” Tulcea
15. Liceul Tehnologic „Astra” Piteşti
16. Liceul Tehnologic „Dr. Ioan Şenchea” Făgăraş
17. Liceul Tehnologic „Simion Bărnuţiu” Carei
18. Liceul Tehnologic „Timotei Cipariu” Blaj
19. Liceul Tehnologic „Victor Jinga” Săcele
20. Şcoala Profesională Germană „Kronstadt” Braşov

Industrial-technical VET programmes account for approximately 60 percent of the dual education programmes.

2. Players and elements of regional and central governance

Initial vocational education and training has been a regular part of the Romanian education system again since 2013/2014. The reasons for the temporary closure of the VET sector between 2008/2009 and 2013/2014 are explained in the case study in Chapter D.IV.

As Figure 3 illustrates, there is some permeability between vocational and academic education. The three-year training programmes, which are also offered in dual form, include elements of practical learning, which are carried out either in a vocational school or at a company. Work-based learning accounts for 20 percent of the programme in the first year, about 60 percent in the second year and about 72 percent in the third year. These practical periods consist of blocks of days in the school-based variant and blocks of days and weeks in the dual variant. In the first year, the blocks of days comprise three hours per week, which corresponds to one day at the company every two weeks under the dual variant. The second year has two days (16 hours) of practical training per week and the third year three days (21 hours). The dual variant additionally comprises blocks of weeks, specifically five weeks in the first year, nine weeks in the second year and ten weeks in the third year.

To be able to introduce a dual variant, the school concludes framework contracts with companies interested in providing training: “These contracts establish clear responsibilities for both schools and companies for WBL provision and resources to be provided by the company for

training and certification exams.” (CEDEFOP 2019c, p. 30). The framework contracts set out the obligations of the companies:

1. Organising and implementing the training process to enable students to obtain their professional qualifications and devising the training plan for practical training phases
2. Ensuring the availability of the technical and human resources needed for work-based learning
3. Ensuring the availability of the technical and human resources needed to organise and conduct the certification exam for the professional qualification of VET graduates

CEDEFOP (2019c) describes the main stakeholders in initial vocational education and training at the national, regional and local levels:

The Ministry of National Education is responsible for developing and implementing national education and training policies and strategies. It draws up legislation and approves funding and enrolment plans. In addition, it supervises the education system and the work of education providers either directly or through the relevant agencies. The Ministry of National Education awards the VET certificates for both initial and continuing VET and coordinates national examinations. It approves promotions and transfers of teachers as well as curricula through subordinated bodies (CEDEFOP, 2019c, pp. 36-37).

The National Centre for Technical and Vocational Education and Training Development is accountable to the Ministry of National Education. Its main tasks are to: coordinate the design, implementation and review of national curricula; supervise the development of professional training standards for qualifications validated by sectoral committees (coordinated by the National Authority for Qualifications) and approved by the education ministry; develop methodologies for the quality assurance and monitoring of programmes; and implement continuing professional training programmes for teachers/trainers (CEDEFOP, 2019c, p. 37).

School inspectorates, in partnership with advisory bodies at the local and regional level, propose the VET plan for the next school year to the Ministry of National Education. They also organise the selection and recruitment of teachers.

Local committees for development of social partnerships are advisory management bodies that aim to improve the relevance and quality of VET. Members include representatives of local authorities, the county employment agency, employer associations, trade unions, school inspectorates and NGOs. Their tasks include monitoring the local education action plans and

school action plans, evaluating the annual enrolment plan for VET at the county level and approving the local part of the VET curricula. Finally, the local authority is responsible for the upkeep of the school buildings and equipment. A VET school administration board, consisting of representatives of the local authority, the mayor and employers, supports school management. The board approves the institutional development plan, curricula and teacher training plans (CEDEFOP, 2019c, pp. 39-40).

3. Funding and quality assurance

School budgets are approved annually based on per capita calculations that take various aspects, such as number of students, rural/urban areas, type of programme, total number of learners at the school and language of instruction, into account. The approved budgets are adopted annually by government decree. Vocational education and training in state schools is free of charge. Learners in three-year VET programmes receive a monthly vocational grant of 200 Romanian lei (about 40 euros), which is usually used to pay for transport and meals. Learners in dual VET programmes receive an additional 200 Romanian lei from their company. In addition, the companies pay for the learners' work materials, insurance and medical examinations, insofar as they are necessary to meet the requirements of the job (CEDEFOP, 2019c).

Quality assurance instruments

Each IVET programme requires accreditation and has to be approved by the Ministry of National Education through a decree. Examinations take place in examination centres, with a board approved by the school inspector and composed of teachers who have not been involved in the students' teaching/training as well as representatives of companies in the students' training area.

One member of the examination board is responsible for monitoring the quality of the examinations, for example by determining how the output of the examination centres (number of candidates, number of qualifications, number of board members, number of participating companies) correlates with the input (financial and time requirements, number of examiners, companies in the region).

Currently, no suitability assessment or accreditation is required for companies interested in participating in a dual VET programme. However, the contracts that are concluded between the learners, VET school and partner companies set out the responsibilities of the companies, which include participation in examinations.

4. Reform activities and dual approaches

In 2012, a professional programme with work-based learning components was introduced in two stages as a form of initial VET. First, a two-year programme was established in the 2012/2013 school year, and in the 2014/2015 school year, it was replaced by a professional programme of at least three years' duration following completion of grade 8.

At the request of the social partners and after extensive consultations, the dual system of vocational education and training was introduced in 2016; it is regulated by Government Ordinance 81/2016 amending and supplementing the National Education Law No. 1/2011. Dual VET requires an active partnership between school and company. The regulations stipulate in particular that (a) the company takes responsibility for the students' practical training, (b) a representative of the partner company must become a member of the vocational school's administration board, and (c) the vocational school and the company must cooperate on adapting the curriculum to the needs of the local and regional labour market.

Although the National Education Law anticipates the possibility of organising dual VET at higher levels, at the moment all the provisions for dual VET apply only to EQF level 3 qualifications (methods of access and organisation). Therefore, the IVET system only offers dual VET programmes for EQF level 3.

The strategic objectives of the EDUCATED ROMANIA project (2020) under Romania's EU Presidency (2019) include developing dual VET programmes for EQF levels 4 and 5 as well as dual VET programmes in the tertiary sector. The aim is to link the different EQF levels in an integrated VET system. For this purpose, the national government will establish and financially support a total of ten partnership structures, which will provide the basis for dual VET consortia, each involving at least one VET school offering a dual VET programme, one technical college or university, business stakeholders and the competent local authority. These consortia will receive support to enable them to develop into local and regional industrial ecosystems focused on innovation, creativity and smart specialisation. They are meant to lay the groundwork for a well-rounded work-based learning component of VET, both on campus and at the premises of companies, and will support resource capitalisation in partnerships. The consortia will also assist VET students with less privileged backgrounds by providing scholarships and other forms of support to enable them to pursue their vocational training (Președintele României, 2021). A case study in Chapter D.IV. describes the establishment of such a partnership consortium with the involvement of German family businesses.

Local support services of the German Chamber of Commerce Abroad (AHK)

The German-Romanian Chamber of Industry and Commerce (DRIHK) is involved in the implementation and execution of dual VET, developing and coordinating entire IVET and CVET programmes. In 2017, for example, the AHK launched the Școala de Carte și Meserii project in cooperation with several German family businesses (Hornbach Romania, Lidl Discount, METRO Cash & Carry România), demonstrating its range of services: The AHK was responsible for project management, in particular the search for and selection of partner schools, coordination between companies and schools, coordination of the information campaign and the selection process, coordination between partner companies on internal project issues (for example, determining in-company training periods, scholarships, etc.), quality assurance of the project (including feedback loops, workshops for teachers and students), as well as the organisation of examinations and certifications. Today, the participating companies provide dual VET in a total of eight cities. In another project that was launched in 2019 – called Școala Meserie Viitor (School of the Future) – the AHK is cooperating with the Ilfov District Council to improve dual VET provision in the region. Here, too, the focus is on developing training programmes based on an analysis of the regional labour market (AHK Romania, 2022).

5. EU projects and cooperation at country level

The ReCONNECT project (ReCONNECT, 2022), co-funded by the European Commission through the European Social Fund, aimed to establish an integrated mechanism for anticipating labour market needs, monitoring the integration of VET and higher education graduates into the labour market, and tracking and evaluating public VET and activation policies. The project was implemented by the main institutions in charge of VET and employment at the national level: the National Employment Agency, the Ministry of Labour and Social Protection, the National Scientific Research Institute for Labour and Social Protection, the Ministry of National Education (MEN), the National Centre for Technical and Vocational Education and Training Development, and the Executive Agency for Higher Education, Research, Development and Innovation Funding (UEFISCDI). The timeframe of the project was December 2020 to November 2022.

Since 2016, the European Commission has supported the development of quality assurance mechanisms for VET in Member States by issuing restricted calls for proposals to the national reference points responsible for system-level developments in this area. Member States have established Quality Assurance National Reference Points in accordance with the Recommendation of the European Parliament and of the Council of 18 June 2009 on the establishment of a European Quality Assurance Reference Framework for Vocational Education and Training (Council of the European Union, 2009). This recommendation was extended by the Council Recommendation of 24 November 2020 on vocational education and training (VET) for sustainable competitiveness, social fairness and resilience (Council of the European Union, 2020). In each of these restricted calls for proposals, Romania has successfully applied for grants to

improve the quality of vocational education and training. The implementation of these projects has resulted in the establishment of local networks of vocational schools offering VET programmes in different sectors (e.g. mechanics, electronics, construction). These networks (see Figure 4) support peer learning and encourage cooperation with companies, thus providing a good starting point for German family businesses planning to set up dual VET programmes. Furthermore, these grants have been used to create a platform for collecting and analysing feedback from VET students, which is to be further developed in order to be able to collect feedback from all key VET stakeholders (including company representatives, teachers, local authorities) in the future.

In September 2021, the Romanian recovery and resilience plan was approved by the European Commission. The maximum amounts allocated to Romania by the European Commission are 14.2 billion euros in grants (6.5 percent of GDP) and 14.9 billion euros in loans (7 percent of GDP). In the area of general and vocational education, an important pillar is dedicated to developing the dual system of vocational education and training, with a total of 338 million euros allocated for this purpose (Ministerul Investițiilor și Proiectelor Europene, 2021).

Cooperation at country level

Between 1 November 2014 and 31 October 2016, the National Centre for Technical and Vocational Education and Training Development, as the applicant, and the Landesakademie für Fortbildung und Personalentwicklung an Schulen Baden-Württembergs, a training institute based in the German town of Esslingen, as the partner, carried out the project “National Authorities for Apprenticeship: Development of Apprenticeship Learning in IVET in Romania” (DaliVET, 2022). The project was co-financed by the European Union under the ERASMUS+ fund. Its overall objective was the development of an initial VET pathway focused on work-based learning and implemented in partnership with enterprises. The specific goals of the project were to provide the legal framework for introducing the dual system of vocational education and training, to improve the skills and competences of teachers and trainers involved in work-based learning, to strengthen the accountability of the main stakeholders in initial vocational education and training, and to raise awareness among all relevant stakeholders able to contribute to this new pathway. The main outcome of the project was the integration of a dual VET pathway into the national education system, initially through Government Ordinance 81/2016 and subsequently confirmed by the National Education Law in 2018. In addition, the project involved the development of a training programme for teams of teachers from VET schools and tutors from partner companies, which was nationally accredited and piloted with 22 teachers and 22 tutors.

From 2010 to 2019, the Ministry of National Education and the National Centre for Technical and Vocational Education and Training Development, in cooperation with the Centre for

International Projects in Education at the Zurich University of Teacher Education, implemented the JOBS project (Job Orientation Training for Businesses and Schools; Professional orientation – Training in enterprises and schools) (Jobsproject, 2022). The project helped upper secondary school students (general and vocational) to gain a realistic impression of the career opportunities in their region, with visits to companies enabling them to make more informed decisions. Close cooperation between schools and companies was encouraged, and more than 945 companies opened their doors to students during the project, bringing them into direct contact with the real labour market. A teacher training programme focused on developing teachers' skills in delivering competence-based learning was developed and recognised nationally; a total of 2,240 teachers have taken part in the training so far.

Cooperation with companies

Școala Profesională Germană Kronstadt (SPGK) was founded in Brașov on the initiative and with the support of the companies belonging to the German business club in Brașov (including Continental, Dräxlmaier, Schaeffler and Premium Aerotec) as well as with the support of the local authorities and school supervisory authority. Currently, SPGK runs dual VET programmes in six EQF level 3 qualifications for about 800 students (SPGK, 2022).

Școala Profesională Germană Alba (SPGA) was founded during the 2013/2014 school year as part of the Alexandru Domșa Alba Iulia High School on the initiative of the company SC Star Transmission SRL, a subsidiary of Daimler AG. Since then, the Romanian companies IPEC SA and SOLINA Romania SRL as well as the Italian subsidiary SATURN SA have joined the initiative. The vocational school currently provides dual VET programmes for 230 students (SPGA, 2022).

Școala Duală Banat is part of the King Ferdinand Technical College in Timisoara. The school has partnerships with 14 companies, including the German family businesses Schaeffler and Dräxlmaier, and offers dual vocational training for around 70 students per year (SDB, 2022).

Two vocational schools in Cluj and Blaj cooperate with the Bosch Group, offering around 100 places in dual VET programmes per year in the fields of electronics, electromechanics, electrical engineering and mechanics.

During the 2013/2014 school year, a vocational school was founded within Colegiul Aurel Vijoli on the initiative of the French group Dedienne Roumanie as well as other partner companies from the counties of Brașov and Sibiu. The vocational school is supported by the French Embassy in Romania and the Asociația Parteneriat Cooperare și Progres (association for partnership, cooperation and progress). It offers dual VET for about 80 students per school year in cooperation with the local authorities and the school inspectorate (CAV, 2022).

IV. Slovakia

Manufacturing is a key economic sector in Slovakia, accounting for 76 percent of the country's export goods and a quarter of all jobs (OECD, 2020d). Within this sector, the automotive industry stands out in particular: Slovakia is the world leader in per capita production of cars (Vantuch & Jelinkova, 2019). However, the industry's strength also poses a risk: According to an OECD study, 33 percent of all jobs in Slovakia are at a high risk of being automated. By comparison, the risk in Norway is just 6 percent. Automation does not necessarily mean that jobs will be lost altogether, but transformed jobs will require higher qualifications (Nedelkoska & Quintini, 2018, OECD, 2019a).

1. Structure and status of initial and continuing vocational education and training

VET programmes are organised by qualification levels and objectives (CEDEFOP, 2021a):

- The two- to three-year vocational education and training programmes (lower sec. VET) include both general and job-related content. These programmes are targeted at students who dropped out of basic education without a qualification and wish to obtain a school-leaving diploma (EQF 2). Students may also acquire a nationally recognised professional qualification that is referred to as a certificate of apprenticeship (EQF 3), even though they have not actually completed an apprenticeship.
- Three- to four-year VET programmes teach job-related content and have a high share of work-based learning (over 50 percent). The suitability for dual VET formats is high here. Students acquire a nationally recognised professional qualification (EQF 3), but not a higher education entrance qualification. To gain access to higher education, they must complete a two-year follow-up programme (comparable to the specialised upper secondary school in Germany) during which they may also acquire a further professional qualification (EQF 4) alongside their higher education entrance qualification.
- The four- to five-year VET programmes cover both general education and VET content. At the end, students earn a higher education entrance qualification and a nationally recognised professional qualification (EQF 3-4). Two different profiles are offered in this context: a programme with a higher share of theory and a lower share of practice, and a programme with a higher share of practice and a lower share of theory. The practice-oriented profile is suitable for dual VET formats.

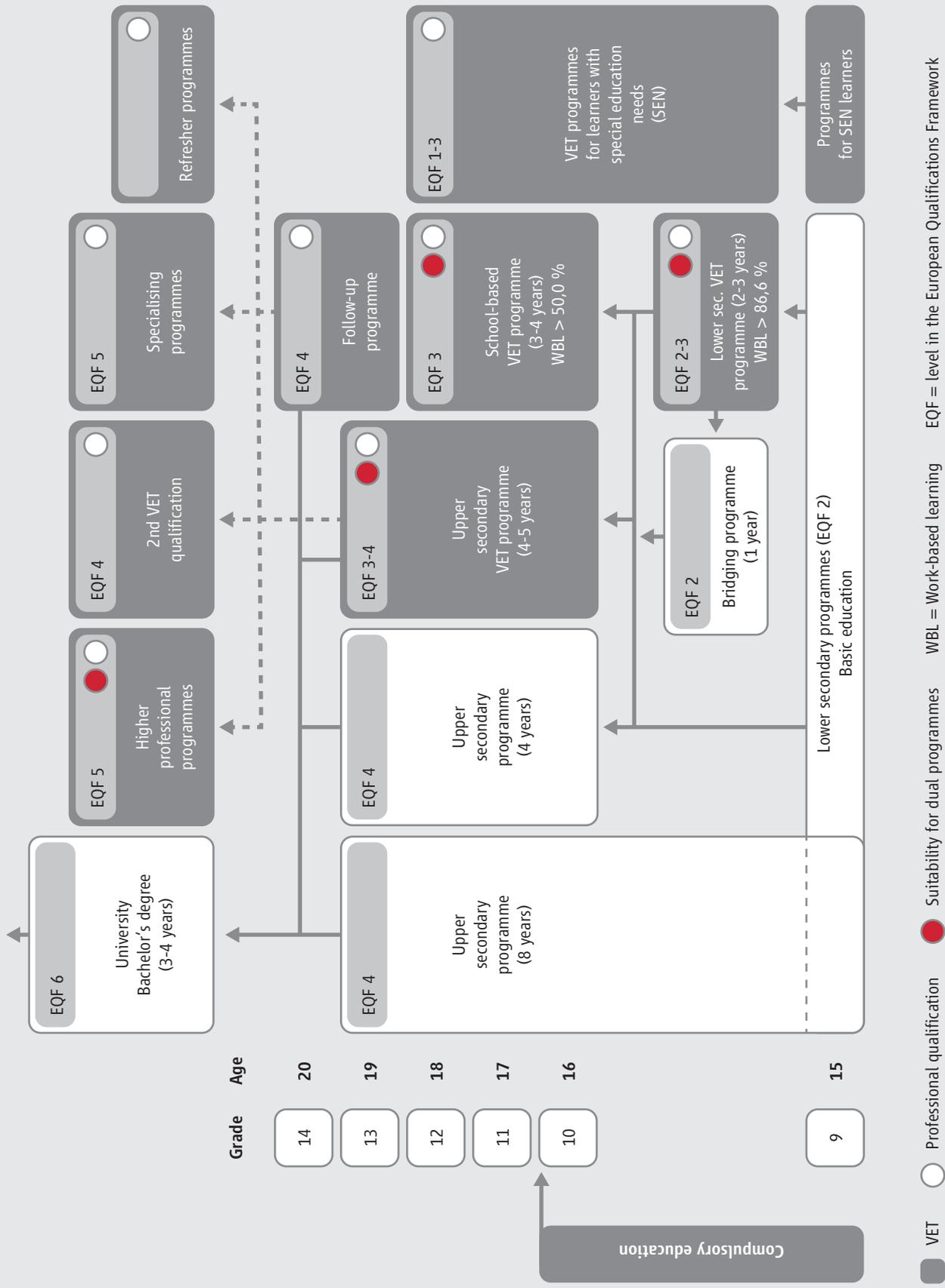
The Slovak VET system was entirely school-based until 2015, when legislation came into force on 1 April governing the implementation of a dual VET programme as an addition to the existing system. Today, there are three types of programmes: completely school-based, mixed (based on a cooperation agreement between school and company) and dual (based on

a cooperation agreement between school and company and a training contract between company and trainee). Some 67.3 percent of students in upper secondary education are enrolled in one of the three VET programmes (Table 3). The employment prospects for VET graduates (age group 20-34) are significantly better (80.7 percent) than for graduates from general education programmes, whose chances of being hired stand at only 69.3 percent (European Commission, 2021b).

Two-year adult education courses allow participants to either obtain a higher education entrance qualification, acquire a further professional qualification (EQF 4) or deepen their knowledge in an existing professional qualification (EQF 5). Providers of such courses are private, but must be accredited by the Ministry of Education. The participation rate of 3.6 percent is well below the EU average of 10.8 percent. In tertiary education, there are no universities of applied sciences. The first cooperative degree programmes are being piloted, and there are plans to introduce legislation for this type of study (CEDEFOP, 2021a).

While initial VET has seen a variety of reforms, adult learning and continuing education still need reforming: "Slovakia's adult learning and education system remains fragmented without proper policy acknowledgement, governance structure or financing." (European Commission, 2021b).

Figure 5: Vocational education and training system in Slovakia



2. Players and elements of regional and central governance

A fundamental feature of the education system is that the general framework is defined at the national level and the powers of organisation are largely decentralised. The state educational programme, for example, specifies the key competences and specialist skills to be addressed in the educational programmes, while the concrete implementation takes place in schools in the form of curricula or school educational programmes. The following institutions in particular are involved in governance (Vantuch & Jelínková, 2019, 2020): At the national level, VET is supported by the National VET Council, which is affiliated to the Ministry of Education, Science, Research and Sport of the Slovak Republic (MSVVaS) and consists of 18 subgroups responsible for strategically developing the VET system and aligning it with labour market needs. One working group of the National VET Council evaluates the work of the regional VET councils. Other institutions that fall within the remit of the Ministry of Education are:

- A. The National Institute for Education (SPÛ, Státny pedagogický ústav), which assists vocational schools in developing curricula for general education subjects.
- B. The State Vocational Education Institute (ŠIOV, Státny inštitút odborného vzdelávania) provides support with the development of vocational school curricula and is responsible for drawing up the national framework curricula.

The Ministry of Education is also responsible for the sectors of continuing education and lifelong learning.

Regional VET councils – whose members include government representatives as well as representatives of the social partners – have a high degree of influence, as Slovakia's eight regional districts have elected people's representatives and are self-governing. These regional VET councils advise the national government in its decisions (e.g. concerning programmes or the number of school places to be made available).

Sectoral skills councils (SSCs) were originally established in 2004 by the Ministry of Labour as working groups to build up the national occupations system. Today, there are 24 SSCs organised in the Alliance of Sectoral Councils. SSCs are voluntary associations of representatives of employers, workers, educational institutions and the government. As in the past, their task is to support the development of occupational standards and to participate in the development of the national qualifications system.

Sectoral assignees represent central employer institutions by ministerial decree. They include the following institutions: Chamber of Commerce and Industry, National Union of Employers, Federation of Employers' Associations, Chamber of Agriculture and Food, Chamber of Trades,

Chamber of Mines, Chamber of Foresters and the Association of Industrial Unions. The task of sectoral assignees is to ensure the quality of training, for example by certifying in-company training institutions and trainers (train-the-trainer programme). Since 2017/2018, the sectoral assignees have been responsible for auditing school educational programmes that are offered on a dual basis but were not created in cooperation with companies. The work of the sectoral assignees is coordinated by the Employer Council for Dual VET, whose work is partly financed by the national government.

The counterpart to sectoral assignees on the school side is the State School Inspectorate, an independent administrative body appointed by the Ministry of Education for a five-year term.

3. Funding and quality assurance

Initial vocational education and training is funded from the state budget, regardless of the organising institution. In 2019, for instance, the amount per student ranged from 1,900 to 3,600 euros, depending on the category of school (CEDEFOP, 2020a).

This type of per capita funding often forces VET schools to admit learners regardless of their abilities and personal interests. Investment expenditure is borne by the schools' sponsors (and, in emergencies, by the state), but additional funds must be raised, for example by charging fees or collecting donations. Continuing VET is financed by learners, employers, the public sector and EU funds.

Quality assurance instruments

In 2009, Slovakia decided to set up a national qualification framework (NQF) with the support of a dedicated ESF project. The Slovak Qualification Framework (SKKR) was eventually launched in 2017 (CEDEFOP, 2020a).

The State School Inspectorate is a main stakeholder in reviewing the quality of VET. In addition, the National Institute for Certified Educational Measurements is responsible for developing national assessment instruments and conducting national and international tests. Both institutions focus mainly on general education subjects but lack experience and capacities: the quality checks are supposed to be expanded, but the institutions are unable to cope with their existing tasks in the VET sector. In part because of these capacity constraints, employers' representatives are expected to become more involved in checking the quality of VET (CEDEFOP, 2020a).

Currently, the State Vocational Education Institute (ŠIOV) of the Ministry of Education and Research is in the process of implementing EQAVET (European Quality Assurance in VET) and recommendations to increase VET quality (MSVVaS, 2022).

4. Reform activities and dual approaches

Historically, the persistent underfunding of schools has had a serious negative impact on VET schools, which have been unable to adapt to technological progress as a result. Moreover, vocational school teachers and trainers received neither financial nor institutional support to be able to adapt their training programmes to the needs of the labour market. It was against this background that a Slovak version of dual VET system was introduced in 2015, called for by the automotive industry in particular. Dual vocational education and training leads to a professional qualification and a school-leaving diploma in the four-year upper secondary programme and to a professional qualification in the three-year school-based VET programme. The practical part of the three-year VET programme totals at least 50 percent. Companies conclude training contracts with the trainees they select. The trainees are not employees of the company, but are referred to as students.

During the 2017/2018 school year, i.e. two years after the dual VET programme started, only 2,611 trainees were enrolled in dual vocational education and training (1,252 of them in the first year), corresponding to 3 percent of an age cohort. The start was difficult: For example, participating schools had their budgets cut, on the grounds that they would be teaching less than before. The fact that dual VET programmes required capacities to develop and adapt the curricula and to coordinate with the companies was not taken into account. In the 2018/2019 school year, this budget cut was lifted. In addition, lists of sought-after educational programmes (white lists) and of less sought-after educational programmes (black lists) were published in 2017. Programmes on the white lists, including all dual VET programmes, now receive a 10 percent bonus per student, while programmes on the black lists have a 10 percent deduction. Apart from this measure, which does not specifically address dual VET, schools do not receive any financial incentives. It is necessary to develop the required structures, but also to increase the attractiveness of dual VET for young people, schools and companies. A particular challenge lies in getting SMEs to participate: since 2018, incentives have included tax breaks for companies that provide training as well as annual per capita payments for the hours of training carried out. The situation is different for larger companies: as of January 2019, 268 enterprises had registered in the training cost reimbursement system. Some 250 enterprises applied for reimbursement and 215 received it. Depending on the size of the company and its training commitments, 50 to 70 percent of the eligible costs – between 300 and 1,000 euros per learner – were reimbursed. Another incentive is that up to 30 percent of the training content can be adapted to local conditions and the needs of the company, allowing for company-specific training (CEDEFOP, 2017b; CEDEFOP, 2020a, Geiben & Csépe-Bannert, 2019).

The reform propositions of Learning Slovakia (an MSVVaS expert group) published in October 2017 warn against underestimating the impact of digitalisation, automation and the increasing

importance of additive manufacturing (for example 3D printing) on VET. The authors note that Slovakia is not sufficiently prepared for the challenges involved in transitioning from an industrial to an information society or for the impact of new technologies on the demand for new skills. Meanwhile, however, the impact of new technologies on vocational education and training is being taken seriously. For example, the 2019 work programme of the State Vocational Training Institute includes a task aimed at identifying the competences relevant to Industry 4.0 and developing new VET programmes that take the requirements of Industry 4.0 into account (Vantuch & Jelínková, 2020).

Alongside the dual approach, which is based on German models, the Anglo-Saxon counter-model is also in use. The central feature of this approach is to define learning outcomes in the form of standards (occupational standards, qualification standards) rather than learning content and conditions (e.g. necessary infrastructure). Learning outcomes are to be defined by the working world, which is organised in Sector Skills Councils/Sectoral Councils. However, they are not very meaningful in terms of the work to be done, which brings us to the second pillar of the Anglo-Saxon model: examinations and certifications concentrate not on professional qualifications, but on partial qualifications that are oriented towards specific professional tasks. This orientation towards specific tasks inevitably leads to a rapid growth in the total number of qualifications, making it difficult to keep up with the continuous development and revision of these qualification standards. A project launched in 2013 to establish a national qualifications system listed over 1,000 qualifications in the national qualifications register after just two years of work (CEDEFOP, 2020a). Sectoral Councils (Sector Skills Councils), supervised by the Ministry of Labour, are currently working on revising the standards and drawing up sectoral strategies for human resources development under the Sector-Driven Innovations project co-funded by the European Social Fund.

The Anglo-Saxon model creates a second reference framework in Slovakia's VET system, and this has already caused some irritation. The introduction of dual VET was accompanied by the development of training curricula. However, while students under the dual system were trained on the basis of these curricula, there were no such curricula for school-based learning. Instead, the latter continued to be oriented towards learning outcomes. This complication ultimately led to curricula development being abandoned (Vantuch & Jelinkova, 2019, 2020). The reason could be that the Anglo-Saxon model – which defines what a person must be able to do, but not how, where, when or with whom a person develops this skill – is preferred. A more likely scenario, however, is that the schools simply lacked the capacities and perhaps also the competences needed to develop VET curricula.

Cooperative forms of VET

Slovakia has cooperative forms of vocational education and training. One example is the Dual Academy, which provides training in mechanics, electrics, IT, mechatronics, mechanical engineering, machine and plant construction and electrical engineering with the participation of large corporations (e.g. SIEMENS, Volkswagen, Newport Group) (Duálna akadémia, 2022).

Local support services of the German Chamber of Commerce Abroad (AHK)

The German-Slovak Chamber of Industry and Commerce was founded in 2005 as the 57th German Chamber of Commerce Abroad. It promotes business relations between Germany and Slovakia, has around 400 member companies and, in the area of education, offers in particular the DUALpro programme, which brings company-based training into line with German standards. Slovak training curricula are adapted to create content and procedures that enable trainees to pass German skilled worker examinations and obtain a German-Slovak certificate (bilateral AHK-DIHK certificate). Trainers can also be qualified via the German-Slovak Chamber of Industry and Commerce within the framework of the four-day international train-the-trainer programme. In addition, the AHK determines – through a standardised skilled worker examination – whether candidates have acquired professional skills in line with German curricula (AHK Slovakia, 2022).

5. EU projects and cooperation at country level

What made it possible to develop vocational education and training and to support disadvantaged groups was a number of projects co-financed by the European Social Fund, among others. Below are some examples of these projects:

1. Development of Secondary VET (2013-2015) with the aim of introducing dual system elements, assessing teaching quality and materials, and developing career guidance, among other things.
2. Creation of the National Qualification System (2013-2015) with the aim of establishing a register of occupational and qualification standards based on the Anglo-Saxon model.
3. Further Education and Counselling for Adults as a Tool for Increasing the Chances on the Labour Market (2013-2015) with the aim of establishing counselling centres and providing continuing education, among other things.
4. Requalification Passport, Re-Pas & Re-Pas+ (2015-2016, 2017-2018) with the aim of providing free training for the unemployed, among other things.
5. Dual Education and Increasing Attractiveness and Quality of VET (2016-2020) with the aim of significantly increasing the number of students in dual VET programmes.

An example of an Erasmus+ project is IntVETDual (Introduction of Dual VET Elements), which ran from 2014 to 2016 and addressed the high level of youth unemployment in the Danube region and the simultaneous shortage of qualified workers. The aim of this project was to contribute to the modernisation of the dual VET system and to provide impetus for other countries in the Danube region. The project was coordinated by the Slovak Ministry of Education, Science, Research and Sport. Other participants included the State Vocational Training Institute of Slovakia, Germany's Federal Institute for Vocational Education and Training, the Ministry of Finance of Baden-Württemberg, the Landesakademie für Fortbildung und Personalentwicklung an Schulen Baden-Württemberg, the Austrian Chamber of Commerce, Austria's Federal Ministry of Science, Research and Economy, and Volkswagen Slovakia (IntVETDual, 2016).

Cooperation at country level

The Berlin memorandum of December 2012 established a European training alliance to reform VET systems and combat youth unemployment (Memorandum on Cooperation in Vocational Education and Training, 2012). The memorandum on the creation of a European VET area was signed by the education ministers of Germany, Spain, Greece, Portugal, Italy, Slovakia and Latvia with the participation of the European Commission. In 2012, the German Federal Ministry of Education and Research (BMBF) and the Slovakian Ministry of Education, Science, Research and Sport signed a bilateral cooperation agreement on VET, which has since been extended (2015 and 2019). Furthermore, bilateral relations in the area of VET currently exist with countries such as Croatia, Denmark, Finland, France, Great Britain, India, Indonesia, Kazakhstan, Korea, Luxembourg, Mexico and Norway (MSVVaS, 2021).

V. Czech Republic

In the 1990s, the Czech Republic – due to relatively low labour costs at its industrial locations – initially had the image of being Europe's "extended workbench". However, the economy underwent a major transformation in the space of just one decade, as evidenced by the automotive industry with its global approach to quality production, which brought with it local responsibility for higher production segments and correspondingly higher local skills (Voskamp & Wittke, 2012). Today, the Czech Republic is a successful industrial nation with a high degree of automation. But as an export-oriented country, it also has some weaknesses, including a shortage of skilled workers (vacancies: 344,000, registered unemployment as of April 2022: 3.3 percent), a lack of practical training and a strong dependence on the automotive industry (GTAI, 2021).

One particular strength is highlighted by the Gini coefficient, which is calculated by the World Bank to measure the equality or inequality of income distribution within an economy. A Gini coefficient of 0 expresses perfect equality, while a coefficient of 100 expresses absolute

inequality. The Czech Republic, along with Slovakia, is among the countries with the lowest Gini coefficient. A value of 25.3 indicates that there is greater income equality in the Czech Republic than in Finland and Norway, for example (both 27.7) (World Bank Group, 2022a). However, in contrast to Finland and Norway – which together lead the ranking of countries with the lowest rate of corruption in the world – the Czech Republic is ranked 49th out of 180 countries in the Corruption Perceptions Index (CPI) (Transparency International, 2022b).

In the Global Competitiveness Index, which takes the Gini coefficient and the CPI as well as other variables (e.g. patent applications per million inhabitants) into account, the Czech Republic is ranked 32nd, ahead of countries such as Poland (37th), Slovakia (42nd) and Hungary (47th). Areas where the Czech Republic scores well in this ranking include macroeconomic stability and research and development (World Economic Forum, 2020).

Another relative strength is the willingness of many companies to upskill their workforces. In a survey by the World Bank, 44 percent of Czech companies stated that they offer staff training. While Slovakia has a comparable rate at 43 percent, its training intensity is higher: in the Czech Republic, companies that provide training reach 52 percent of their workforce, while those in Slovakia reach 73 percent (World Bank Group, 2020a). Despite this willingness to train, there is no dual education system in the Czech Republic, and although 75 percent of all companies are involved in school-based activities, 62 percent hold the opinion that the VET system is not geared to the requirements of the labour market (Dlabajová, 2019).

1. Structure and status of initial and continuing vocational education and training

After compulsory education of nine years, four-year general education programmes start at general secondary schools (gymnázia) and two- to four-year VET programmes start at secondary technical schools (střední odborná škola, SOŠ) or secondary vocational schools (střední odborná učiliště, SOU). The two basic school types SOŠ (which usually lasts four years) and SOU (which usually lasts two to three years) are increasingly being merged into one type of school (SOŠ and SOU) due to declining student numbers, with the result that the differences between the two are disappearing. A key difference that remains is that graduates of the four-year programmes are awarded a higher education entrance qualification (maturita). Graduates of three-year programmes can acquire such a qualification by attending a two-year follow-up programme. Students at tertiary professional schools (vyšší odborná škola, VOS) can enrol in educational programmes at EQF level 6. In general, all types of vocational school can be completed in the form of full-time or evening school, distance learning, self-study or in a combined form (Kaňáková et al., 2019).

Dual VET models did exist until 1989. During the transition to a market economy, however, they were replaced by purely school-based training (at least 75 percent of the curriculum is taught at school) with only a small amount of practical training in either the school's own workshops or by means of internships or brief practical training periods at a company. General subjects are an important component in all types of VET programmes: their share varies depending on the programme, ranging from 30 to 70 percent of the teaching time. The current education system is illustrated in Figure 6.

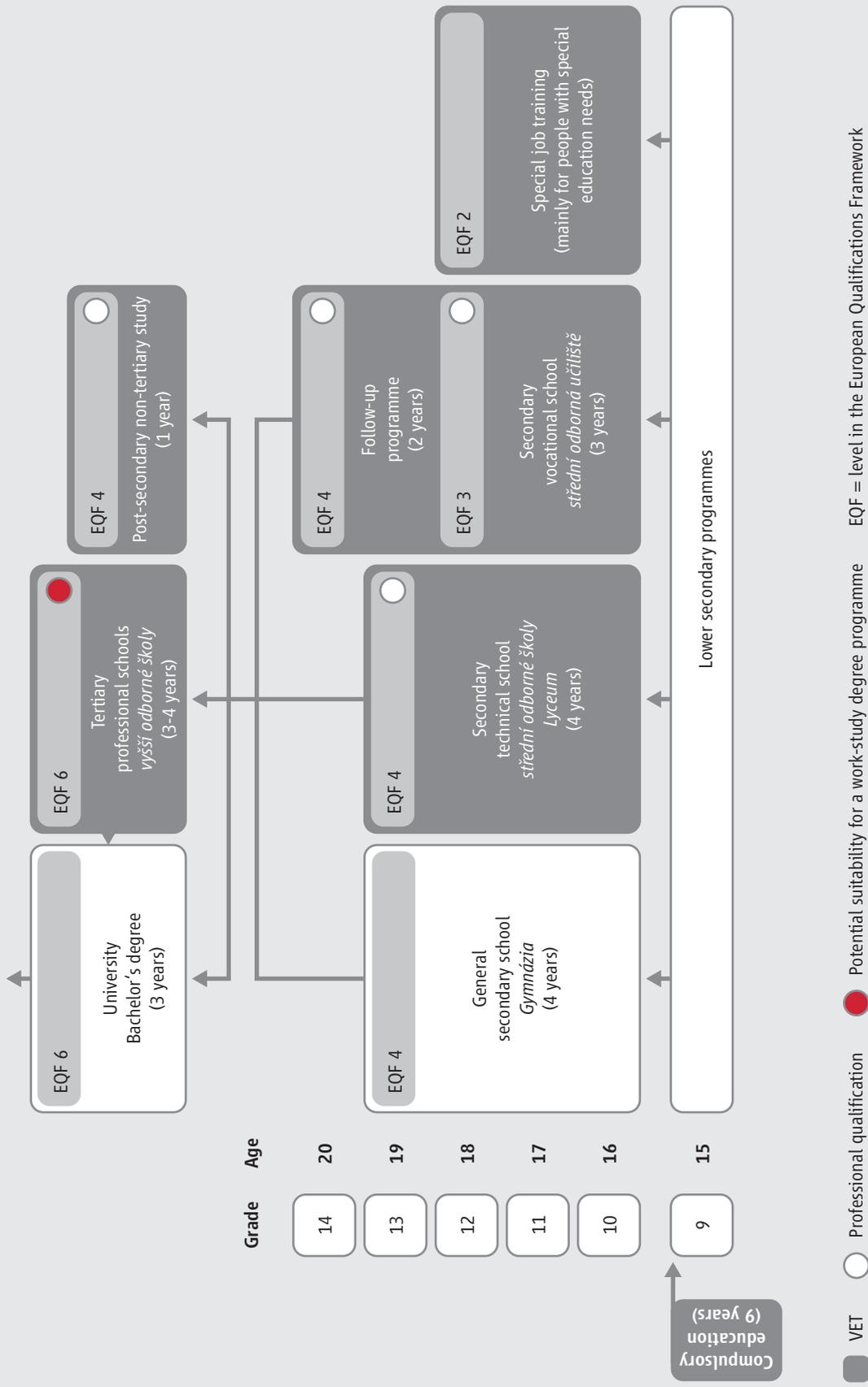
In contrast to all other countries in this study, the Czech Republic has not (re-)introduced the dual system of vocational education and training so far, but this is set to change. In its strategy for the education policy of the Czech Republic up to 2030 and beyond, the Ministry of Education states that a dual education system is to be established: "It is necessary to expand the possibilities for training pupils and students in the real working environment. Therefore, the introduction of a dual system of education in a modified form, adapted to conditions in the Czech Republic, i.e. using the broadest possible opportunities and forms of voluntary co-operation between schools and companies, will be supported." (Ministry of Education, Youth and Sports, 2020, page 36).

Social acceptance and prevalence of VET

Despite a slight decline, VET participation remains well above the EU average, with VET accounting for 70.5 percent of all upper secondary education in 2020 (see Table 3). The employment rate of VET graduates stood at 86.8 percent, which is also higher than in other EU countries (79.1 percent), despite a slight decrease compared to 2018 (European Commission, 2020b). But even though these absolute values are very good, there is a trend among young people and their parents to favour general education over vocational education (Kaňáková et al., 2019).

One of the main challenges lies in improving the quality and attractiveness of secondary-level VET by promoting practical training and internships in companies to help graduates make the transition from school to work (CEDEFOP, 2021a). Another general challenge is the low attractiveness of the teaching profession all the way up to the tertiary level, as this profession is considered to be underpaid: the salaries of teachers at all levels of education are far below the OECD average (OECD, 2020a).

Figure 6: Vocational education and training system in the Czech Republic



Selected industrial-technical training occupations

The National Institution of Technical and Vocational Education (Národní ústav odborného vzdělávání) provides a detailed description of the various VET programmes and their occupational profiles on its website (NUOV, 2022).

In the field of mechanical engineering and technical production (Strojírenství a strojírenská výroba), it lists almost 40 VET programmes, such as cutting machine operator, 4 years (Mechanik seřizovač), machine and plant mechanic, 4 years (Mechanik strojů a zařízení), car mechanic, 3 years (Automechanik), metal worker, 3 years (Obrábění kovů) or tool mechanic, 3 years (Nástrojař). In the field of electrical engineering, telecommunications and computer technology (Elektrotechnika, telekomunikační a výpočetní technika), the list includes more than 30 occupations, such as electrician, 3 years (Elektrikář), electronics mechanic with various specialisations, 4 years (Mechanik elektronik) and electronics technician for automation technology, 4 years (Automatizační technika).

While the 281 VET programmes are already very specific, the National Register of Vocational Qualifications (Národní soustava kvalifikací, NSK) lists over 1,400 partial qualifications with 134 qualifications in the mechanical and plant engineering segment alone. The NSK was developed entirely by representatives of the business sector, without any involvement of stakeholders from the education sector, which is why there is no connection between the VET programmes and the NSK so far. In the spirit of the Anglo-Saxon approach of competency-based education (CBE), the NSK is designed to enable students to acquire qualifications by means of a performance assessment, i.e. the recognition and validation of learning outcomes, without the need for corresponding training curricula and programmes. The fact that the NSK is decoupled from the education system is therefore no accident but the result of the CBE strategy, which places an emphasis on assessment and validation rather than on training and education (National Register of Vocational Qualifications, 2022).

2. Players and elements of regional and central governance

Overall responsibility for education lies with the Ministry of Education, Youth and Sports (MŠMT), with support from the National Institution for Technical and Vocational Training (NUOV) in matters of VET. The Ministry of Labour and Social Affairs (MPSV) is responsible for determining labour market needs.

At the regional level, self-governing bodies – the regional assemblies and regional councils – are directly responsible for establishing public VET schools (Kaňáková et al., 2019). The regional assembly has decision-making and consulting powers on the number, structure, provision, quality and funding of schools. The regional council is elected by the assembly and holds

executive powers. It forms expert advisory commissions in various fields, including education. Vocational schools have a relatively high level of autonomy. School directors have extensive powers with regard to the quality of pedagogical work, administration and financial resources.

Social partners influence VET at the national and regional levels, in particular by contributing to the development of curricula. It is mandatory for them to be represented on the final examination committees of VET programmes.

Public policy makers and associations of private employers in the Czech Republic have determined that there is a mismatch between the qualifications available and the demand for new and specialised qualifications arising on the labour market. Thus, a platform for systematic cooperation has been established. These Sector Skills Councils are led by employers and partly co-financed by the public sector. They lead expert groups whose task is to monitor the shortage of skilled workers and advise on relevant policy responses (including vocational qualifications, national occupational system) (CEDEFOP, 2022). Direct trade union involvement in school-based vocational training is quite rare, including in apprenticeship training, and falls into the category of specific cooperation between individual companies and their company schools (Association of Independent Trade Unions, 2020).

3. Funding and quality assurance

The MŠMT provides most of the education budget, covering the direct costs. Funding from the public budget takes place on a per capita basis and depends on the type of school and area of education (Kaňáková et al., 2019). However, this might motivate schools to enrol many students, which can lead to a decline in school quality. In 2016, a reform of regional school funding was therefore proposed, including new criteria for determining the level of funding. The new regulations will be implemented gradually in the coming years.

The Czech School Inspectorate (Česká školní inspekce – ČŠI) is the independent national evaluation authority. It identifies and assesses educational provision and outcomes, compliance with school curricula and links to national curricula in the form of external evaluation. In addition, schools regularly conduct self-evaluations (Kaňáková et al., 2019).

The Czech Republic has not yet decided whether to develop a National Qualifications Framework (NQF) (CEDEFOP, 2020b). The National Register of Vocational Qualifications (NSK) from 2006 is not yet used in education and training, but it is a useful tool for the recognition of skills acquired through non-formal training or informally in the workplace. As of June 2022, the NKS comprises 1,447 qualifications in some 27 occupational fields at EQF levels 2-7. A

framework for higher education qualifications has also been developed, covering qualifications at EQF levels 6 to 8 that are offered by higher education institutions.

4. Reform activities and dual approaches

While the current system of specialised training does allow students to receive practical training directly at a company, this is not the rule; thus, one of the country's current priorities in the field of education policy (Kaňáková et al., 2019) is to strengthen the role of employers and increase their involvement in VET.

Recently, several measures have been taken to promote cooperation between schools and employers, including tax incentives for companies (company scholarships are tax deductible; tax savings per hour of practical training provided), the development of exams in cooperation with employers and the possibility of employing business experts in schools (CEDEFOP et al., 2019b). Linking VET programmes with qualifications in the National Register of Vocational Qualifications is also likely to lead to a better alignment with labour market needs. A revision of national upper secondary school curricula is currently being prepared (CEDEFOP et al., 2019b).

Another reform task is the coordination of vocational guidance (see Kaňáková et al., 2019). Most career guidance services are provided in two parallel systems: One falls under the responsibility of the Ministry of Education (MŠMT), the other is run by the Ministry of Labour (MPSV).

Local support services of the German Chamber of Commerce Abroad (AHK)

Due to the absence of a legal framework, the German-Czech Chamber of Industry and Commerce – in contrast to other German chambers of commerce in Central and Eastern Europe – has not been actively involved in training so far: “The Czech Republic has not (yet) succeeded in establishing the institutional framework conditions for a dual education system or a dual branch of VET. ... That is why there is currently no training in accordance with DIHK categories and we do not administer any final examinations.” (AHK Czech Republic, 2022a [our translation]). According to the AHK, the proportion of time spent in practical training is too low for an examination. In addition, the schools alone are responsible for the process, quality and outcomes of the training provided – and that includes practical training, even if a small part of it takes place at companies (AHK Czech Republic, 2022b; Association of Independent Trade Unions, 2020).

5. EU projects and cooperation at country level

In recent years, major EU projects (large-scale investments worth more than 50 million euros supported by the EU's cohesion policy funding) in the Czech Republic have targeted

in particular the areas of infrastructure, renewable energy and electricity supply (European Commission, 2022e).

In the educational area, projects have been funded that promote the development of digital skills, support language learning and help Roma enter the labour market, for example. The European Social Fund also supports projects in the education sector, for example to improve teaching and learning with the help of information and communication technologies (European Commission, 2022b).

The Czech Republic has concluded more than 100 bilateral agreements on cultural cooperation, including in the field of education (Eurydice, 2022), with the country's Ministry of Foreign Affairs providing comprehensive information on partner countries and bilateral cooperation activities (Ministry of Foreign Affairs of the Czech Republic, 2022). With Germany, the Czech Republic engages in bilateral cooperation in areas such as the networking of research structures and technology partnerships (BMBF, 2022b). To date, there is no bilateral VET cooperation between the education ministries in Germany and the Czech Republic, even though this would be useful and necessary.

VI. Hungary

Hungary's gross domestic product per capita (GDP/capita) came to 7,910 euros in the year 2000, whereas the EU average stood at 22,450 euros. By 2021, the average GDP in the European Union had increased by 5,380 euros/person – or 24 percent – to 27,830 euros per person. Though Hungary still falls short of the EU average, the gap has narrowed considerably: From 2000 to 2021, its GDP per capita rose by 7,750 euros (compared to the EU's average of 5,380 euros) or 72.7 percent (compared to the EU's average of 24 percent) to the current level of 13,660 euros (EuroStat, 2022j). In 2022, Hungary's economy had already recovered – at least in part – from the coronavirus crisis, with GDP in the first quarter increasing by 8.2 percent year-on-year, for example (GTAI, 2021). However, the war in Ukraine has weakened the growth momentum.

In the 2019 Global Competitiveness Index published by the World Economic Forum (2019), Hungary only came 47th out of 141 countries. This poor ranking was caused, among other things, by deficits in the areas of judicial independence (rank 102) and the ease of finding skilled employees (rank 138). In the 2021 Global Innovation Index of the World Intellectual Property Organization, Hungary is ranked 34th out of 132 countries, one place ahead of Bulgaria. The ranking is due to poor results in the areas of investment (e.g. market capitalisation) and business environment (e.g. ease of starting a business), while the area of knowledge and

technology outputs (especially high-tech manufacturing, production and export complexity, high-tech exports) is rated highly (WIPO, 2021).

In contrast to this good economic output, Hungary (like Germany) has a schooling problem due to high dropout rates (early school leavers): The rate was 13.9 percent in 2000, improved to 10.8 percent in 2010 and deteriorated again to 12 percent by 2021 (Germany: 11.8 percent). By comparison, Poland's current dropout rate is only 5.9 percent and the Czech Republic's is 6.4 percent (EuroStat, 2022g). Especially the Roma, the largest minority living in Hungary, belong to the group of young people who leave the (vocational) school system without any qualifications. Many of them reach upper secondary vocational education, but then drop out due to their often poor educational attainment and socio-economic status (CEDEFOP et al., 2019d).

Students today are divided about evenly between general and vocational secondary education: half of each cohort chooses a VET programme at the secondary level (see Table 3). This even distribution may seem like a good ratio at first, but as recently as 2010, the share of students enrolled in a VET programme was still 66 percent. While the general education segment is growing continuously, the vocational education segment in secondary education is shrinking, though it is still at a high level at present (Benke & Rachwal, 2022).

1. Structure and status of initial and continuing vocational education and training

In 2013, 2016 and 2019, structural changes were made to the four- or five-year VET school form, which was called *szakközépiskolának* (secondary vocational school) from 2013, was then renamed *szakgimnáziumnak nevezett* (vocational grammar school) and is now called *technikum* (technical school). The new name was proposed by representatives of the business community in order to increase the attractiveness of this course of education:

"Based on the feedback provided by the economy, the name 'technikum' will be introduced to replace the name of 'vocational grammar school', which is clearer and even in nowadays symbolizes high-quality VET for many people, so it can be a buzzword for both the parents and students." (Ministry of Innovation and Technology, 2019, p. 40)

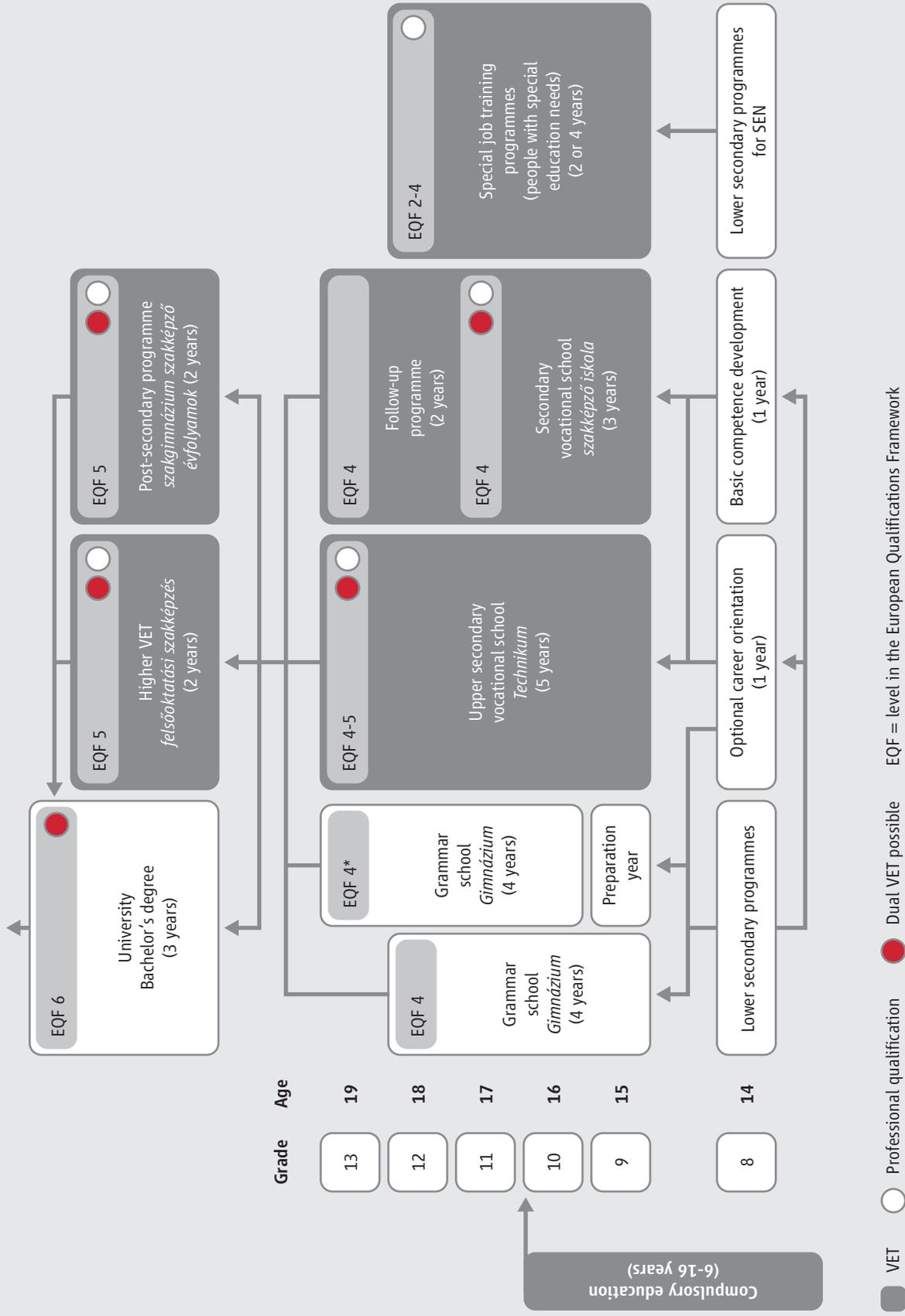
Today, vocational education and training starts in 9th grade and usually lasts five years at a technical school (*technikum*) or three years at a secondary vocational school (*szakképző iskola*). Since 2016, graduates of the secondary vocational school have been able to obtain the same qualifications as graduates of a *technikum* by means of a two-year follow-up programme. Each name change was accompanied by a change in structure. The predecessor of the technical school, for example, could be completed in four years with an optional additional year. The

predecessor of the secondary vocational school used to be preceded by vocational preparation courses lasting one to two years, as many students lacked the prerequisites for vocational training (including the ability to read and write). This form of training preparation was abolished in 2013, shortening vocational education and training from four or five years to just three years. Since 2013, there has also been less theoretical VET and general education content to allow for more on-the-job training in companies (Mártonfi, 2019). The training preparation year abolished in 2013 was reintroduced as an option in the 2020/2021 school year (CEDEFOP, 2021a). The problem with this approach becomes apparent when we compare German and Hungarian VET entrants: in Germany, 24.3 percent of the 2020 cohort had a lower secondary school leaving certificate (obtained after grade 9), 41.3 percent had an intermediate secondary school leaving certificate (obtained after grade 10) and 29.2 percent had a university entrance qualification (BMBF, 2022a, p. 58). In Hungary, all VET entrants have an entry qualification below the German lower secondary school leaving certificate, having only completed 8th grade.

The frequent structural changes are viewed rather critically by the public: “According to the directors of the institutions, it is mainly as a result of these frequent changes, which are difficult for the public to follow, that this programme is suffering from a permanent loss of popularity and is falling further and further behind in the competition with general upper secondary education.” (Mártonfi, 2019, p. 246 [our translation]).

The figure below illustrates the VET system after the reform in 2019:

Figure 7: Vocational education and training system in Hungary



*Bilingual.

Sources: CEDEFOP, 2021a; CEDEFOP & IKK, 2022.

At a technical school, students can usually obtain a vocational qualification in five years, depending on the occupation. Training begins with two years of basic training, covering general education content in combination with basic job-related content. After completing their basic training, students may enrol in a dual VET programme, usually lasting three years, where they conclude an employment contract (szakképzési munkaszerződés) with an external training institution. Until 2020, training contracts were concluded. The newly introduced employment contract allows trainees to receive remuneration (60 percent or more of the average minimum wage). After passing the final examination, students receive a school-leaving certificate entitling them to enter higher education (EQF 4) and (optionally) a technician diploma (EQF 5). Graduates with a technician diploma also have the opportunity to take up higher education studies and are prioritised in the admission procedure for a degree in the area of their qualification.

Training at a secondary vocational school (szakképző iskola) usually lasts three years, with the first year devoted to basic training covering both general and vocational content – similar to the two years of basic training at the technicum. Professional specialisation takes place in the second and third years. This type of school awards a nationally recognised professional qualification upon successful completion. The aim of basic training is to provide learners with a common professional basis in one of 24 sectors, both to aid them in learning further occupations within the same sector at a later stage and to promote the development of key competences, the right mindset and a willingness to train.

The previous legal framework governing VET treated adult learning separately. With the new VET Act of 2019 (in force since 2020), adults who start their school-system training in one of the occupations listed in the qualifications register are treated like trainees. They can have their previous training recognised, which can reduce the training period by up to a quarter.

To ease access to vocational education and training, the new VET Act provides for the following types of courses:

1. A 6- to 24-month workshop school within a vocational school provides training aimed at either placing students in a VET programme or preparing them for employment. It offers the option of acquiring only a partial professional qualification.
2. Students may also decide, before they start their vocational training, to attend a preparatory course (optional career orientation) which offers them guidance, language courses and a support programme.

3. The aim of the basic competence development year, which has also been newly introduced, is to help learners make career choices, develop the basic skills and key competences required for their vocational training and support them in planning their careers. This personalised form of education combines mentoring with an attempt to help learners choose a career. The introduction of a preparatory career orientation year requires the approval of the minister responsible for VET.
4. Since September 2020, the previous catch-up programmes (híd) have been replaced by a springboard programme (dobbantó) and a school workshop (műhelyiskola). These programmes help learners acquire basic education and a partial professional qualification.

Social acceptance and prevalence of VET

Vocational education and training in Hungary has been in a state of flux since the political and economic changes of 1989. The 2000s brought two fundamental reforms: the introduction of a competency-based, modular qualification structure accompanied by a continuous renewal of curricula, and the clustering of schools in integrated regional VET centres. Table 12 lists industrial-technical training occupations that are offered at these VET centres, though independent schools continue to offer them as well.

Table 12: Industrial-technical training occupations and locations

Required qualifications	VET programmes available at
Mechatronikai technikus (mechatronics technician)	17 VET centres and 19 schools
Mechatronikus karbantartó (mechatronic maintenance technician)	16 VET centres and 18 schools
Elektronikai technikus (electronics technician)	17 VET centres and 20 schools
Ipari gépez (industrial mechanic)	16 VET centres and 20 schools
Ipari szerviztechnikus (service technician)	2 VET centres and 2 schools
Szerszám- és készülékgyártó (toolmaker)	6 VET centres and 7 schools
CNC-programozó (CNC programmer)	16 VET centres and 21 schools
Gépi és CNC forgácsoló (machine and CNC operator)	35 VET centres and 51 schools

Source: NIVE, 2022.

The business community has long been dissatisfied with the quality and quantity of skilled workers. As a result, VET policy after the year 2000 has continuously strengthened the role of the chambers. Since 2010, the Hungarian government has pursued the goal of aligning VET with the needs of the business sector and strengthening and expanding dual VET. The government has committed to increasing the share and prestige of VET by making the training of skilled workers less theoretical and conducting more of it in companies. After 2010, the new government under Victor Orbán worked to further strengthen the role of chambers and place greater emphasis on practical training, with the possibility of starting vocational training at an earlier age. The aim, as before, was to make VET more attractive and to increase the share of students in VET programmes.

At the same time, many young people opted for skilled worker training only as a last resort, mainly due to the low prestige of vocational training and the much higher payoff of general education (e.g. entry-level salaries). The rate of continuing education among adults also remains well below the EU average. The lack of attractiveness can be clearly seen in the declining share of VET programmes versus general education programmes (see table below).

Table 13: Shift in the focus of secondary education

	1990/1991	1995/1996	2000/2001	2005/2006	2010/2011	2015/2016	2019/2020
VET	76 %	70 %	67 %	66 %	66 %	60 %	54 %
General education	24 %	30 %	33 %	34 %	34 %	40 %	46 %

Source: Benke & Rachwal, 2022.

This decline in the share of VET is compounded by a second trend: between 2000 and 2018, the number of students in elementary and primary education decreased by 24 percent (Ministry of Innovation and Technology, 2019, p. 19).

2. Players and elements of regional and central governance

From 2010 to 2015, centralised education management was introduced, with the Ministry of Education as the responsible body. This meant that in 2013, all schools previously maintained by the municipalities or counties were taken over by the state. In 2015, the responsibility shifted from the Ministry of Education to the Ministry for National Economy, which thus also inherited the task of maintaining the VET schools. Some 380 VET institutions were subsequently grouped into 44 VET centres and placed under their authority. What degree of autonomy the individual institutions have within these centres is unclear. Just as unclear is the outlook for the future, as this centralised administrative system suffers from a complete

lack of medium-term strategic planning at the institutional, local and regional levels (Radó, 2021). In 2018, the Ministry of Innovation and Technology took over responsibility for VET and adult learning, and it continues to be in charge of this area today.

Ever since the 2011 VET Act, the key players have been the chambers, especially the Hungarian Chamber of Commerce and Industry (Magyar Kereskedelmi és Iparkamara). Along the lines of the German model, the chambers accredit and register companies interested in participating in VET, train in-company trainers (since 2018, in-company trainers need an instructor exam certificate that is awarded to them by the chamber once they have completed a train-the-trainer programme), arrange training places and register training contracts, provide career guidance and organise national VET competitions. In 2015, the chamber guarantee was introduced, which means that the chambers now guarantee that they will find companies interested in providing training. They are, however, only partially successful. Since 2015, anyone who enrolls in a VET programme at a three-year vocational school but cannot find a training place and therefore completes the practical training at the school's workshops needs confirmation from the chambers that no training place is available for them. The introduction of the chamber guarantee has effectively made dual VET the standard form of three-year vocational training, even though in practice it is not. The chambers were originally also responsible for developing qualification standards and the national qualifications register, but in 2018, this task was assigned to the newly established Sectoral Skills Councils (SSCs) (CEDEFOP et al., 2019d). Since dual VET is theoretically accessible to everyone, Hungary reports all VET students under the heading "school and work-based vocational programmes" in the EuroStat statistics. The available figures are therefore not reliable (EuroStat, 2022k).

In 2012, the National Institute of Vocational and Adult Education (Nemzeti Szakképzési és Felnőttképzési Intézetet, NSZFI), which was previously responsible for the administration and development of vocational and adult education in Hungary, was merged with the employment agency and the National Labour Inspectorate and thus effectively dissolved. This was possible because, as of 2011, its administrative tasks were taken over by the chambers, which established their own administrative structures and their own back office for this purpose. In 2014, this back office was renamed National Office of Vocational Education and Training and Adult Learning (Nemzeti Szakképzési és Felnőttképzési Hivatal, NSZFH), which from then on took over official tasks. Today, the NSZFH is responsible, among other things, for drafting legislation on VET, maintaining the 44 VET centres that centralise the management of VET and adult learning institutions, introducing and monitoring a national quality management system, and providing expert support during the implementation of projects and developments in the field of VET and adult learning (Mártonfi, 2019).

The task of the VET centres is to provide qualifications for the local needs of the business community. Alignment between national policy and regional needs is supported by 19 county development and training committees (CDTCs), consisting of representatives of employers, employees and the chamber. They were established with a view to developing vocational education and training and identifying labour market needs, and they have an advisory, opinion-forming and proposal-making role. The committees' task is to draw up a VET development concept that includes a short- and medium-term enrolment plan and sets out what type of VET they consider necessary in the context of the regional labour market situation. The committees also draw up a list of "qualifications in demand" that are required in a region. The CDTCs were created in response to the 2015 Act amending the 2011 VET Act. Previously, identifying qualifications in demand was the sole responsibility of the chambers, which have made an important contribution to assessing, summarising and presenting the training needs of companies operating in the counties. However, this contribution was not enough to be able to make fast, data-driven decisions based on up-to-date information concerning the region's training structure (Bükki, 2019).

The national qualifications register (NQR; Országos Képzési Jegyzék, OKJ) was first published in 1994. As of 2007, the Anglo-Saxon approach of modularised partial qualifications was introduced, gradually bringing the number of professional qualifications to 760. The current strategy for restructuring vocational education and training criticises this approach: "Despite the multiple restructuring it is clear that the NQR contains substantially more qualifications compared to the international practice, and is not adjusted to the job system of the employers. The NQR is not transparent, neither for young people choosing a vocational occupation, nor for the teachers working in career guidance." (Ministry of Innovation and Technology, 2019, p. 49). The previous NQR was replaced by the newly created catalogue of occupations (szakmajegyzék), which currently lists 193 training occupations (NSZFH, 2021).

New players in the system are the Sectoral Skills Councils established in 2017/2018 and the Vocational Innovation Council, which support the Ministry of Innovation and Technology. Sectoral Skills Councils, consisting of up to 19 business representatives (including one trade union representative), have the strategic task of improving the alignment of VET provision and skills needs in a sector of the economy. To this end, they monitor the sector's qualifications in the NQR, recommend admission numbers to VET programmes, which are then funded centrally, and assess the results of labour market forecasts.

The Vocational Innovation Council (VIC) proposes, prepares, deliberates and comments on policy decisions. This national body is made up of 38 experts from government agencies, educational institutions, chambers, trade unions, interest groups, large companies and the Hungarian Academy of Sciences, among others. Its intention is to bring the ministry and the

various stakeholders into direct contact with each other. One of the specific ideas developed by the VIC since its establishment in 2018 is to strengthen the management orientation of VET centres by introducing the office of chancellor (Csík & Szűcsné Szabó, 2020).

3. Funding and quality assurance

Since 2007, companies have had to pay a vocational training contribution (Szakképzési hozzájárulás) or training levy, equal to 1.5 percent of the payroll, and since 2011, the amount can be provided in three forms: (1) by means of in-house training as part of initial or continuing VET, (2) by means of internships for learners at vocational, technical and higher education institutions, and/or (3) by paying into the development and training fund of the National Employment Fund (NEF). Some 60 percent of the eligible training costs may be deducted from the levy to be paid. Medium-sized enterprises may deduct a further 10 percent and small enterprises a further 20 percent. Eligible costs include in particular the wage costs of in-company trainers, wage costs of the participants, costs for investments in and maintenance of the training workshops, and indirect costs, such as administration, rental and overhead costs (CEDEFOP, 2022a, 2022b). The trainees receive at least 60 percent of the minimum wage (457 euros * 0.6 = 263 euros) under a vocational employment contract (sometimes also translated from Hungarian as student employment contract) (CEDEFOP, 2021a).

Quality assurance instruments

One requirement of the Vocational Education and Training 4.0 strategy of 2018/2019 was the creation of a professionally managed, efficient VET school system. The consolidation of VET institutions into centres made it possible to introduce centralised, unified management practices, formalised through the recent introduction of the post of chancellor (Ministry of Innovation and Technology, 2019).

The VET Act of 2019 addressed the calls for a national quality management system (QMS) with a central database, which is currently being developed based on the the criteria of EQAVET (European Quality Assurance for Vocational Education and Training). In parallel, VET institutions were required to develop their own QMS by 31 August 2022, with this requirement also extending to adult learning institutions. The EQAVET quality framework comprises a quality assurance circle (planning, implementation, evaluation, review) as well as indicators for the system level (e.g. investment in training of teachers and trainers, completion rate in VET programmes) and for the institution level (e.g. ongoing consultation with social partners and all other relevant stakeholders takes place to identify specific local/individual needs; staff undertake regular training and develop cooperation with relevant external stakeholders to support capacity building and quality improvement, and to enhance performance) (European Commission, 2022a).

Another quality development measure focuses on the qualification and continuing education of teachers, their standing and the number of teachers and trainers available at VET institutions. On the one hand, a wave of retirements is on the horizon, and on the other hand, teachers' salaries are on average 30 percent lower than the market salaries of comparable jobs, which is why teachers from VET schools in particular are switching to industrial jobs (Ministry of Innovation and Technology, 2019). A first countermeasure, effective as of 2020, was to turn teachers and trainers at VET schools into employees within the meaning of the Labour Code, which means that their salaries are no longer governed by the civil servant pay scale but are based on performance from now on. Accordingly, criteria for appraising the performance of publicly employed teachers and trainers were developed for the new QMS. The appraisal is conducted by the management of the respective institution. While teachers at general education schools received a salary increase of 10 percent (European Commission, 2020c), the increase at VET schools is somewhere between 30 and 35 percent (Hungarian Insider, 2020). A second countermeasure relates to continuing education for teachers, which is to take place in the form of in-company training (Ministry of Innovation and Technology, 2019).

In addition to the above-mentioned measures to improve the qualification, standing and number of available teachers and trainers, there is a move to improve the permeability between the five-year technicum and higher education. This reform has already been implemented. The third focal point of the quality initiative relates to providing an attractive learning space in a 21st century VET school: "Creation of quality buildings, teaching rooms, training workshops, sports and recreational spaces which represent a real and attractive option for young people and their parents before choosing a career." (Ministry of Innovation and Technology, 2019). The ministry is investing between 31.5 and 63 million euros per year over a ten-year period for the renovation of VET schools (CEDEFOP, 2019b).

4. Reform activities and dual approaches

Since 2010, the Hungarian government's goal has been to align vocational education and training more closely with the needs of the economy and to expand dual VET (Laczik & Farkas, 2022). The dualisation of VET meant that from 2013 onwards, students started their practical training two years earlier than before, at the age of 14 or 15 (grade 9), on the basis of a training contract. This approach was intended to ensure an adequate supply of skilled labour by starting vocational education and training at an earlier age. Important steps were taken in the course of the reform: The four- to five-year vocational school programmes were replaced by a uniform three-year programme known as the dual VET model. These new programmes have a significantly higher share of practical training, while the share of theoretical vocational training and especially general education was reduced. The aim of the reform was to ease the transition from school to the workplace by providing practical training in a business environment (Mártonfi, 2019).

Trade unions in the Hungarian education sector expressed grave concerns about the aforementioned reforms. In their opinion, orienting the education system exclusively to the needs of the business community jeopardises the longer-term, knowledge-based future of the economy and society (Kunert, 2016). This view was shared by VET researchers who compared the conditions in Hungary with those in Germany and found that Hungarian students had 20 to 30 percent fewer hours of general education during their vocational training than their German counterparts. According to the researchers, the negative effect on general skills such as mathematics and reading comprehension was already evident two years after the number of hours spent on general education subjects was reduced. They therefore argued that the students' long-term labour market opportunities were likely to deteriorate overall despite the benefit of improved short-term job orientation (Horn, 2014). The situation was further aggravated by the fact that a considerable number of students had educational deficits and learning problems stemming from primary school that were no longer compensated for in vocational schools (Makó et al., 2016) and sometimes even worsened there (Hajdu et al., 2015).

The 2019 reform addressed this problem: Students now start with basic sectoral training (two years at a technicum and one year at a vocational school), which concludes with a basic sectoral examination. Only when they have passed this examination may they start a dual VET programme. To ease the transition to dual VET, a possibility was created to conclude pre-apprenticeship contracts with students who are still in basic sectoral education (Bükki, 2019).

One element that has changed with the 2019 VET Act is the fixed-term vocational employment contract, which replaced the previous apprenticeship contract. Not only does the reform aim to reduce the administrative burden on smaller companies, there is also the hope that an employment contract will increase the trainee's sense of belonging and willingness to work for the company while simultaneously strengthening the company's commitment, which should make the transition from apprenticeship to employment easier. The change of contract aims in particular to tie apprenticeship pay more strongly to the apprentices' performance (Ministry of Innovation and Technology, 2019). Apprentices receive at least 60 percent of the minimum wage ($457 \text{ euros} * 0.6 = 263 \text{ euros}$) through a vocational employment contract. Since 1 September 2020, vocational employment contracts can only be concluded for training in an occupation registered in the occupational register. This rule applies to people of all ages.

Cooperative forms of VET

The 2019 VET Act provided for the establishment of sectoral training centres (STCs). One reason for this concept is that small companies in particular are often not in a position to provide training (lack of infrastructure, lack of staff). STCs conclude a vocational employment contract with the trainees. Under these contracts, they can take on the role of organiser by organising when the trainees will go to which companies (and which VET institution) and for how long

they will stay there, or they can take the role of organiser and provider by providing practical training themselves and also organising when the trainees will go to which companies (and which VET institution) and for how long they will stay there. The aim of the STC concept is to offer apprenticeships in a fully equipped modern environment and to give small businesses that are only able to offer part of the training for a particular occupation the opportunity to conduct joint, institutionalised apprenticeships. A sectoral training centre can be established by (1) at least four micro or small enterprises, (2) at least two medium-sized or large enterprises, or (3) at least one enterprise in cooperation with a VET centre. STCs may engage in the following activities: VET (sectoral basic education with school responsibilities), adult learning, continuing education of teachers, company-based training services, training organisation, production activities (ReferNet Hungary, & CEDEFOP, 2022).

Local support services of the German Chamber of Commerce Abroad (AHK)

Hungary's dual education system is governed by the Hungarian Chamber of Commerce and Industry, which is beneficial for the work of the AHK in Hungary: for example, the German-Hungarian Chamber of Industry and Commerce (DUIHK) is a member of the national VET Innovation Council, which advises the responsible ministry. In this role, the AHK contributed to the development of the Vocational Education and Training 4.0 strategy, which the government adopted by government decree (Ministry of Innovation and Technology, 2019). The DUIHK was also involved in the amendment of the VET Act and takes part in various subject-specific working groups to improve elements of the dual education system. Moreover, it runs pilot projects to support the implementation and execution of dual IVET and CVET programmes. Since 2017, the DUIHK has been administering final examinations as part of the dual VET programme for industrial clerks at the German AUDI Hungaria school in Győr. Between 2018 and 2022, it developed, tested and established various elements of the programme for industrial metalworking professions (e.g. admission of trainees, training content, training courses, examination system) in cooperation with the Siemens Energy Kft. training centre. It also carries out industrial master craftsman training based on the German model together with the companies Körber Hungária and Mercedes-Benz Manufacturing Hungary Kft (AHK Hungary, 2022).

5. EU projects and cooperation at country level

According to information from the National Office of Vocational Education and Training and Adult Learning, the following EU projects and initiatives, among others, have been and are being implemented to improve vocational education and training in Hungary:

1. Development of skills for the digital labour market in the Central Hungary region
2. Support for on-the-job training: career development programme for employees of micro, small and medium-sized enterprises, as well as large enterprises

3. Reduction of the number of people leaving VET without a qualification
4. Improvement of the quality and content of VET and adult learning in the 21st century
5. Development of digital curricula for a selection of exemplary occupations
6. IT training to support structural change
7. An electronic platform for adult learning in Europe

Bilateral intergovernmental relations in the area of vocational education and training have strengthened and intensified with the Hungarian government's 2011 strategy of opening up to the east and with its 2015 announcement of opening up to the south. In addition to enquiries by the Ministry of Foreign Affairs in eastern states following this strategic opening, there has been a new influx of enquiries from various partner countries, particularly in the area of VET cooperation. Among the main areas of interest are the structure and management model of apprenticeships, the national qualifications register and vocational education and training, the latter in particular with regard to the VET centres that have been reorganised since 2015. Some VET centres are already engaged in international cooperation, especially within the framework of the European Union's Erasmus+ programme. Nevertheless, the mobility of trainees is low: in 2020, a total of 202,472 trainees were enrolled in IVET programmes (see Table 3), and of them, only 3,959 took part in Erasmus exchanges (Table 18), corresponding to an annual mobility rate of just 1.95 percent.

Other examples of cooperation at the country level include the Learning by Doing project and the Development of Vocational Education and Training in the Carpathian Basin project. The Learning by Doing project was initiated by the Budapest Chamber of Commerce and Industry as part of the INTERREG Danube Transnational Programme with financial support from the European Union. There were project partners from all 14 countries of the Danube region: Austria, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Germany, Hungary, Moldova, Montenegro, Romania, Serbia, Slovakia, Slovenia and Ukraine. The project aimed to increase the capacity of all relevant VET stakeholders by strengthening regional, national and transnational partnerships to ease the transition to more business- and practice-oriented forms of work-based learning in VET in the Danube countries. It ran from 1 January 2017 to 30 June 2019 with a total budget of 2.3 million euros. The Development of Vocational Education and Training in the Carpathian Basin programme aims to improve VET for the Hungarian population living in the Carpathian Basin and to ensure consistent economic and labour market cooperation in the region. The programme is sponsored by the Hungarian Ministry of Human Capacities. The providers of the initiative are the VET centres, which regularly arrange cross-border programmes with VET schools from Košice and Dunajská Streda (Slovakia), Baia Mare and Miercurea Ciuc (Romania) as well as Bečej (Serbia).

VII. Serbia

Serbia has been a candidate for accession to the European Union since 2012. International trade agreements (e.g. Central European Free Trade Agreement; European Free Trade Association) allow for largely duty-free trade. The Serbian economy recovered well from a mild recession in 2020 brought on by the consequences of the COVID-19 pandemic. The economy grew by 7.4 percent in 2021, driven primarily by private consumption and an increase in wages and consumer credit (World Bank, 2022b). Despite rising wage levels, the average gross monthly wage in Serbia is still only around 700 euros and thus below that of Bulgaria, the country with the lowest income in the EU (EuroStat, 2022h).

Serbia's main challenges lie in the migration of young people to foreign countries and the low birth rate: A high rate of unemployment, especially among young adults and university graduates, fuels migration as skilled young people seek better opportunities abroad. This, combined with Serbia's shrinking population, poses a risk to the country's economic competitiveness (Morina, 2021). Serbia is ranked 72nd out of 141 countries in the World Economic Forum's Global Competitiveness Index – lower than any other country in the European Union (World Economic Forum, 2019). A particular point of concern is the skills of the current workforce, a category in which Serbia ranks even worse (75th out of 141). In the Enterprise Survey conducted by the World Bank (World Bank Group, 2019), respondents indicated that a strong informal sector and insufficiently trained workers are the main challenges in the Serbian business environment. However, 38 percent of the companies stated that they offer formal training to counter the shortage of skilled workers, and this is more than the average for Europe and Central Asia (33 percent).

Another indicator determined by the World Bank is the Gini coefficient, which measures the distribution of income within an economy. A Gini coefficient of 0 expresses perfect equality, while a coefficient of 100 expresses absolute inequality. With a score of 34.5, Serbia has a level of inequality similar to that of Germany (34.4) (World Bank, 2022a).

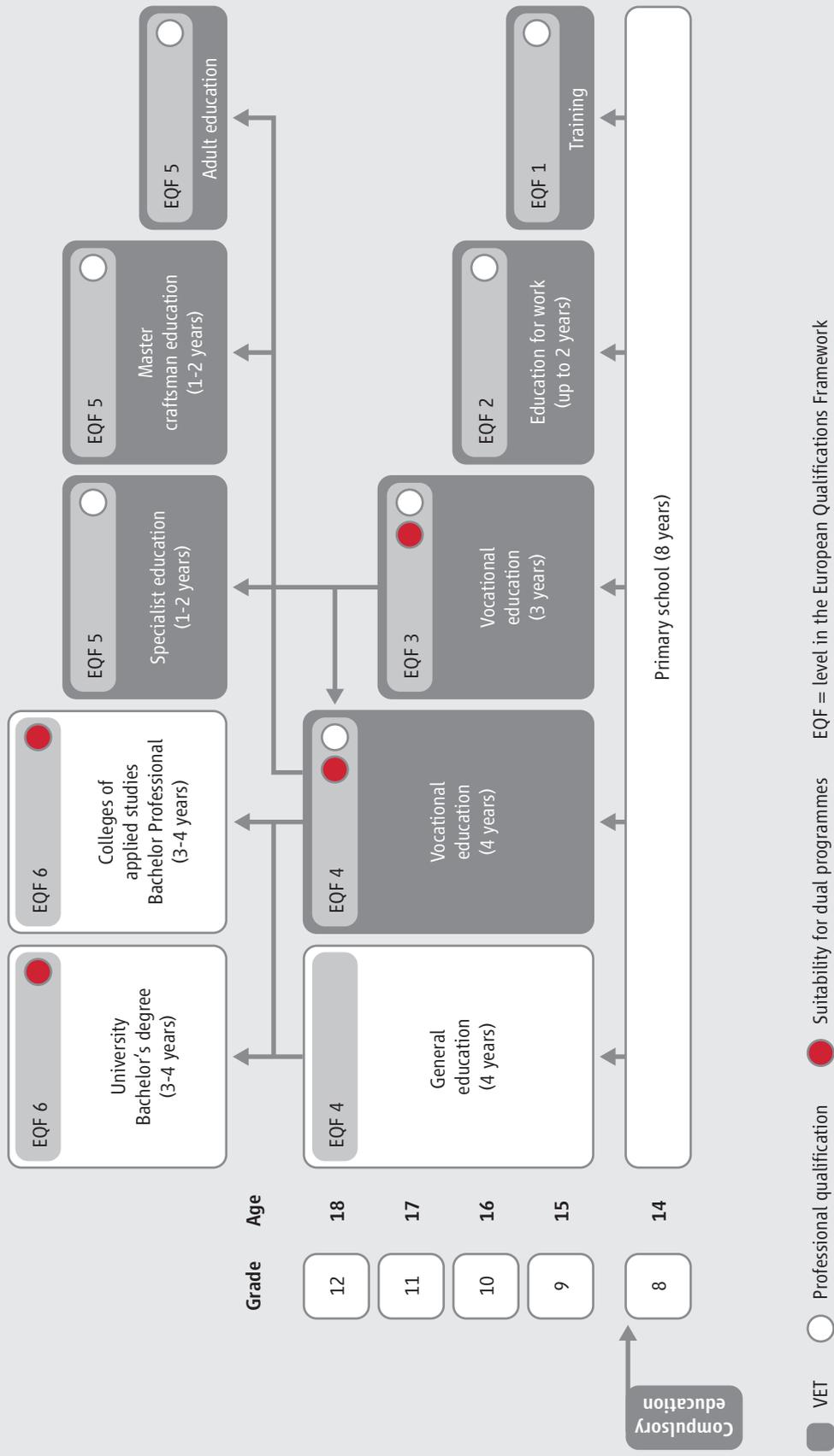
1. Structure and status of initial and continuing vocational education and training

The former Yugoslavia was traditionally characterised by a well-developed general and vocational education system (Castejon et al., 2011), and even today Serbia does not have a problem with VET participation: in 2020, 73.49 percent of secondary school students were enrolled in technical and vocational education and training programmes (EuroStat, 2022k). Nevertheless, the Serbian VET system faces challenges, such as the need to adapt learning content to labour market requirements, to increase the participation of enterprises in VET and to reform teacher

training. In late 2017, Serbia adopted the Law on Dual Education to address these shortcomings and introduce the dual education model into the national VET system.

After eight years of general education, students can move on to vocational education and training. The curricula here include 30 to 40 percent general education and 60 to 70 percent vocational education content. Internships and apprenticeships with companies require a contract with the school that covers all aspects of work placement, remuneration and mentoring by the company's staff (Renold et al., 2019).

Figure 8: Vocational education and training system in Serbia



Source: Maghnouj et al., 2020.

2. Players and elements of regional and central governance

One of the key players identified in the literature is the Ministry of Education, Science and Technological Development (MoES), which acts as the supreme authority with central responsibility for all levels of education in Serbia. Within the MoES, regional school authorities are responsible for monitoring and evaluating schools, as well as for taking care of teacher training and school funding (Pešikan & Ivić, 2021; KOF, 2017).

The National Education Council (Nacionalni prosvetni savet, NPS) was founded in 2004. Together with the National Council for Vocational and Adult Education, it handles the national administration of VET.

The National Council for Vocational and Adult Education (Savet za stručno obrazovanje i obrazovanje odraslih) was established in 2009 and consists of 21 members (KOF, 2017). It shares responsibility with the MoES for vocational subjects at VET schools and seeks to improve the quality of the VET system by coordinating labour market needs and education. Alongside the NPS, the Council for Vocational and Adult Education examines vocational school content from the perspective of the individual occupations and the needs of the economy and bears responsibility for the vocational content.

The Institute for the Improvement of Education (IIE; Zavod za unapređivanje obrazovanja i vaspitanja) was established in 2004, with the Centre for Vocational and Adult Education (Centar za stručno obrazovanje i obrazovanje odraslih) affiliated to it (Republic of Serbia, 2022b). The Centre for Vocational and Adult Education is involved in the accreditation of informal adult education curricula. The IIE, together with the MoES, is responsible for revising existing curricula and developing new VET programmes. At the initiative of an interested stakeholder, such as a school, company or municipality, the IIE and MoES develop job profiles including task descriptions and occupational standards and organise expert workshops to have them assessed (KOF, 2017).

The Chamber of Commerce and Industry of Serbia (Privredna komora Srbije, PKS) represents the interests of employers and is the interface between the employment system and the government. The PKS is divided into the Belgrade Chamber of Commerce and regional chambers of commerce. With the dual model of vocational training, the chambers of commerce and industry have been given a stronger role in training, mirroring the German model (Pešikan & Ivić, 2021; ETF, 2020).

Trade unions play only a minor role in the Serbian VET system, even in their own perception: "The Chamber of Commerce and Industry Serbia avoided including unions in the public debate

about dual education, even though we had various comments and critiques about dual education and the law. We are informed through documents we receive to our more specific unions ... but we are not heard.” (Renold et al., 2019, p. 11).

3. Funding and quality assurance

Most vocational schools are state schools that are funded by the central government and local municipalities. The salaries of teachers and school administrators are financed by government funds, whereas the local authorities are responsible for building maintenance, materials and equipment as well as for the further training of teachers (GIZ, 2015; KOF, 2017).

Overall, investments in the Serbian VET system are considered low and inefficient. This is particularly true of practical content provision, as teachers are not trained for this task and the technical equipment is outdated and lags far behind industry standards (OECD, 2022b).

Quality assurance instruments

Since 2015, VET schools in Serbia have been subject to the quality assurance system that extends to all forms of primary and secondary education. They must also comply with additional quality standards for VET and implement a pilot self-assessment system. The state authority in charge of monitoring quality is called the Commission for Accreditation and Quality Assurance (KAPK). The European quality assurance indicators for VET (EQAVET) are not yet used at the system level, but elements of these indicators feature in several initiatives related to quality assurance. Serbia was not involved in the EQAVET network but was informed about EU projects and used the EU instruments for quality assurance in vocational education and training. So far, Serbia has not conducted any systematic tracer studies to follow up on VET graduates. It also has no system in place to monitor their employability or transition to the labour market, and no government funding is available for the development or implementation of such a system (ETF, 2020). Sound data on both school education and labour market outcomes is needed to evaluate and monitor the impact of VET programmes. In Serbia, however, there are large gaps in the data that should be collected from schools and across the education system (ETF, 2021). In addition, there is criticism over the KAPK’s lack of independence from the MoES (ETF, 2020; Pešikan & Ivić, 2021).

4. Reform activities and dual provision

On top of the existing legal framework, in recent years Serbia has presented further strategic outlines for education policy initiatives and laws through the Skills 2020 Serbia initiative and the Strategy for Education Development in Serbia 2020 (Ministry of Education, 2012).

In late 2017, the government adopted the Law on Dual Education, which formalises and governs dual VET in upper secondary schools at the national level – in contrast to the previous system in which VET schools and companies worked together on a more ad hoc basis. The law introduces a new process for matching apprentices and companies and includes provisions on such matters as on-the-job training periods, apprentices' remuneration, companies' involvement in career guidance and orientation, training certification for companies and the licensing of in-company trainers (Caves & Osterwalder-Egg, 2020; Grujić, 2021).

Work on its full implementation has been underway since the 2019/2020 school year. The dual VET model is based on joint governance by the MoES (with responsibility for school-based learning) and the PKS (with responsibility for company-based learning). The PKS is in charge of accrediting employers for work-based learning, training and licensing trainers, and maintaining the registers of employers and apprenticeship contracts, among other things. Locally, the Law on Dual Education is implemented by regional offices of the Ministry of Education, called regional school administrations, as well as by regional offices of the Chamber of Commerce (Caves & Osterwald-Egg, 2020; ETF, 2020).

On-the-job training accounts for a minimum of 20 percent and a maximum of 80 percent of the total number of hours of vocational subjects according to the relevant curriculum (Pešikan, A., & Ivić, 2021). During the 2019/2020 school year, 2,533 students were enrolled in the first year of dual VET programmes, with the total number currently standing at over 7,000. In total, there are currently 37 dual VET profiles, 104 dual VET schools and 880 interested companies that are undergoing the accreditation process (Republic of Serbia, 2022a). Since the introduction of the Law on Dual Education, these numbers have been steadily increasing. At the same time, it is important to note that the Serbian dual education model is not based on a social partnership approach: the employee perspective is not taken into account (Grujić, 2021). Instead, the reform is a top-down effort involving a formal process that starts with a new law (Caves & Osterwalder-Egg, 2020). The roles of the National Education Council and the National Council for Vocational and Adult Education in implementing education policy have been fundamentally reshaped through changes to their status and responsibilities: Previously, they were elected as stakeholder representatives by the National Assembly; now, the MoES proposes potential candidates who are appointed by the government. This limits the councils' independence from the MoES, with their role changing from that of a decision-maker to that of an advisory body (Pešikan & Ivić, 2021).

In addition to the reform of dual VET, in 2019 Serbia passed a law on work-study degree programmes in higher education. It introduced the requirement for higher education institutions to establish an employers' council, with the aim of including experts and practical knowledge

in the preparation of curricula to adapt them more closely to the needs of the labour market (Burns et al., 2020).

Serbia issued a report in 2020 about aligning its national qualifications framework with the European Qualifications Framework for lifelong learning and self-certification in the European Higher Education Area. Following the adoption of NQF legislation in 2018, a legal basis was created for establishing organisations and bodies responsible for its implementation. In the same year, the members of the NQFS Council were appointed, a qualifications agency was established and twelve Sector Skills Councils were created (HOKC, 2022). Based on current developments, past experience and analyses, and with the support of European projects aimed at implementing the NQF and the work of Sector Skills Councils, Serbia plans to develop and introduce a sector profile model (ETF, 2020), which collects and presents key data on a sector (including employment figures, qualification programmes, development of the sector) (Republic of Serbia 2020).

Over 400,000 job losses are expected in the manufacturing sector – more than in any other sector in the next ten years (Pešikan & Ivić, 2021). There is therefore an even greater need for Serbia to set its sights on retraining, upskilling and additional qualification so that it can respond to this change effectively. Further important issues to be addressed include improving the quality of teacher training and expanding career guidance and orientation (OECD, 2022b; Morina, 2021; Burns et al., 2020).

Local support services of the German Chamber of Commerce Abroad (AHK)

With over 350 members, the German-Serbian Chamber of Commerce is a large and important bilateral interest group (AHK Serbia, 2021). In June 2021, the chamber founded a working group on dual vocational education and training, which discusses challenges, provision and possible solutions with a focus on dual VET, work-study degree programmes and dual qualifications. The aim of the working group is to improve the flow of information among its members. In addition, the German-Serbian Chamber of Commerce advises companies on how to get involved in dual VET and on cooperation with a vocational school.

5. EU projects and cooperation at country level

EU projects in Serbia in the last decade have focused on entrepreneurship, tourism, water management and automotive computing, among other things. In the area of social inclusion, jobs, education and training, there are official plans to launch projects on palliative care and medical care for children (European Commission, 2021c). Major EU projects (large-scale investments worth more than 50 million euros) and ESF projects have not yet been implemented in Serbia.

As regards vocational education and training, Serbia engages in bilateral cooperation with countries such as Austria and Switzerland, and until 2017 it also cooperated with Germany (GOVET, 2018). Currently, various stakeholders are implementing projects to improve the Serbian VET system, mostly seeking to introduce a dual system with a significant vocational component. Among those stakeholders are the German Society for International Cooperation, the Austrian Development Agency (ADA, together with the Austrian Economic Chambers (WKO)) and the Swiss Agency for Development and Cooperation (SDC). One of the projects, called From Education to Employment (E2E, 2021), aims to improve the employability of young people in Serbia in a socially inclusive and sustainable way (KOF, 2017; ETF, 2020).

In 2019, Serbia became an official Erasmus+ Programme Country. One of the projects carried out under this programme is the Implementation of Dual Education in Higher Education of Serbia project, which seeks to develop a flexible model of dual higher education to support the different needs and interests of employers, higher education institutions and students in different industry and business sectors, and to make recommendations for the implementation of dual higher education (DualEdu, 2021).

C. Company survey

A total of 193 family businesses took part in our survey, most of which were large family businesses with 250 employees or more. The survey took place online between September and December 2021 and used the Questback/UniPark platform. The questionnaire was based on a study for the German Federal Ministry for Economic Affairs and Energy, which looked at projects to ensure the supply of skilled workers for German companies abroad (Jansen & Pierenkemper, 2019). The data sample is shown in the table below.

Table 14: Data sample

Country	Employees	up to 249	250 or more	Total
Bulgaria		9	11	20
Poland		0	45	45
Romania		5	23	28
Serbia		0	23	23
Slovakia		0	19	19
Czech Republic		0	33	33
Hungary		0	25	25
Total		14	179	193

Source: Company survey by the Institute of Technology and Education, University of Bremen.

Of the family businesses involved in the survey, 92.7 percent had a workforce of 250 or more, putting them in the category of large businesses. 169 people, respectively 87.6 percent, had managerial responsibility and 135 (69.9 percent) had worked at the respective company for more than five years.

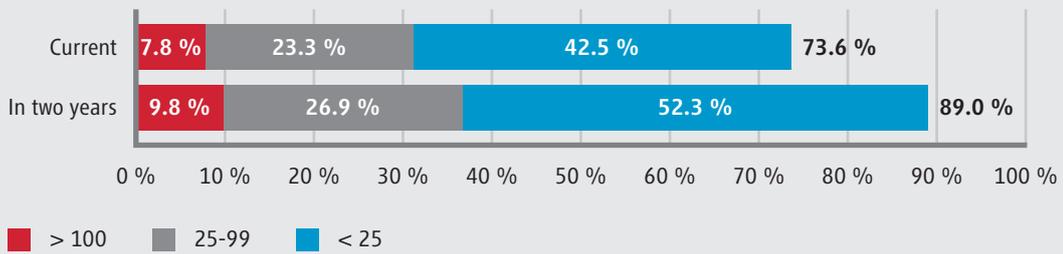
The majority (54.4 percent) of the companies were in the manufacturing sector, followed by 12.4 percent in retail (including motor vehicle maintenance and repair). Construction, transport/logistics, energy supply and services were more or less equally represented with a total share of 23.3 percent. The remaining companies belonged to the "other industries" group (9.9 percent).

I. Involvement in vocational education and training

73.6 percent of the businesses surveyed are active in vocational education and training. This already high level of involvement is set to increase further to 89.0 percent by the end of 2023, according to the survey responses.

Figure 9: Involvement in VET

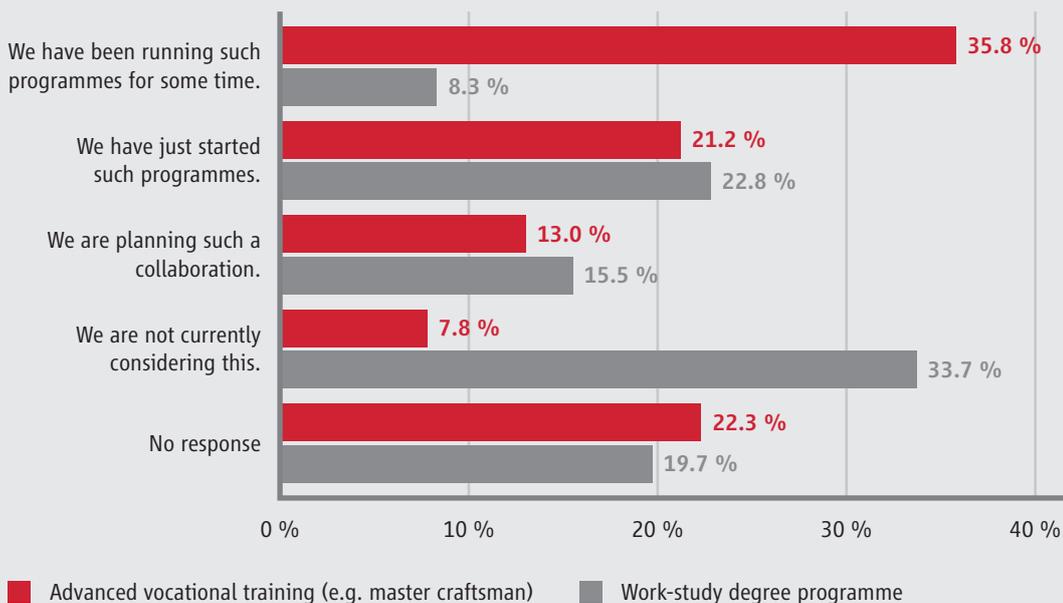
How many trainees do you currently train at your company in CEE, and what do you expect this figure to be in two years?



Source: Company survey by the Institute of Technology and Education, University of Bremen.

Figure 10: Advanced vocational training and work-study degree programmes

What is the current status of advanced vocational training at master craftsman level and of work-study degree programmes (degree apprenticeships/dual study programmes)?



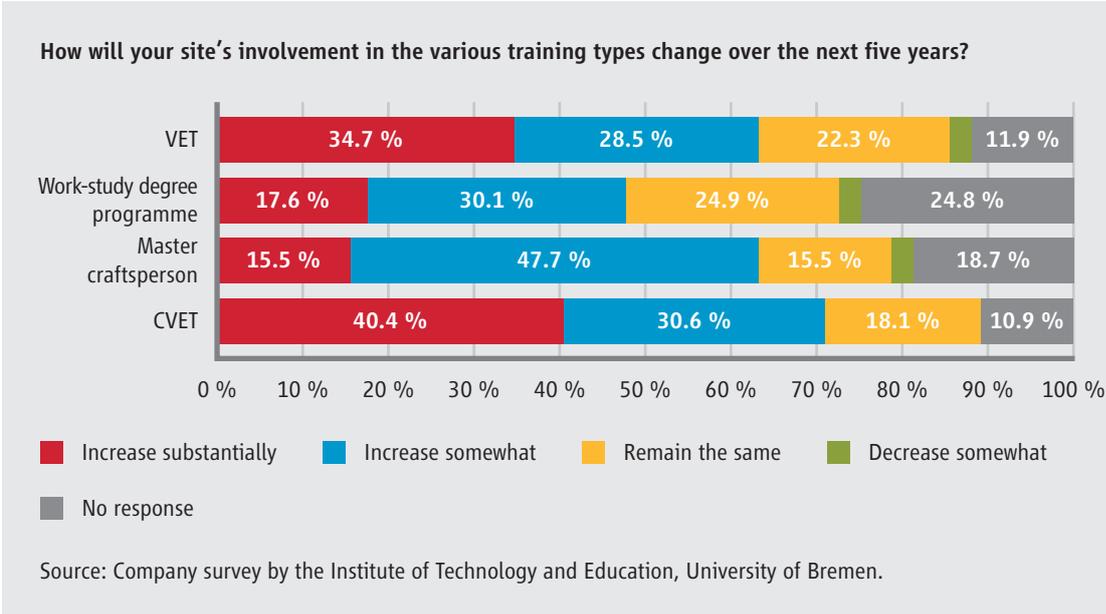
Source: Company survey by the Institute of Technology and Education, University of Bremen.

Although not on the same scale, there is a high level of involvement in advanced vocational training, too, with many companies having long-standing programmes (35.8 percent). This is also a growing area: a large proportion of companies recently began implementing a programme (21.2 percent) or are planning one (13 percent). The situation for work-study degree programmes is somewhat different: in the case of many companies, such programmes have either just been launched (22.8 percent) or are at the planning stage (15.5 percent). For one

in three businesses (33.7 percent), however, work-study degree programmes are “not yet being considered”.

Businesses expect a considerable increase in all areas of training over the next five years and see the greatest growth potential in continuing vocational education and training. 40.4 percent of the businesses surveyed expect a considerable increase here, while another 30.6 percent anticipate slight growth. Overall, this means that 71 percent of companies expect to expand their provision of continuing vocational education and training.

Figure 11: Trends

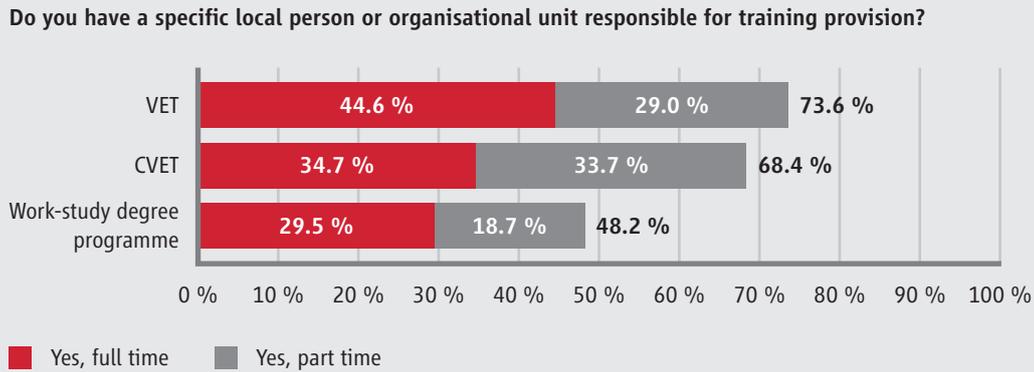


The next sub-chapter will examine the structures used by businesses to provide VET.

II. Organisation of vocational education and training

Locally, VET and CVET programmes are generally under separate direction. 73.6 percent of businesses have a dedicated person responsible for VET, followed by 68.4 percent for CVET and 48.2 percent for work-study degree programmes.

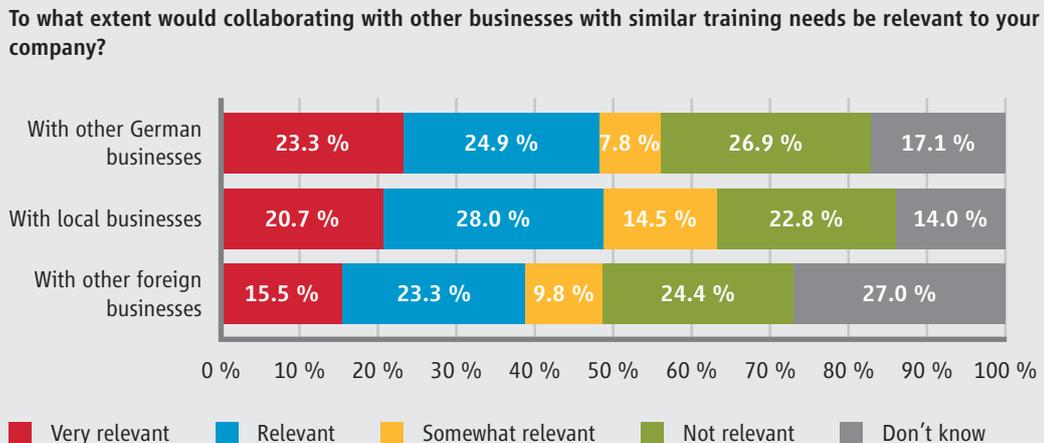
Figure 12: Responsibility for vocational education and training



Source: Company survey by the Institute of Technology and Education, University of Bremen.

Providing training in partnership with other businesses is of interest to around half of companies. Levels of interest in partnerships with local businesses and partnerships with other German or foreign businesses were similar.

Figure 13: Collaboration with other businesses



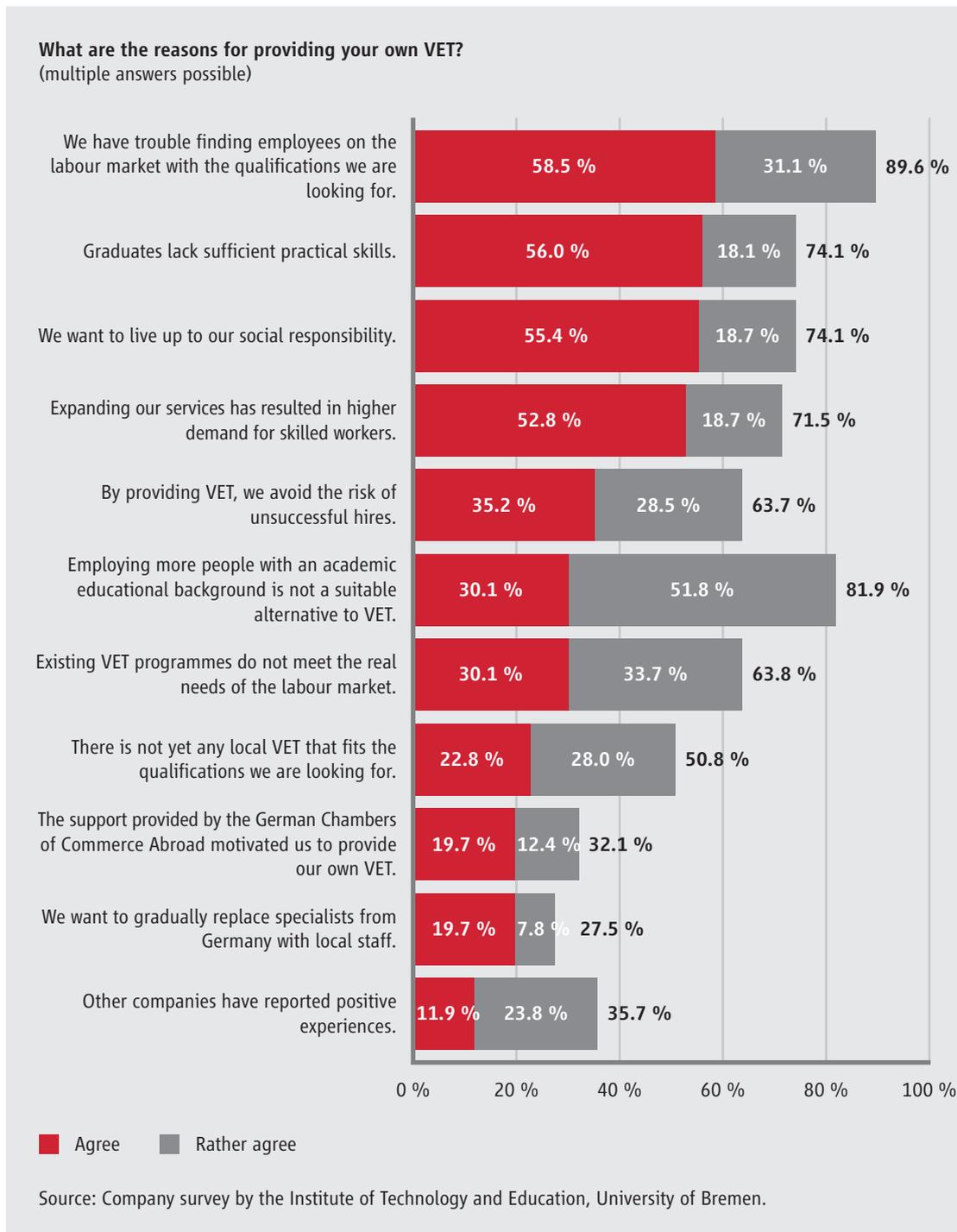
Source: Company survey by the Institute of Technology and Education, University of Bremen.

The following sub-chapters look more closely at VET and CVET:

1. Vocational education and training

The reasons cited by companies for providing their own VET are the shortage of skilled workers on the labour market (89.6 percent) and other business reasons (e.g. avoiding unsuccessful hires) on the one hand, and a desire to take on social responsibility (74.1 percent) on the other.

Figure 14: Reasons for providing own local VET

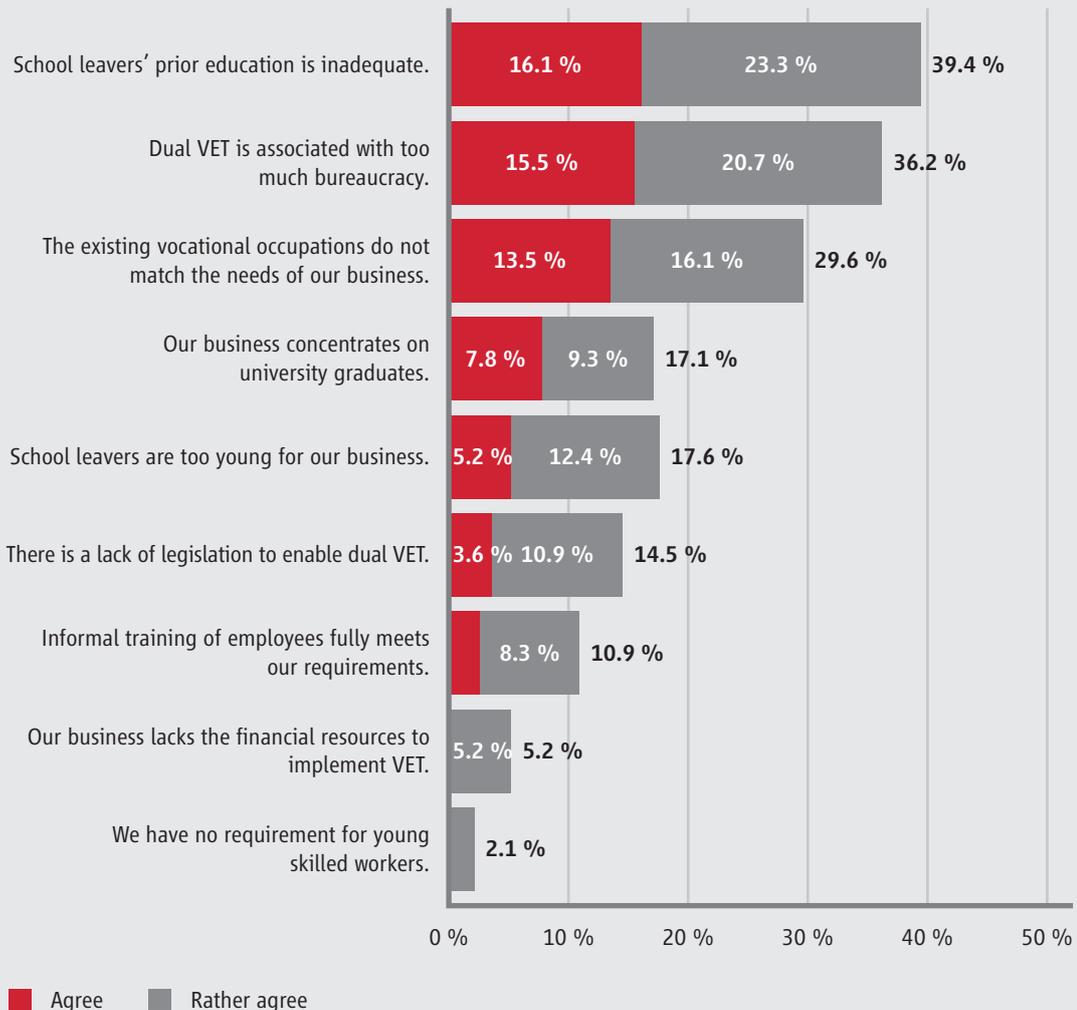


The problem of meeting the existing demand for skilled workers is being further exacerbated by companies' growth and the increasing range of work they are doing in CEE (71.5 per cent). Despite companies' urgent need for labour, the vast majority of businesses surveyed (81.9 per cent) believe that employing people with an academic educational background is no substitute for vocational education and training. Another reason for training people locally is to reduce the need for specialist staff from Germany (including expats). In addition to these

push factors, one in three of the businesses surveyed cited the positive experience of other companies (35.7 percent) and the support offered by the German Chambers of Commerce Abroad (32.1 percent)

Figure 15: Reasons against local VET

Which of the following are reasons against providing your own VET?
(multiple answers possible)



Source: Company survey by the Institute of Technology and Education, University of Bremen.

The businesses surveyed report particular shortages of mechatronics technicians (88.1 percent), electronics technicians specialising in automation technology (83.4 percent) and industrial engineering (77.2 percent), information technology specialists (71.5 percent), skilled metalworkers (47.7 percent) and industrial mechanics (45.6 percent) (figures not illustrated).

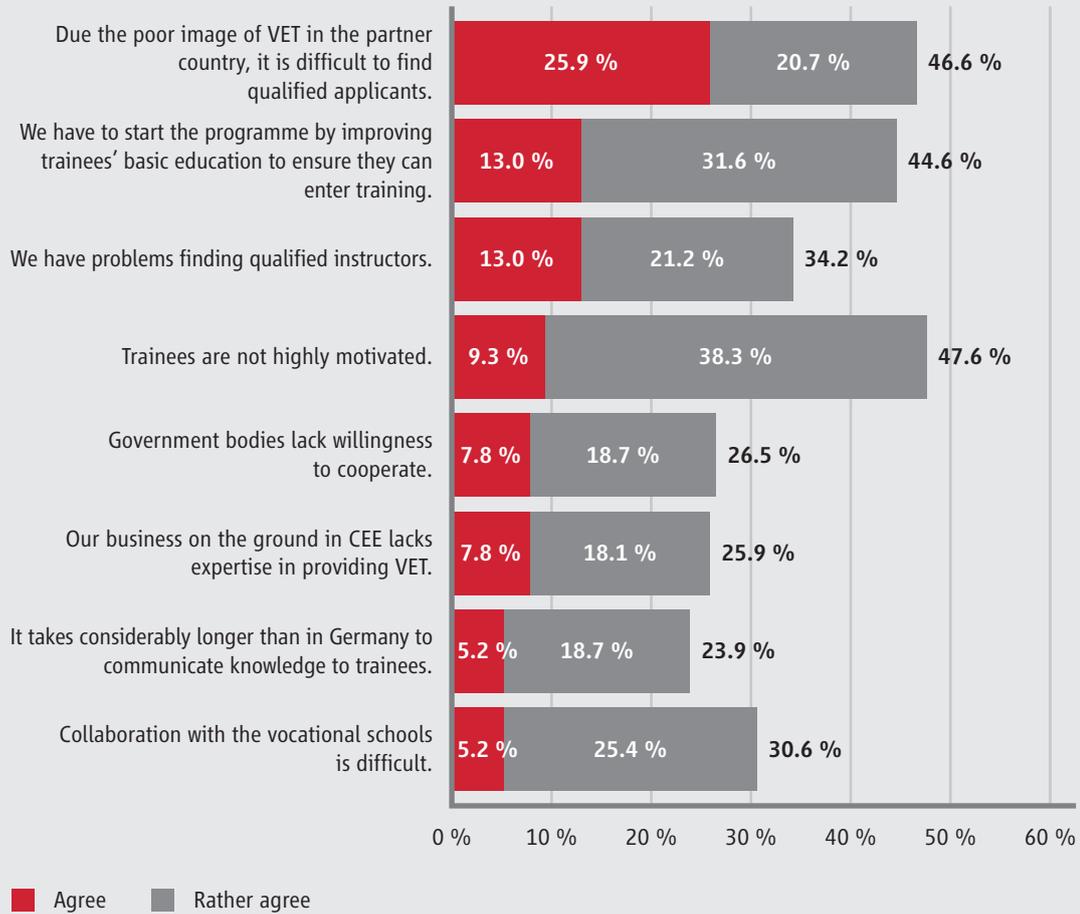
The primary reasons given for not providing local training are context-specific (see Figure 15). A total of 39.4 percent believe school-leavers lack sufficient prior education, 36.2 percent find the bureaucracy too time-consuming and 29.6 percent consider the training occupations a poor match for their company's needs. Internal factors such as a lack of requirement (2.1 percent) or financial resources (5.2 percent), or a concentration on informal training (10.9 percent) or university graduates (17.1 percent), also play a role, albeit it a much smaller one than external circumstances.

Interest in providing VET brings with it the challenges of planning and implementing a training programme on the ground (see Figure 16). Major context-specific challenges include the often poor image of VET (agree: 25.9 percent/somewhat agree: 20.7 percent), the prior education of trainees (agree: 13.0 percent/somewhat agree: 31.6 percent) and low levels of trainee motivation (agree: 9.3 percent/somewhat agree: 38.3 percent). Other challenges arise from the practicalities of implementation: qualified instructors are difficult to find (agree: 13.0 percent/somewhat agree: 21.2 percent) and there are difficulties in working with government bodies (agree: 7.8 percent/somewhat agree: 18.7 percent) and vocational schools (agree: 5.2 percent/somewhat agree: 25.4 percent).

The distinction between "agree" and "somewhat agree" makes it clear that only a small proportion of the businesses surveyed regard these issues as true barriers. Overall, while obstacles exist, half of businesses do not regard them as challenges. In this context, our survey also asked to what extent the situation with the local vocational training system was a relevant reason to reject or reconsider the opening of a local branch. The trend from the responses is clear: the current VET environment is not leading businesses to abandon or rethink the opening of branches in CEE.

Figure 16: Challenges in planning and implementation

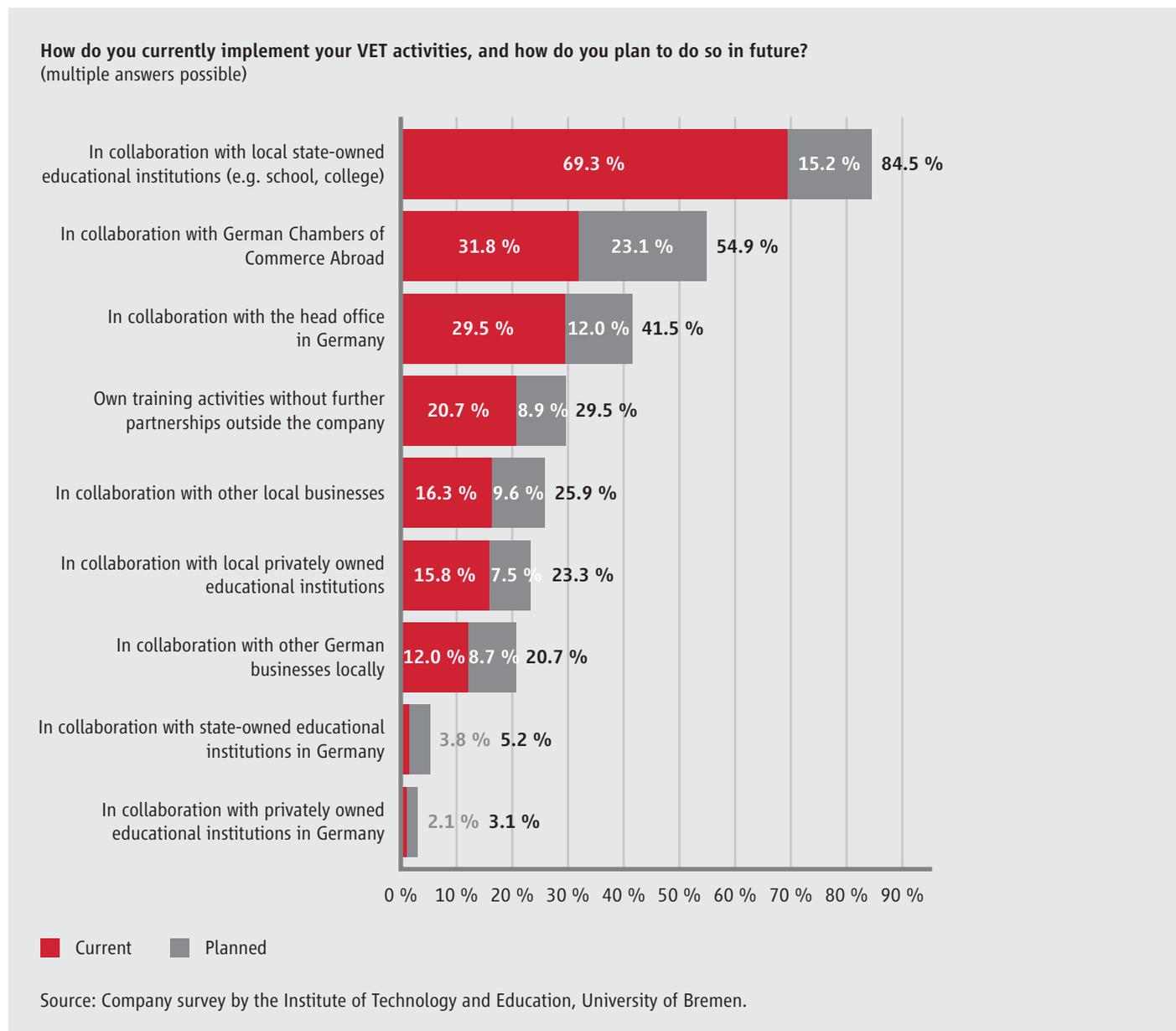
What challenges do you encounter with planning and implementing VET at your company?
(multiple answers possible)



Source: Company survey by the Institute of Technology and Education, University of Bremen.

VET is generally provided by working with partners (see Figure 17), the most important of which are the local state-owned educational institutions (69.3 percent). A further 15.2 percent of businesses plan to expand such partnerships in future. More or less equal numbers collaborate with the German Chambers of Commerce Abroad (31.8 percent) and their own head office in Germany (29.5 percent). Both these relatively low figures indicate the high degree of independence shown by businesses when it comes to their own local training. In addition to collaborating with local state-owned educational institutions, 20.7 percent of the businesses surveyed conduct their own VET activities that do not involve further partnerships. Partnering with private and state-owned educational institutions in Germany is still a rarity. There is considerable development potential when it comes to the learning mobility of trainees and teaching staff.

Figure 17: Implementing VET

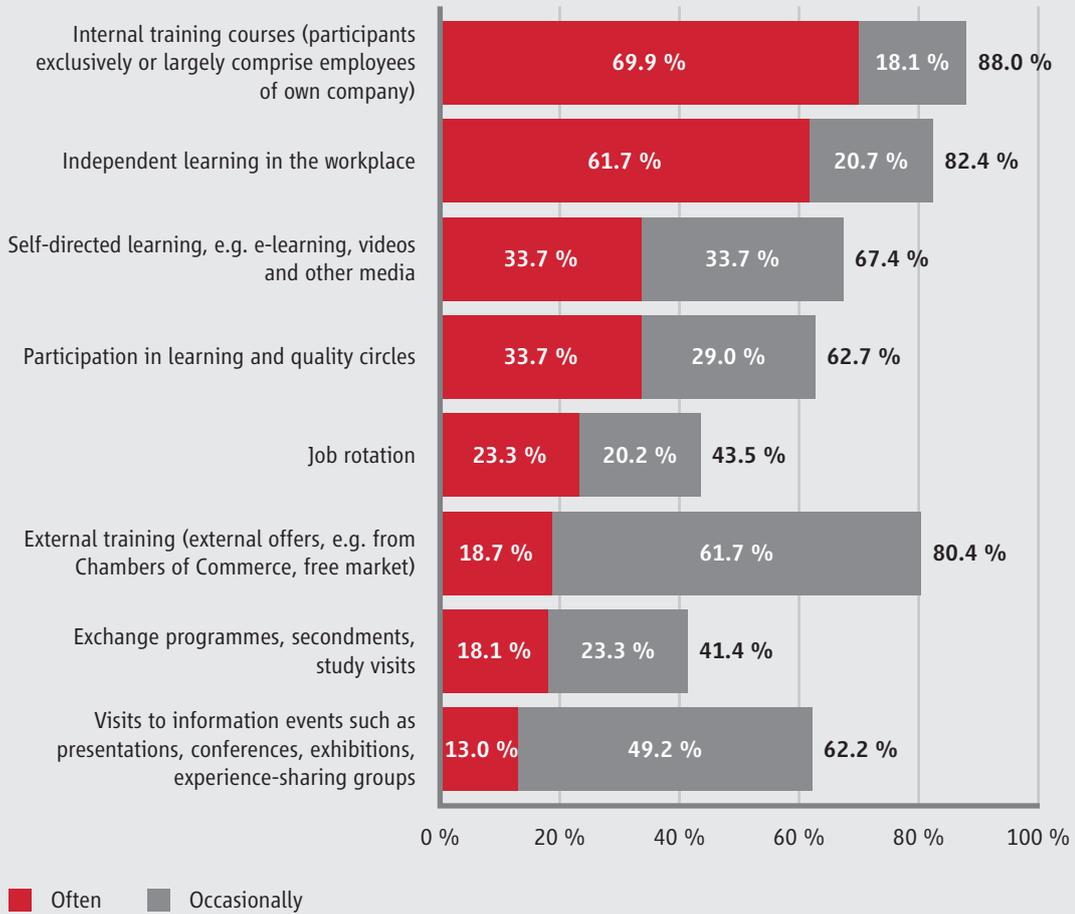


2. Continuing vocational education and training

In the companies surveyed, CVET takes place in various forms, the most common of which are internal training courses (88.0 percent). Many businesses also organise external training courses (80.4 percent); unlike the frequent internal training (69.9 percent), however, these largely take place on an occasional basis (61.7 percent). Structures such as learning circles, quality circles and job rotation are also used. One in three companies implement learning and quality circles on a frequent basis (33.7 percent) and one in four often use job rotation (23.3 percent).

Figure 18: Training formats

What other training formats were used in your business before the pandemic?
(multiple answers possible)



Source: Company survey by the Institute of Technology and Education, University of Bremen.

D. Case studies

How exactly have German family businesses created and structured their vocational education and training in Central and Eastern Europe? In the following chapter, we seek to answer this question using examples provided by case studies from Poland, the Czech Republic, Hungary and Romania. These countries were chosen for their economic importance (Table 1 and Table 2) and the form of VET provided. The four case studies cover different models of VET, both in terms of the number of trainees – just a few or several – and the number of companies involved; that is, whether a single company or a cooperation between companies. They are summarized in the table below in the order in which they will be presented here.

Table 15: Case studies

Country	Form	Trainees
Poland	Individual company	< 50
Czech Republic	Individual company	50 to 100
Hungary	Individual company	50 to 100
Romania	Collaboration by multiple companies	> 100

Poland, the Czech Republic and Hungary were chosen for their economic importance. The Romanian case study was included because it vividly illustrates what can be achieved when German businesses abroad bundle their activities. This “what can be achieved” refers not only to the development of dual VET; the commitment of German (family) companies has also, in part, enabled systemic changes. For example, the revival of the once abolished vocational education system in Romania was thanks in significant part to the impetus provided by the work of German family businesses on the ground.

I. Poland: Dual VET at Gühring

Gühring is an owner-managed family business with around 8,000 employees at over 70 production sites in 48 national companies. It is a world-class manufacturer of round shank cutting tools for the metalworking industry. The case study is based on guided interviews with representatives from the Centre for Vocational and Continuing Education (Centrum Kształcenia Zawodowego i Ustawicznego) in Sosnowiec as well as a visit to Gühring’s site in Dąbrowa Górnicza in 2022.

Background information

The Centrum Kształcenia Zawodowego i Ustawicznego (CKZiU) was founded in 2013 by the city of Sosnowiec (population approximately 200,000) in the Upper Silesian Industrial Region. The CKZiU brings together a variety of technical schools to make a relatively large school in which several hundred learners receive instruction in a host of occupations. Gühring has operated in Poland since 1996 and moved to Dąbrowa Górnicza in 2011/12. The 140 people at the plant in Dąbrowa Górnicza produce drilling, milling, tapping, PCD, reaming, countersinking and grooving tools along with deep-hole drills, tool holders and tool systems.

The beginnings

In 2014, the newly created CKZiU began looking for companies in the region that were willing to offer its students practical training opportunities. Gühring registered its interest, motivated particularly, though not only, by the shortage of skilled workers on the labour market. In 2014, confronted with a labour shortage, the company formulated a plan to recruit apprentices who could later become CNC operators. Gühring was not only interested in training its own workforce but also wanted to contribute to improving VET in the region.

Although located in Dąbrowa Górnicza, some 13 km from the school in Sosnowiec, Gühring was attracted by the CKZiU's strong reputation for teaching quality and by the openness of the school directors. The company and school signed a declaration of intent on 31 March 2014, and the first students began their training in September 2014.

Occupation

The collaboration since 2014 has concentrated on the occupation of mechanic. The learning programme is based on the national core curriculum for VET, which applies to all Polish vocational schools. The school and company have jointly developed a learning programme that meets both the requirements of the core curriculum for VET and the local needs of the company.

Nature and scope of collaboration

There are three levels of collaboration: (1) Gühring takes on two to three trainees each year for a one-month mandatory work placement (pratyki zawodowe) at the company. (2) The company runs classes (klasa patronacka) at the vocational school for six to eight trainees. Starting from the beginning of the course, the students spend one day in the company a month. In the fourth year, they generally complete a one-month work placement (pratyki zawodowe). (3) In addition, the company enters into a scholarship agreement (umowa stypendialna) with

two or three selected fourth-year students. As part of the scholarship agreement, the trainees can work for the company (alongside attending school) and receive remuneration for this.

Where possible, the training at Gühring involves spending time in different departments. However, as the work is technically demanding, the students cannot work independently on the company's CNC machines. At the end of the course, the selected trainees are generally offered a job. The school directors noted in the interviews, however, that Gühring has very high standards for its recruits and that it is not easy to be selected for permanent employment.

As the company's working language (e.g. manuals, instructions, software) is German and the students mainly learn English, Gühring offered to pay for German lessons. There have also been plans to send trainees to Gühring's head offices in Germany; however, these have so far had to be shelved due to the COVID-19 pandemic. Gühring currently plans to expand the scope of collaboration in terms of the number of trainees and the occupations covered. For instance, it intends to add further trainees for the occupation of mechatronics technician. The company also plans to provide the school with CNC machines so that trainees can expand their practical skills. In late 2021, given the worsening shortage of skilled workers, it also began to work with another vocational education centre in the city of Kalisz.

Initial challenges

The school learning programme needed to be changed to adapt it to the company's needs. The Polish system enables this, as schools have a degree of leeway in designing their programmes provided they still comply overall with the requirements of the core curriculum for the occupation in question. A team consisting of teaching staff from the school and representatives from the company (see below) was formed to put together a learning programme for the future trainees. Everyone involved described this process as smooth and cooperative.

Legal basis and funding

The legal basis for collaboration between employers and technical secondary schools, including its scope and funding, is set by the Education Law. Employers who offer practical training can request reimbursement of the costs for personnel involved in instruction or for equipment used during the training. The maximum amount to be reimbursed is anchored in law, but is left up to decisions at local level. Individual agreements are reached between the vocational schools and local authorities on the one hand and the employers on the other. Practice differs from province to province. In the interviews conducted for this study, some school directors in the region of Silesia noted that the employers they work with either do not expect or request reimbursement or request only small amounts. This also applies to Gühring: the company has not requested reimbursement for its involvement in the partnership with the vocational school.

The CKZiU has successfully applied for funding from the European Social Fund so that it can enable its students to attend a work placement with Gühring; the funding can be used to remunerate trainees there. As already mentioned, however, Gühring does not expect any financial reward for its involvement.

Promoting the collaboration

From the company's side, Gühring's CEO has played the key role in initiating and supporting the partnership with the CKZiU. The CEO agreed the framework and scope of the collaboration directly with the CKZiU directors. The company then set up a team responsible for working with vocational schools. This consists of administrative directors (responsible for direct contact with schools and documenting the collaboration), production managers (responsible for funding, overseeing the content of the practical training and involving the relevant departments), technicians and machine operators (specially trained to provide instruction, who are responsible for direct supervision of trainees on company premises).

The nature and scope of collaboration with the school was decided locally between the managing director and the school directors. The German head office encourages this dialogue but does not prescribe a specific approach. A few weeks before the interview, the Polish team responsible for collaboration with the vocational schools had visited the Gühring head office in Albstadt to find out more about the German dual education system. The representatives of the Polish vocational school told us that specific features of the "skills ecosystem" in Albstadt could not be replicated in Poland, where certain structures and practices do not exist, and the company noted that this was also a problem in other countries where Gühring does business.

Collaboration with the vocational schools

Both the company and the vocational schools are positive about the collaboration so far. The school directors noted that the partnership runs very smoothly and efficiently because Gühring understands the benefits of it. They added that they do their utmost to respond flexibly to the company's needs and ease the administrative burden on Gühring wherever they can. The company for its part, commented that the technology at the CKZiU had been modernised but that some of the machinery there was still outdated. Gühring therefore plans to improve the school's CNC equipment.

Instructors

The company has a team responsible for collaboration with the vocational schools. This includes the managing director, administrative director, production manager and a CNC operator/instructor (see above). Each team member dedicates a portion of their regular working hours to the partnership with the vocational school. No separate position was created within

the company. However, Gühring reported that the situation is now changing: the company is unable to find CNC operators with the requisite skills on the labour market and has therefore decided to take on promising employees and train them itself locally. For this purpose it has created the position of CNC instructor. This person is not involved in the production process, but instead has the task of training new employees (including the trainees from the vocational school) in existing and new skills to help them in their work at Gühring.

Collaboration with the German-Polish Chamber of Industry and Commerce and other partnerships

There is no collaboration with the German-Polish Chamber of Industry and Commerce. Trainees must complete a national examination organised by regional examination boards in order to graduate from a vocational school. Once they have passed the exam, they receive a national VET certificate.

Gühring works together for training purposes with Fiat and Volkswagen, which are buyers of Gühring products. Students from the vocational school who have a placement with Gühring therefore visit Fiat and Volkswagen plants to see Gühring's products being used in practice.

Challenges

The collaboration is viewed positively by the company and the vocational school. However, challenges were also raised in the interviews.

The COVID-19 pandemic was mentioned several times in this context. The company pursued a strict policy regarding access for non-employees, and this included trainees, who were therefore sometimes unable to enter the company's premises during the pandemic. The pandemic-related measures also blocked plans for learning mobility with the German head office. Interestingly, neither the company nor the CKZiU mentioned any bureaucratic obstacles in their collaboration.

The company representatives noted that the interruption to value chains due to the pandemic and the war in Ukraine was severely impacting the automotive industry in Europe – the main buyer of Gühring products. This in turn could affect Gühring's plans to expand its collaboration with vocational schools in the coming months. For the school directors, the medium-term challenge will be recruiting skilled staff to work as teachers. Due to the tight labour market and low unemployment, wages in the private sector have risen considerably in recent years, making teaching in vocational schools an unattractive proposition for skilled individuals. As a result, vocational schools are having difficulty recruiting teaching staff. The interviewees do not

believe that national authorities are addressing the problem sufficiently. They also criticised the school's infrastructure, which, despite modernisation, did not meet current requirements.

The company representatives commented that not all trainees are sufficiently motivated to acquire new skills: some lack the "positive attitude" needed to become specialists. There was also criticism of the careers advice system in this context. The company told us that many students lack awareness of where future career prospects lie and therefore often choose training occupations for which there is little demand on the labour market. According to company representatives, many students want white-collar jobs, whereas companies have considerable demand in industrial/technical occupations such as CNC operator, electrician and mechatronics technician. For their part, vocational school representatives said that parents often still have a negative view of vocational education, which in turn influences the career choices of their children.

The company representatives pointed to the need to create "skills ecosystems" where local public authorities, vocational schools and companies would work together and jointly contribute to skills development, including promoting vocational education. They cited the example of Gühring's head office in Albstadt, Germany. However, they also noted that Gühring in Poland would be too small to play such a leading role locally. One conclusion that can be drawn from the interview is that the promotion of collaboration between companies and schools largely depends on the company's local circumstances, including its finances, and the market in which it is active. Representatives from Gühring mentioned that the directors and teachers at the vocational schools put great effort into the collaboration with the company.

They also said that the duration/number of days of practical training should be extended, as the existing period is insufficient. The school representatives said that the reform of the Vocational Education Law in 2019 offered new solutions but that it was still too early to evaluate the effects, as the vocational schools had not yet implemented the new option. They also reported that the high rate of emigration in the first few years after EU accession had adversely affected businesses' commitments to VET in Poland. Unemployment at that time was still high, meaning that companies did not need to invest in training in order to recruit skilled workers on the labour market. Then, too, investments in training entailed the substantial risk that workers would leave once qualified, as they were very easily able to find employment in Germany or Austria. Full employment and the shortage of skilled workers have changed the situation in recent years. As a result, companies are now more willing to invest in their own training.

II. Czech Republic: VET at Mubea

Mubea is an owner-managed family business from Attendorn, Germany, with over 14,000 employees at 48 sites. It specialises in the manufacture of automotive components. The case study is based on a guided interview with Mubea's head of HR development and training in Prostějov in 2022.

VET is very important to Mubea's corporate philosophy, growth, corporate culture and standard practices. The initiative to set up vocational training at the company's Czech sites therefore came initially from the head office in Attendorn. Given plans to employ more than 3,000 people in Žebrák and Prostějov, replicating the German dual system as closely as possible to cover the growing demand for skilled workers was a direct consideration when setting up the plants. The German management team (site management) provided extensive support in establishing VET.

Training began in Žebrák with a newly appointed VET manager, who had experience as a teacher and school director. As part of his orientation, he spent three days at the German head office in Attendorn, where he familiarised himself with the technical training provided there and looked for ways to adapt it to the Czech Republic. Training at the Prostějov site followed in 2006 while this plant was still under construction. A training manager was appointed here too, who built and supervised the training system in Prostějov from 2006 to 2012 with the help of his counterpart from Žebrák. As part of his orientation, the second training manager also spent several days at a Mubea plant in Germany to familiarise himself with the training practices there. The language barrier meant that a longer orientation period in Germany was not feasible. The training managers at the two Czech locations work closely together and are in regular dialogue. In Prostějov, the first two training occupations were metalworkers and mechanics.

Mubea has structured, organised, established and funded the training in the Czech Republic independently. It has not received support from local authorities, schools or chambers of commerce and is not a beneficiary of EU subsidies. Mubea selected the schools itself, initially agreeing a partnership with two to three institutions. In 2012, the company set a benchmark to determine what schools in the area would be considered. It currently works with 14 secondary schools, including the Secondary Technical School for Industry and the Secondary Vocational School for Mechanical Engineering (Střední odborná škola průmyslová a Střední odborné učiliště strojírenské/SOŠ průmyslová a SOU strojírenské) in Prostějov.

Training occupations and qualifications

A total of 75 people are currently being trained in Prostějov in the following occupations: machine mechanic (Strojní mechanik, 3 years), toolmaker (Nástrojař, 3 years), metalworker (Obráběč kovů, 3 years), machine setter (Mechanik seřizovač, 4 years), machine and plant mechanic (Mechanik strojů a zařízení, 4 years) and electrical technician specialising in mechatronics (Elektrotechnika Zaměření Mechatronika, 4 years).

Training rotates between maintenance, production and the teaching workshop. In this workshop, up to six people can be supervised simultaneously. The training ends with a national vocational qualification at one of two levels:

1. Three-year programme (SOU Střední odborné učiliště/secondary vocational school): ends with a state examination assessing practical skills. The trainees are known at Mubea as “apprentices”. The programme begins with a year and a half of teaching in school, during which the apprentices do not spend any time with the company. For the remainder of the course, the apprentices alternate between a week at school and a week with the company. The time with the company is described as an internship. Approximately 30 percent of trainees at Mubea complete this form of training. The company is interested in expanding this training model; however, recruitment is difficult.
2. Four-year programme (SOŠ Střední odborná škola/secondary technical school): ends with a university entrance qualification. The training is focused on mechanical engineering and begins with a year of teaching at school. Starting in the second year, the company-based training takes the form of either a) a two-week block or b) three-day blocks two weeks apart. Option b) amounts to a considerably larger practical component than option a). Individuals on this programme are known at Mubea as “students”. Although qualified to enter university upon completing the course, few students do so.

Students on this programme make up around 70 percent of trainees at Mubea. The company is interested in reducing this in favour of the three-year programme; however, recruitment for the four-year programme is easier.

The current split of 30 percent secondary vocational school and 70 percent secondary technical school is not the company’s preference but results from the low demand for and supply of three-year courses at secondary vocational schools.

Training contract/remuneration

The trainees (both cohorts) enter into a scholarship agreement with Mubea and commit to remaining with the company for three years after finishing school. The scholarship is calculated monthly and depends on the school year, school grades and attendance at Mubea. Up to 80 euros is paid in the first year of the course, up to 120 euros in the second and third years and up to 160 euros in the fourth year. The scholarship must be repaid if trainees leave Mubea before the end of the three years after finishing school. In addition to the scholarship, trainees are further incentivised by a wage of 2.50 euros an hour during the work placement (less in Žebrák). This wage is tax deductible for the company at the end of the year. The local district also provides scholarships (60 euros for half a year); however, students need very high grades to be eligible for these.

Instructors

In Prostějov, Mubea has a training manager (instructor for practical skills, handling machinery) and an employee responsible for administrative tasks such as calculating remuneration. The latter has access to school grades and attendance figures via an online system and uses these to calculate the scholarships.

The training manager is a qualified instructor and also worked as a shift manager at another German automotive supplier. He is familiar with the production processes and is a welding specialist. He makes regular rounds of the production facility, speaks to trainees and oversees the practical training at Mubea. The specialist departments (e.g. maintenance) have no specific instructors, but the company has identified employees who have a good relationship with the HR department and are able to coordinate and organise training and look after the trainees during their time with the department. Training takes place at the same time as the normal production process, and these employee coordinators provide instruction alongside their other tasks; they receive no time off from their work in order to provide the training. The coordinators take on this additional responsibility partly because it is standard practice at Mubea and partly because it provides them with a source of potential new recruits for their department.

Training plans/school

The training plans are written in Czech. They follow the school curriculum but have additional elements based on the specific requirements of the Mubea production site. Given the different state-prescribed curricula that have to be followed for the various occupations (e.g. metalworker, machine and plant mechanic, electrical technician), it was not possible to implement Mubea's standard technical training curriculum (first year of training). While the content of the curriculum is similar to the German version, there are differences in how they are organised, with the German system providing for more extensive practical components, for example.

Overall responsibility for the training programme always lies with the school, which can call trainees/students back to the campus whenever it considers necessary (e.g. for a welding exam). When apprentices and students attend the company, training initially follows the state curriculum, with company-specific aspects being covered only at a later stage. As Mubea's production cannot cover every part of the school curriculum, the remaining content is taught in the teaching workshop. Trainees can use Mubea's facilities to complete practical exams as part of their courses.

Collaboration with the schools

Vocational students in the Czech Republic can work with companies during their school education but are not required to do so. If vocational students complete their education without going to work at a company, the practical component takes place in the school (without remuneration). Although the schools are not obliged to allow their students to work in industry, they nevertheless enable this. For this purpose they conclude collaboration contracts with the companies.

Mubea presents itself as a partner to the vocational and technical schools through open days and exhibitions, field trips and competitions. It offers internships and the opportunity for students to write their thesis at the company (e.g. for design engineers), and accompanies trainees to university open days. While trainees were unable to access school premises during the pandemic, Mubea offered them various workshops and internships. Mubea also supports the schools with the procurement of materials and equipment. Whereas the schools are funded by the local district (and have constant money problems), Mubea receives no government support. The schools are required to provide practical training and have workshops in which to do this, but practical training is nonetheless generally left to the companies in the form of work placements.

Mubea is a major presence in the schools. When electromechanical technicians at Mubea needed to train as electricians (an 80-hour course), for example, one of the partner schools developed and implemented a CVET programme based on Mubea's needs.

Trainees have school holidays and do not need to attend work at Mubea during this time; however, they often use these periods to take on summer jobs (brigádu) and earn money.

Involvement of German Chambers of Commerce Abroad

The German-Czech Chamber of Industry and Commerce is not involved in vocational education and training and does not provide certification. Mubea therefore does not work with the German-Czech Chamber of Industry and Commerce on the delivery of its vocational training.

Collaboration with other companies

While Mubea does not collaborate with other companies on VET, it is in contact with them as a role model, since Mubea began building its own VET system earlier than other businesses.

Challenges

Setting up and operating Mubea's own teaching workshop, which the company describes as a rarity in the region, has been and remains a key challenge. The teaching workshop needs to be connected to the specialist departments. Mubea achieves this principally through a rotation system and the use of coordinators in each department.

Workers with the requisite skills are not available on the labour market, which means that providing vocational training is almost the only way of recruiting and retaining qualified production staff. Mubea's needs are very specific. Even a qualified metalworker or fitter cannot go straight into this role at Mubea, as the qualification does not cover what Mubea requires. Trainees are therefore taught skills specific to the company's needs, have a close relationship with the company and are familiarised with its production.

Around 95 percent of the apprentices are taken on at the end of their course and approximately 90 percent stay with the company beyond the compulsory three years, quickly entering key occupations. These include the occupation of fitter (preparing machinery for the production process). Trainees staying with the company generally continue to have a productive working relationship with the training manager even after the end of their programme of study.

According to the interview, internal collaboration between the teaching workshop and the specialist departments is regarded as very good. It requires a high level of ongoing personal commitment, intensive coordination and a regular budget for new machinery. Demand in the area of electronics is set to rise and with it the demand for trainees on three-year programmes.

Some 15 to 20 trainees join the Prostějov site each year, making a total of around 75 trainees; however, it is becoming increasingly difficult to find new recruits and maintain this number. In contrast, more trainees are necessary on both the three-year programmes (machine mechanic, toolmaker, metalworker) and the four-year programme for electrical technicians specialising in mechatronics. While Mubea is making great efforts to recruit more students with its presence at both secondary technical schools and secondary vocational schools, its paid internships and its guaranteed jobs at the end of the course, competition between companies is fierce: SOŠ průmyslová a SOU strojírenské in Prostějov, for example, works with more than 30 businesses.

III. Hungary: Dual VET at Festo

Festo is a German family business employing more than 20,000 people at 250 branches in 61 countries around the world. It has two business divisions: Automation (factory automation and process automation) and Didactic (technical education). The case study is based on a guided interview with Festo's Global Head of Vocational Education in 2022.

This year, Festo is celebrating its 40th anniversary in Hungary (founded in 1982). The dual vocational education and training in Budapest takes place at the Automation division production plant. Until 2019, the plant's employees were trained locally on an individual basis by Festo Didactic or by managers "on call". The first moves to establish dual VET came in 2015, and a small feasibility study was carried out. In 2018, the managing director, an experienced technology transfer expert, then suggested introducing dual VET as a recruitment channel between Festo's head office in Esslingen and Festo Hungary. It did not take long to get this project up and running. The first cohort of mechatronics technicians started training in September 2019.

Since the early 2000s, German apprentices have regularly had placements in Hungary, and the German term "Azubi" (apprentice) has therefore long been part of the Hungarian employees' vocabulary.

Training occupations and qualifications

A compact, dual VET programme in mechatronics technology – chosen because it covers many of the technologies needed in the production process – has been provided since 2019. Three full-time instructors look after the trainees, of whom there are currently 18 in each year of the programme. On completing the course, students receive a university entrance qualification and a vocational qualification as a mechatronics technician.

The full course, which has been integrated into the Hungarian education system, lasts five years and leads to an EQF level 5 qualification. After a three-year preparatory stage of in-school teaching (secondary school), trainees attend the company over a two-year period. During these two years, the trainees spend two days a week at the school and three days a week at Festo, where they find out how to take the theory they have learned and put it into practice on the machinery (e.g. programming, basics of electrical engineering). After several months of basic training, the trainees enter an internal rotation programme. Over an eight-month period, they work in two different value streams for three months each, moving from workstation to workstation and experiencing how products are created. Each value stream encompasses an entire production process from the raw materials to an end product. The trainees begin in assembly and then work backwards through the production process. In addition, the trainees learn about toolmaking, maintenance and quality assurance.

In terms of the future, the plant in Budapest is considering setting up programmes to provide additional skills for those already qualified (these would lead to a Bachelor's qualification) and a two-year apprenticeship to meet the anticipated need in the area of machining.

Training contract/remuneration

The vocational schools promote the dual programme and recommend candidates from those students already enrolled. Festo then chooses the trainees, enters into a contract with them and provides remuneration. This means that the company also makes social security contributions and provides accident insurance for the trainees. Around 75 percent of the trainees are taken on after their course; it is rare for people to drop out during the training.

Instructors

To establish the dual VET, the training director at the plant (previously chief purchasing officer at Festo) began by approaching schools and building a network of contacts. Of the three newly appointed instructors, two were from vocational schools and had prior teaching experience, while the third was from another industrial company.

The instructors and training director report to Festo's Global Head of Vocational Education, whose job it is to standardise training across the company. The aim is to qualify trainees to work anywhere in the Festo world, including in plants in other countries.

Training plans/school

The vocational school teaches both theory and, to some extent, practice. Students generally learn through study and revision. Teachers at the vocational school are invited to visit Festo and observe its practices. Four to six students per class do not belong to Festo. These students attend school without being partnered with a specific company.

Festo's company training plans, which were described in the interview as very structured and detailed, have been developed using German curricula.

Collaboration with the schools

To find a partner to work with, various school directors were contacted with the help of Festo Didactic via VET centres (8 to 12 vocational schools in different locations). As part of this process, Festo visited the schools, looking at their equipment and networking opportunities, to assess the potential for collaboration.

In Hungary, Festo currently works with two vocational schools, which generally supply trainees who have already been through the three-year, school-based part of their courses. Working with two schools minimises the risk of having to completely re-establish the entire training system should one school decide no longer to participate. Trainees continue to attend vocational school alongside their time at Festo (two-year part of the course).

Trainees partly use equipment sponsored by Festo as well as that already available in the schools. The most important training equipment, however, is on hand at the Festo plant.

Involvement of German Chambers of Commerce Abroad

Festo in Hungary does not collaborate with the German-Hungarian Chamber of Industry and Commerce on dual VET. The full-time instructors are qualified through local TTT (TTT = train the trainer) provision, and dual education and training at Festo in Hungary qualifies as “type C” under the Chamber’s classification (local dual training with elements of the German system).

Collaboration with other companies

Festo has contact with training directors at other German companies in Hungary that also provide dual VET. Some of these also offer training beyond their own requirements (i.e. for trainees from other companies) and have never yet reached full capacity. Festo would also consider providing VET for and in partnership with small enterprises to improve the supply of skilled workers and tackle the social transformation.

What works well and where are there still challenges?

Overall, the creation and implementation of the dual programme for mechatronics technicians was described as a great success. Festo has recently set up an online learning platform as a third venue for training trainees and instructors. Existing partnerships, especially with vocational schools, are working well. Social media (Facebook and Instagram) are the primary means of advertising the dual programme to young people. The company also makes use of education fairs and offers short work experience placements for parents and teachers to give the target group and the people who influence their decisions a better idea of the different occupations and what these involve.

Hungary will need more CNC experts in future; Festo is therefore working on a second line of VET to provide CNC operators. Dual VET for die casting, CNC and toolmaking is also already being planned in north-eastern Hungary, where planned growth in the company’s plant will necessitate new recruits for this technology. This will begin after the eight-year primary education rather than after secondary school.

There is also a major challenge resulting from legislative changes in Hungary: in future, the first six months of the two-year practical phase are to be purely school-based. Companies providing training places are opposed to this, as it reduces the time available for practical learning. Attitudes at ministerial level are described as challenging, which results among other things in the still inadequate involvement of companies in designing dual VET programmes.

IV. Romania: Școala Profesională Germană Kronstadt

The Școala Profesională Germană Kronstadt is the first vocational school in Romania to be founded based on the model of the German dual education and training system. Established by German companies in Brașov (the Romanian and English name for Kronstadt) in 2012, it is admired by policymakers, business and the public. Școala Profesională Germană Kronstadt is therefore a counterpoint to the overwhelmingly poor image of VET among business, society and parts of the political system in Romania. The case study is based on guided interviews with the school directors in 2021 and 2022 and publications about the vocational school.

Founding the school

Until 2009, students in Romania were offered two-year vocational programmes at schools of arts and trades (SATs) once they completed lower secondary education (after eight years of school). On graduating from SATs, which marked the end of compulsory education, few students opted to continue at school. This was despite the recommended “completion year” designed to upgrade their relatively low level of qualification (EQF 2) and despite the fact that most graduates did not find employment after leaving school: six months after graduating, over 70 percent were in neither employment nor education (Mocanu & Zamfir, 2017). In 2008, the education ministry opted against reforming the schools of arts and trades and decided on a clean break: from the 2009 school year, students were no longer able to enrol in SATs. The effect was dramatic: student numbers in vocational education dropped from 189,254 in 2008 to 12,382 in 2011 (Petrescu & Negut, 2016). The system of basic vocational education in Romania was effectively destroyed.

Against this backdrop, the DWK (German Business Association in Brașov (Asociația Clubul Economic German Brașov)) started conversations with the local school inspectorate and the city administration of Brașov about setting up their own vocational school. At the same time, the DWK and other players also lobbied the ministry at national level to revisit of the decision of 2009. On 3 February 2012, the education ministry passed national legislation enabling the yet-to-be-created Școala Profesională Germană Kronstadt (SPGK) to apply for official state recognition. The school inspectorate presented the application to the education ministry. Eleven corporate members of the DWK supported the creation of the school, including the German family businesses Dräxlmaier and Schaeffler. The school building was provided

by the Braşov city authorities. Technical equipment was supplied by DWK Fit for Future, an association founded by the DWK.

Opening in 2012, the school started initially with a two-year programme consisting of 60 percent practical training in the first year and 75 percent in the second year. In 2014, the education ministry officially reinstated the option of a three-year vocational education after lower-secondary level, which enabled the SPGK to extend its programme from two to three years. The SPGK gained the status of an independent legal entity on 1 July 2013 by decision of the Braşov County School Board.

Other vocational schools with dual VET programmes were also set up in other cities at the same time in cooperation with German (family) businesses. They included the Schola Dual Abanat in Timişoara in 2012 and the Şcoala Profesională Germană Alba Iulia in Braşov in 2013.

Becoming established

The SPGK began operation in 2012 with 129 students in five classes and two occupations (CNC operator and electromechanical technician). On the wishes of the companies, the vocational school was permitted to preselect students. The admission process therefore included a written test (mathematics, technical thinking, logic, concentration) and an interview with the partner company. The results of the interview made up 60 percent of the overall score. Initially, the school had to look actively for new students, but by the 2015/16 school year there were six applicants for every place. Today, the SPGK has around 700 students in 26 classes and more than 50 teachers.

At the beginning, the major challenges were the low appeal of vocational education and the lack of technical equipment (Naghi, 2016). The DWK Fit for Future association organised presentations about the SPGK's VET programmes for students and their parents. These emphasised the advantages enjoyed by SPGK graduates compared with those following other educational paths (including good prospects of being taken on by the partner companies, attractive salaries and the option to continue training with the support of the employers). In cooperation with other corporate sponsors, DWK Fit for Future provided technical equipment for the vocational school and ensured that all SPGK students were accepted by a member company. The majority of the practical training today takes place in the association's partner companies. The final semester of the school programme takes place entirely at the student's future workplace.

The German-Romanian Chamber of Industry and Commerce supports the vocational school. It monitors the quality of vocational training and reviews the suitability of the training facility and company instructors as well as the conduct of the final exam. Students receiving an

above-average number of points receive a certificate from the German-Romanian Chamber of Industry and Commerce in addition to their national certificate. This certifies that they have received “local dual training with elements of the German system (type C)”.

The dual model practised since 2012 by the SPGK was introduced at national level in Romania by a change in legislation in 2016. In this new dual model, local districts agree partnerships with companies interested in providing training. Based on this agreement, the school, employer and trainee (or the latter’s legal representative) enter into a training contract. National legislation requires the school inspectorates to set up a dual VET programme at companies’ request if at least 12 students have registered for the occupation in question. This means that, in Romania, it is business that provides the initiative for setting up dual a VET programme for a certain qualification at a partner vocational school.

The companies are legally obliged to pay the trainees a monthly wage or scholarship. Trainees from the SPGK receive 200 lei (around 40 euros) from the government and 200 lei from the company providing the training (during the course and work placements). Monetary prizes are awarded at the end of the school year for good learning outcomes. There are no clauses obligating trainees to remain with the company at the end of the course.

SPGK’s school activities are coordinated by a board consisting of managers from the partner companies, representatives of the city of Braşov and the district school inspectorate. The SPGK is a state-recognised vocational school funded in accordance with national legislation.

Status quo

The SPGK offers the following programmes at EQF level 3:

1. CNC operator
2. Electromechanical technician
3. Machine and plant mechanic
4. Machine tool technician
5. Stitching leather specialist
6. Operator for polymer manufacturing and processing

Since the 2018/19 school year, SPGK graduates can train part-time as mechatronics technicians (EQF level 4) by attending evening classes.

As required by national law, the qualifications offered at the SPGK follow national education and training standards based on learning outcomes. The entire vocational learning plan is developed locally together with the companies – the SPGK’s partners – and tailored to their needs.

Since 2017/18, work-based learning has again become an important part of vocational programmes. Romania is following here in the tradition of its apprenticeship schools, which existed until 2003 and were replaced by the less successful schools of arts and trades. Due to a lack of industry partners, however, the work-based learning often takes place in school. In dual VET programmes, work-based learning consists of a period in the vocational school and a period in the partner company. The practical component comprises around 20 percent of the first year of learning, 60 percent of the second year and 75 percent of the third year. In the three-year programme, there are additional work placements totalling 24 weeks (five weeks in the first year, nine weeks in the second year and ten weeks in the third year), which are often completed at a company other than the partner company.

Teachers and equipment

The SPGK has 34 salaried teachers, 20 supply teachers and three retired teachers. The latter work on an hourly basis. The use of a large number of supply teachers can result in a lack of continuity in the training process. 50 percent of the teachers are aged over 45. The SPGK would like to accelerate the recruitment and training of younger teachers in the coming years.

The SPGK currently has 16 classrooms, an ICT lab, a CNC workshop (equipped with an EMCO Concept Turn 450 and EMCO Concept Turn 250) and dedicated workshops for conventional machining, metalwork, pneumatics and hydraulics, mechatronics, welding, producing goods from leather and leather substitutes, logistics, and occupational health and safety, as well as a training room for Kaizen principles and techniques.

Expansion: Braşov Technical Campus

With the Braşov Technical Campus opened in 2019, SPGK has partnered with the Colegiul Tehnic Remus Răduleţ, also based in Braşov. This campus offers the six VET profiles listed above, which the SPGK now teaches both through the partnership and independently as a vocational school. The DWK Fit For Future association provided the impetus for the new campus and developed and funded it together with the city of Braşov and the Braşov district school inspectorate. Its aim was, in part, to increase the overall capacity of dual VET programmes: 325 students began a course here in the first year 2019/20. Training is provided in the school’s own buildings on campus and at DWK member companies. The school authority provided the building and funded the equipment (the practical workshops have been equipped with training

systems from Festo Didactics and Lucas-Nülle, among other things). The two institutions also complement each other: the SPGK is particularly strong in mechanics, whereas the Colegiul Tehnic Remus Răduleț, specialises in electronics.

Challenges

The legal framework created in 2017/18 to establish dual VET structures has been beneficial. The figures speak for themselves: 94 percent of trainees are taken on at the end of their course and 98 percent find a job in the relevant occupation. However, damage has already been done to the appeal and standing of vocational education (e.g. through the decision to abolish national vocational education in 2008, which was not repealed until 2014). More recent decisions have also been detrimental: from the 2020/21 school year, Article 2 no. 10 of the legislation published by the Ministry of Education on 9 September 2019 requires students with a poor average mark in the national assessment to attend the three-year vocational school (Ministerul Educației Naționale, 2019). This is due to the large number of students dropping out of the four-year lyceum for various reasons. The problem of high drop-out rates in lyceums (which have a variety of societal explanations including poverty levels) is to be solved by only allowing access to those achieving good grades in lower secondary education. This sends the message that vocational education is intended for weaker students and renews existing negative stereotypes.

Establishing dual VET in Romania is a feasible objective, and businesses, as the initiators of dual VET programmes, have considerable leeway to shape what form this takes. However, VET suffers from a general lack of public trust, appeal and acceptance. While political decisions have mitigated this at times (e.g. 2012, 2017/2018), they have in some instances worsened it further (e.g. 2009, 2019).

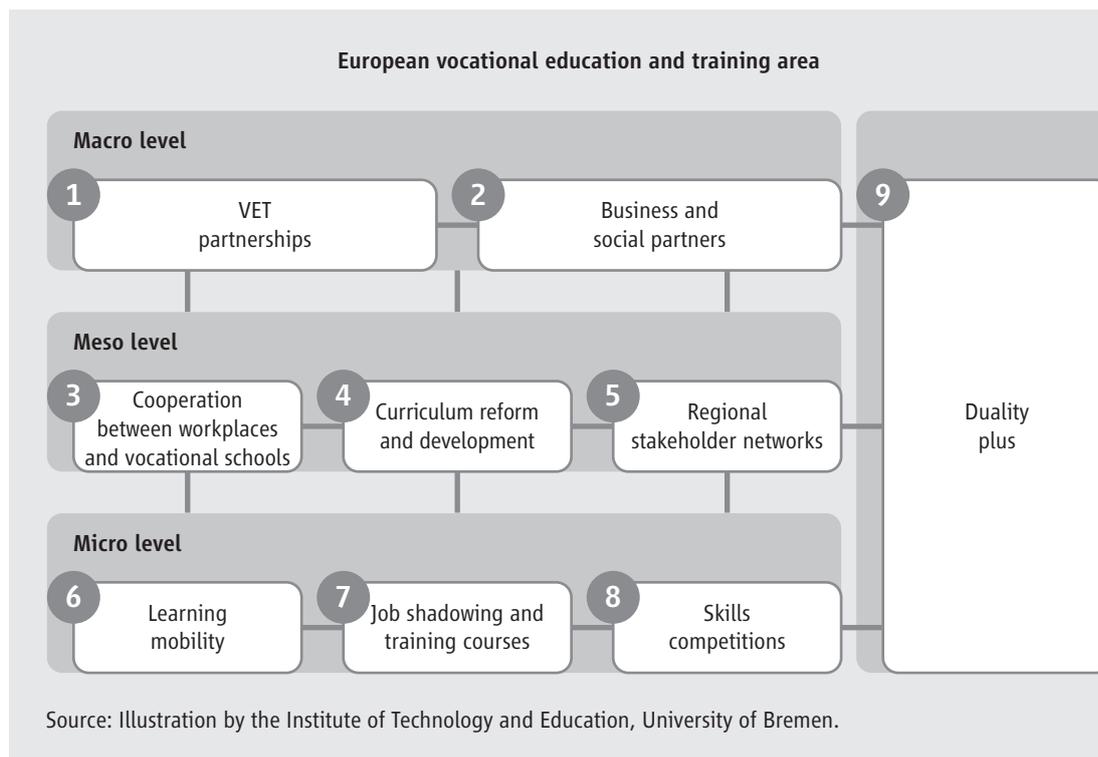
The SPGK has clearly not only managed to build and operate a strong dual VET system but has also developed understanding of the importance of dual VET among policymakers, parents, young people and companies, with the latter acting as the key promoters.

E. Action recommendations

Our recommendations in this section will touch upon three levels: The micro level, comprising actual teaching and learning processes and interactions between stakeholders (including trainees, teachers and instructors); the meso level, i.e. the level of institutions (companies, schools, school authorities) and institutional actions and collaboration; and the macro (policy) level, which provides the framework determining the responsibilities, opportunities for collaboration and room for manoeuvre of stakeholders and institutions in the VET system.

We provide a total of nine action recommendations: three at the micro level, three at the meso level, two at the macro level and one affecting all levels. All the recommendations are aimed at further improving the environment for vocational education and training in Europe. An overview is provided in the table below.

Figure 19: Action recommendations



The chapter consists of three parts: First, we provide some context, looking at efforts to establish and strengthen a European vocational education and training area. Part two then sets out our action recommendations.

I. European vocational education and training area

On 18 December 1979, the European Council, seeking to address the poor employment prospects for young people, issued a resolution on “linked work and training for young persons”. It recommended integrating school education with experience in the workplace and called for structures to enable collaboration between relevant parties and the creation of programmes that offered a sufficiently broad educational basis to meet the needs of technological development (European Council, 1980). The recommendation unfortunately had little impact. In the United Kingdom, the Thatcher government even developed a countermodel to the Council’s proposal: the Youth Training Scheme, a state-funded, one-year on-the-job training programme devised in 1983. It acted as a rival to the existing apprenticeship system, triggering the demise of vocational education and training in the UK (Gospel, 1995).

It was not until the Copenhagen Declaration of 2002, authored by the European ministers responsible for vocational education and training and the European Commission, that the situation changed. The overarching aim of future cooperation was now to create a “European vocational education and training area”. The focus until 2010 was initially on instruments for creating transparency and mobility, for the recognition of competences and qualifications and for quality assurance (European Ministers for Vocational Education and Training, & European Commission, 2002). In 2010, again in the context of high youth unemployment due to the economic and financial crisis, the development of apprenticeship-type training was once again declared a common strategic objective in the Bruges Communiqué. More specifically, for the period from 2011 to 2014, the Communiqué called for governments, social partners and VET institutions to make arrangements to enhance cooperation between VET institutions and enterprises, including through traineeships for teachers in enterprises (European Ministers for Vocational Education and Training et al., 2010). The Communiqué of 2010 mentions apprenticeships only in passing. In contrast, they were highly prominent in the Riga Declaration five years later in 2015, which aimed to “promote work-based learning in all its forms, with special attention to apprenticeships, by involving social partners, companies, chambers and VET providers, as well as by stimulating innovation and entrepreneurship” (European Ministers for Vocational Education and Training, 2015, p. 4). The objectives defined in 2010 and 2015 bore fruit in the form of a wide range of different apprenticeship programmes (Markowitsch & Wittig, 2020).

Governments brought in new legislation or amendments to existing laws in order to establish dual VET programmes in Hungary in 2011, Bulgaria and Slovakia in 2015, Poland and Romania in 2016 and Serbia in 2017. In the Czech Republic, VET features large proportions of work-based learning; however, this still takes place largely in school and only to a limited extent through work placements. The country has yet to introduce root-and-branch reforms in this area.

The current European strategic objectives, which run until 2030, were formulated in the European Council Recommendation on vocational education and training for sustainable competitiveness, social fairness and resilience of 24 November 2020 (European Council, 2020). For the period from 2021 to 2025, these objectives were set out in more detail on 30 November 2020 in the Osnabrück Declaration on vocational education and training as an enabler of recovery and just transitions to digital and green economies by the Ministers in charge of vocational education and training of the Member States, the EU Candidate Countries and the EEA countries, the European social partners and the European Commission (European Ministers et al., 2020).

Measures to develop a European vocational education and training area are being implemented voluntarily by government ministries and VET stakeholders in the various countries (Bohlinger & Tütlys, 2022), are having a genuine impact (as described in this study) and provide a useful reference point for ideas to improve VET systems in Europe. The nine recommendations set out below are designed to help build and strengthen a European vocational education and training area with a particular focus on Central and Eastern Europe. They align with the European Council Recommendation (European Council, 2020) and Osnabrück Declaration (European Ministers et al., 2020). The table below shows whom the recommendations are aimed at and the strategic objectives to which they relate.

Table 16: Recommendation, stakeholders and strategic objective

No.	Action recommendation	Aimed at	Link to strategy of the Osnabrück Declaration (2020)	
1	VET partnerships	Education ministries in CEE and Germany	Objective 1: Resilience and excellence through quality, inclusive, and flexible VET	“Promote exchange of best practices and peer-learning activities on innovative policy reforms and VET excellence, also addressing sustainability and digitalisation challenges and the linkage of IVET and CVET qualification offers as attractive career pathways” (p. 6)
2	Business and social partners	Business and social partners in CEE and Germany German Chambers of Commerce in CEE	Objective 2: Establishing a new lifelong learning culture – relevance of CVET and digitalisation Objective 3: Sustainability – a green link in VET	“Develop national skills strategies for quality and inclusive lifelong learning with all relevant national, regional, sectoral stakeholders and social partners” (p. 8) “Define labour-market-relevant skills for the green transition that are to be incorporated in curricula and VET provision, including basic skills across all sectors and occupations and sector-specific skills in cooperation with the social partners” (p. 9)

No.	Action recommendation	Aimed at	Link to strategy of the Osnabrück Declaration (2020)	
3	Cooperation between workplaces and vocational schools	German family businesses in CEE, vocational schools in CEE	Objective 1: Resilience and excellence through quality, inclusive, and flexible VET	"Reinforce work-based learning and apprenticeships by implementing the European Framework for Quality and Effective Apprenticeships" (p. 6)
4	Curriculum reform, development	Education ministries in CEE and Germany Business and social partners in CEE and Germany German Chambers of Commerce in CEE German family businesses in CEE and Germany Vocational schools in CEE	Objective 1: Resilience and excellence through quality, inclusive, and flexible VET	"Enable social partners, decision-makers, stakeholders and providers to adapt and update VET programmes, curricula and guidelines in a timely and effective manner" (p. 6)
5	Regional stakeholder networks	German family businesses in CEE German Chambers of Commerce in CEE Local stakeholders	Objective 1: Resilience and excellence through quality, inclusive, and flexible VET	"Develop and strengthen centres of vocational excellence as innovative incubators and skills ecosystems encompassing learning, training and research activities, VET, HE and research in selected sectors or socio-economic challenges, including support for entrepreneurship and digital and innovative VET resources for all" (p. 6)
6	Learning mobility	German family businesses in CEE and Germany Vocational schools in CEE and Germany	Objective 4: European vocational education and training area and international dimension of VET	"Reinforce mobility, including long-term mobility in VET, based on common quality criteria and on the promotion of recognition of VET learning outcomes" (p. 11)
7	Job shadowing and training courses	Education ministries in CEE and Germany German family businesses in CEE and Germany Vocational schools in CEE and Germany	Objective 3: Sustainability – a green link in VET	"Promote the exchange of practices of VET teachers and trainers, specifically with regard to trends and skill needs relevant to the green economy in order to peer learn/review and to share best practices" (p. 9)

No.	Action recommendation	Aimed at	Link to strategy of the Osnabrück Declaration (2020)	
8	Skills competitions	German family businesses in CEE and Germany Vocational schools in CEE and Germany	Objective 4: European vocational education and training area and international dimension of VET	<p>“Support the preparation and participation of national teams to the EUROSKILLS Competition to raise the attractiveness and image of VET, promote VET excellence in Europe and to achieve champion status in the global WorldSkills competition” (p. 11)</p> <p>“Cooperate with other EU countries in preparing national teams for international competitions such as WorldSkills and EuroSkills” (p. 11)</p>
9	Duality plus	Education ministries in CEE and Germany Business and social partners in CEE and Germany German Chambers of Commerce in CEE German family businesses in CEE and Germany Vocational schools in CEE and Germany	Objective 1: Resilience and excellence through quality, inclusive, and flexible VET	<p>“Improve permeability between vocational and academic pathways, including work-based learning and enhanced cooperation between VET, HE and research centres, thus establishing quality and effective VET and apprenticeship programmes at EQF level 5 and above” (p. 6)</p>

Source: ¹European Ministers for Vocational Education and Training of the Member States et al., 2020.

The above action recommendations are elaborated on in more detail below.

II. Action recommendations

1. VET partnerships

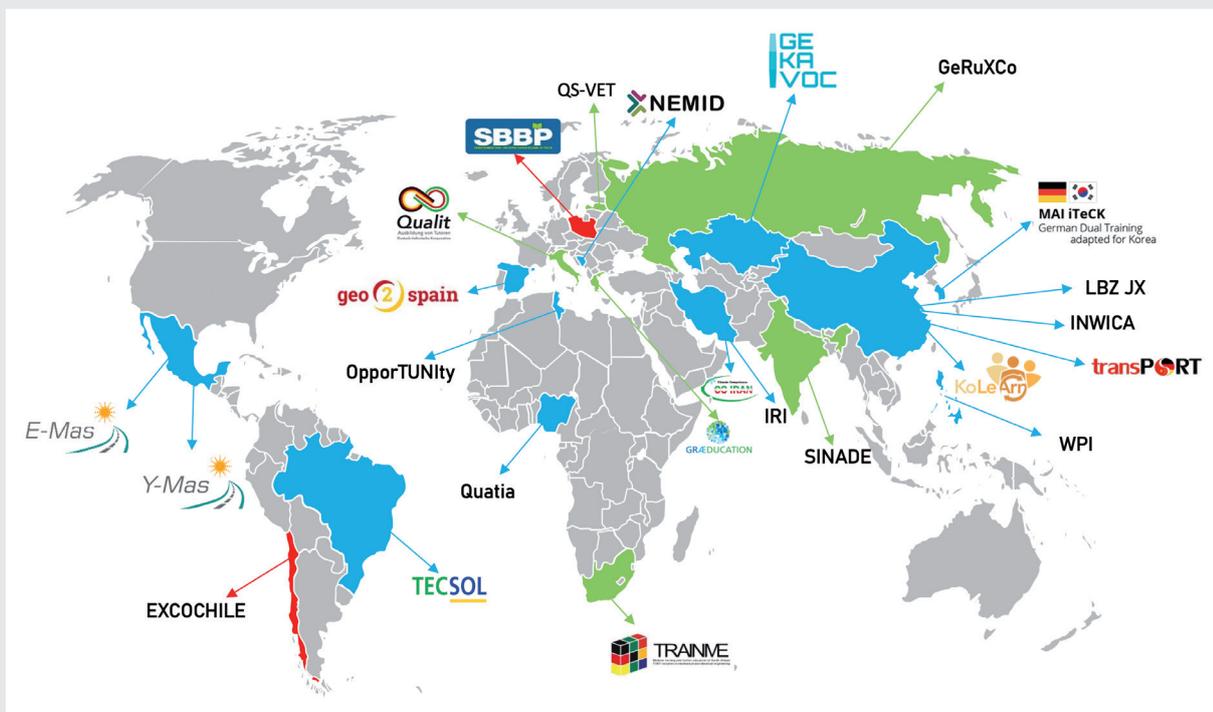
The German Federal Ministry of Education and Research (BMBF) funds vocational education projects around the world to develop the quality of VET and CVET on the ground. Instruments that have been used to achieve this include the “Berufsbildungsexport” or “BEX” (vocational education export) initiative from 2008 to 2016 and “Internationalisierung der Berufsbildung” or “IBB” (internationalisation of vocational education) from 2016 to 2022.

These two programmes were focused in particular on developing the quality of VET in other countries through the transfer of German VET services. According to the BMBF, the transfer of German VET and CVET enables “a leverage effect for German industry, as the export of goods, for instance in mechanical engineering or the automotive industry, often necessarily relies on the existence of well-educated skilled workers abroad.” (BMBF, 2008 [our translation]). Moreover, high-quality VET and CVET is “increasingly a key factor for the competitiveness of

German enterprises on international markets” (BMBF, 2011 [our translation]). More recently, the BMBF has stated that “support for German enterprises abroad with providing VET and CVET for skilled workers is a key objective of the Federal Government’s engagement in international VET cooperation.” (BMBF, 2019 [our translation]). The sentiment is welcome; however, this engagement has rarely reached countries in Central and Eastern Europe to date.

According to the project database of DLR Projektträger (the project management organisation for BMBF projects), 42 projects around the world were funded through the BEX funding line from 2008 to 2016, of which the majority (23) were in China (DLR Projektträger, 2022). Not a single project was funded in Central or Eastern Europe during the BEX initiative.

Figure 20: Projects supported by the IBB funding line from 2016 to 2022



- Transfer projects in countries without partnership agreement
- Transfer projects in countries with bilateral partnership agreement
- Exploratory projects in countries without partnership agreement

Created by Lena Krichewsky-Wegener & WB-IBB.

The subsequent IBB funding line (2016 to 2022) revealed a similar picture. Figure 20 shows the projects supported by the IBB funding initiative, which is currently coming to an end. The overview shows that the BMBF is making a visible and welcome commitment to VET and CVET around the world. However, this barely touches Central and Eastern Europe, an important

region for German businesses: just two of the total 24 IBB projects were located in CEE, and only one of them (Serbia) was an innovation and development project. The other project (Poland) was to explore implementation options for central elements of dual VET (Schröder & Schulte, 2022).

This means that, of a total 66 projects (BEX and IBB) from 2008 to 2022, just two were to improve the quality of VET and CVET in Central and Eastern Europe. This compared with 27 projects in China (BEX and IBB) over the same period. A similar picture emerges in relation to existing bilateral cooperation on VET: the BMBF currently works bilaterally with 16 countries: China, Costa Rica, Ghana, Greece, India, Iran, Israel, Italy, Latvia, Mexico, Portugal, Russia (suspended), Slovakia, South Africa, Thailand and the USA.

Given the major economic importance of countries in Central and Eastern Europe to Germany and German businesses (see Tables 1 and 2), it is surprising that the BMBF does not engage in bilateral cooperation with any countries in CEE apart from Slovakia. Moreover, even the partnership with Slovakia is inactive at present: our analysis could not identify any current project funded or initiated by the BMBF that is comparable to the engagement in other countries (e.g. Greece).

On 12 September 2022, the BMBF published CooperationVET, a policy to support exploratory and collaborative projects “that are aligned with the interests and reform efforts of the BMBF partner countries and, where possible, take account of the needs of German enterprises in those countries with regard to recruiting and retaining skilled workers” (BMBF, 2022c [our translation]). The programme is suited to initiating bilateral cooperation and development projects along the lines of the requirements set out in this study. However, it is limited by its focus on BMBF partner countries. As noted above, the BMBF cooperates bilaterally with countries including Costa Rica, Portugal and Greece, but not with Poland, the Czech Republic, Hungary or other Central and Eastern European countries.

The policy does, however, contain a provision that permits countries without a BMBF partnership to be included “if required” in the interests of a “strategic objective” (BMBF, 2022c). This is not elaborated further, but it can be assumed that “the needs of German enterprises in those countries with regard to recruiting and retaining skilled workers” (BMBF, 2022c [our translation]) would constitute such a strategic objective.

This provision could therefore be used as a first step in initiating VET projects in Central and Eastern Europe. Irrespective of this, the BMBF should also establish VET partnerships with Central and Eastern European countries.

Of 66 BMBF-funded projects in 2008-2022 only 2 were in CEE.

Only CEE vocational training cooperation with Slovakia is inactive at present.

Action recommendation 1	VET partnerships
Aimed at	■ Education ministries in CEE and Germany
Level	Macro level

The German Federal Ministry of Education and Research funds VET innovation and development projects around the world. However, projects in Central and Eastern Europe are so far the exception rather than the rule. The BMBF should therefore reactivate existing multi- or bilateral partnerships (Slovakia) and create new ones (Poland, Czech Republic, Romania, Bulgaria, Serbia) so that it can initiate joint research and development projects – e.g. to train teachers for the shortage occupations in CEE identified in this study (mechatronics technician, electronics technicians specialising in automation technology and industrial engineering, information technology specialists, skilled metalworkers and industrial mechanics) – with stakeholders in CEE and Germany (e.g. Federal Institute for Vocational Education and Training). A funding line focused on CEE to implement Germany’s existing objective is also required: “Support for German enterprises abroad with providing VET and CVET for skilled workers is a key objective of the Federal Government’s engagement in international VET cooperation.” (BMBF, 2019 [our translation]).

2. Business and social partners

The introduction of the dual VET system (e.g. in Bulgaria, Slovakia and Poland in 2015) has strengthened the principle of business and social partnership. In Poland, for example, Sector Skills Councils were set up in 2016 to facilitate dialogue between social partners, government ministries and other stakeholders, including professional associations, education and training providers, experts and research institutions. Sector Skills Councils actively participate in skills development initiatives in the context of IVET and CVET and support adult learning and the development of new qualifications. In Slovakia, social partners are represented on regional VET councils, for example, and advise regional governments on fundamental decisions such as the number of school places provided and programmes offered. Business and social partner organisations are taking on new tasks and responsibilities in this role (e.g. labour market and skills forecasting), which can and should be supported through cross-border collaboration on VET with their counterparts in Germany. In Hungary, the Chambers of Industry and Commerce perform similar roles (including supervision, accreditation, registration, examinations) to the Chambers in Germany’s dual system.

Existing tools to support cross-border collaboration by German business and social partner organisations and German Chambers of Commerce Abroad have not been fully exploited. With the “Funding for implementing projects involving business and social partner organisations in international vocational education and training cooperation” (WiSoVET), which was announced on 7 August 2019, the BMBF provides support to Chamber and employee organisations to

help them design and operationally implement international VET cooperation: “Based on the Federal Government’s strategy for international VET collaboration, the relevant federal ministries, social partners and Chamber associations along with federal states and education and training providers will work together to pool German interests and ensure a coherent presence for German stakeholders abroad” (Bundesanzeiger, 2019, p. 1 [our translation]). In the USA, for example, a project known as WiSoUSA is being realised to implement new VET programmes. It aims to support apprenticeships and the expansion of existing cooperation between three German-American Chambers of Commerce (New York, Chicago and Atlanta) and the South Thuringia Chamber of Skilled Crafts.

The WiSoVET funding mechanism operates as follows: the BMBF coordinates with the partner countries on the local requirements and measures and issues calls for participation. Institutions of the Chambers of Commerce and social partners (e.g. strategic projects – see next section) and commercial education and training providers then apply. Funding is limited to countries with which the BMBF has existing bilateral partnerships: currently five European countries (Greece, Italy, Latvia, Portugal and Slovakia) and ten countries outside Europe (China, Costa Rica, Ghana, Iran, India, Mexico, Russia, South Africa, Thailand, USA; Deutscher Bundestag, 2021). As set out in the first action recommendation, there is a need for the BMBF to establish similar bilateral partnerships with Poland, the Czech Republic, Hungary, Bulgaria, Romania and Serbia. This collaboration offers potential to initiate cross-border cooperation between business and social partners.

Three strategic projects have been funded since 2015 to tackle the challenge of incorporating businesses and social partners into the internationalisation of VET: VETnet/DIHK-KIBB (German Chambers worldwide network (AHK) for cooperative, work-based Vocational Education & Training/DIHK Competence Centre for International Vocational Education and Training), Unions4VET (strengthening trade union cooperation in international VET) and SCIVET (Skilled Crafts from Germany – International Vocational Education and Training): coordination unit for international VET cooperation run by the German Confederation of Skilled Crafts and Small Businesses (ZDH).

These projects build capacity among the business community (VETnet/KIBB for industry and trade and SCIVET for skilled crafts) and social partners (Unions4VET; a strategic project by the German Trade Union Confederation (no equivalent project by employers at present)) so that they can actively contribute their experience and interests to VET cooperation. The European Trade Union Confederation, for example, is calling for the implementation of a comprehensive European quality framework for VET, built on common standards (EGB, 2016). Meanwhile, the German Chambers of Commerce Abroad are working on issues such as career guidance, the image of VET and examination formats and standards.

The Osnabrück Declaration of 2020 (by the Ministers in charge of vocational education and training of the Member States, the EU Candidate Countries and the EEA countries, the European social partners and the European Commission) addresses social partnership in the context of sustainability and the green economy, calling for actions at national level to “define labour-market-relevant skills for the green transition that are to be incorporated in curricula and VET provision, including basic skills across all sectors and occupations and sector-specific skills in cooperation with the social partners” (European Ministers for Vocational Education and Training et al., 2020, p. 9). Cooperation in this area promises benefits for all involved.

Action recommendation 2	Business and social partners
Aimed at	<ul style="list-style-type: none"> ■ Business and social partners in CEE and Germany ■ German Chambers of Commerce in CEE
Level	Macro level

In the school-based apprenticeship-type training in Central and Eastern Europe, business and social partners have played a central role since the introduction of dual VET (e.g. advising on the scope and nature of the schools’ offerings). The international potential of German business and social partners, the German Chambers of Commerce Abroad and the existing funding instruments of the BMBF (e.g. WiSoVET: financial support for business and social partners) should be tapped in order to build cross-border, needs-based collaboration with business and social partners in Central and Eastern Europe.

3. Cooperation between workplaces and vocational schools

The term “dual system” was coined in 1964 by the German Committee for the Education and Training System (Deutscher Ausschuss für das Erziehungs- und Bildungswesen) to emphasise the side-by-side nature of workplace- and school-based training, the need for cooperation between workplaces and vocational schools and their shared responsibility (Deutscher Ausschuss für das Bildungswesen, 1966). The term’s intention was to promote the equal importance of the two places of learning – workplace and school – working together as partners under the Vocational Training Act (Berufsbildungsgesetz). In practice, however, it remains the case that the school-based training (i.e. the publicly funded part-time vocational school and potentially other VET institutions such as inter-company training centres) is effectively the junior partner supporting the workplace-based training provided by the company. This dual system runs in parallel to a separate system: that of full-time school-based vocational education organised by the education ministries of the federal states.

The situation in Central and Eastern Europe is different. Here, efforts to introduce the dual system have built on school-based training, not workplace-based training, as their starting point, and trainees are generally classified as pupils/students. An exception to this is Hungary, where, since the Vocational Education Act of 2019, the “vocational employment contract” (sometimes also called a “student employment contract”) has replaced the previous “apprenticeship contract”. Even here, however, the system is built principally around the school-based element: students without such an employment contract, for example, can instead complete the practical part of the programme in school. The importance of practical learning in school (“work-based learning” as opposed to “workplace-based learning”) remains centrally important in CEE despite the introduction of the dual system. In this context, cooperation between places of learning also has a different flavour there. While schools and companies work together in Germany’s dual system as required by the Vocational Training Act, this relies less on the personal initiative and engagement of the staff involved than on the structural connections between businesses and schools (e.g. the alignment of training regulations and school curricula), on routines and on long-standing experience. The system works without intensive collaboration on an individual level between school teachers and company instructors. This means that the full potential of collaboration between businesses and schools is not exploited. Were it not for Germany’s formal framework, long experience and tradition, more individual cooperation would be required to fill the gap (Gessler, 2017c).

This is precisely the situation in Central and Eastern Europe, where the formal framework and routines of dual VET are only now developing. As well as the sharing of information (see below), action to improve cooperation between the places of learning is therefore important here. Potential measures include the following:

Information: Information sharing in both directions about the commitment, behaviour, discipline and performance of trainees; teaching staff visit businesses providing the training; vocational schools and businesses have specific staff responsible for cooperation between places of learning; invitations from the vocational school to consultation days/events for instructors; information in both directions about the content and timing of the company training plan and school curriculum; teachers discuss trainee report books with trainees; joint events at the vocational school and company (e.g. for potential new trainees); clarification of organisational issues (e.g. exam dates); clarification of fundamental issues in a cooperation agreement.

Cooperation: Harmonisation of company training plan and school curriculum; assignments involving both places of learning; joint development of learning materials; involvement of company’s operational practitioners in teaching at the vocational schools, work experience for (aspiring) teachers in the training company; projects involving both places of learning; instructors and teachers take part in joint CPD events; specially appointed teams of instructors

Between countries, organisations and individuals ideas and concepts are transferred and adapted.

and teachers initiate and coordinate cooperation activities for a class at vocational school; joint working groups of company instructors and teachers.

In education, it is common for ideas and models to be transferred between countries, organisations and people and adapted accordingly. In Hungary, for example, the orientation towards the German model is clearly recognisable. As indicated above, however, more intensive cooperation between schools and companies will be required in Central and Eastern Europe than is the case in Germany. For teachers in German vocational schools, this opens up exciting opportunities for job shadowing and knowledge transfer.

Action recommendation 3	Cooperation between workplaces and vocational schools
Aimed at	<ul style="list-style-type: none"> ■ German family businesses in CEE ■ Vocational schools in CEE
Level	Meso level
<p>German family businesses in Central and Eastern Europe should build and expand cooperation with their vocational schools and other local VET institutions (e.g. sharing information on the content and timing of the company training plan and school curriculum, setting assignments involving both places of learning, offering work experience at the training company for school teachers).</p>	

4. Curriculum reform and development

The curriculum is here understood as an instrument of the institutional mesolevel situated between lesson planning at the micro level and education policy objectives at the macro level. It thus provides a framework that shapes real-life teaching on the ground. We have three recommendations relating to curriculum reform and development: (1) The introduction of action-oriented principles at curricular level. (2) The inclusion in curricula of content reflecting the increasingly digitalised and interconnected world (Industry 4.0). (3) The inclusion of content enabling the development of international employability skills.

Action-oriented curricula

Dual VET in Germany means connecting two places of learning – schools and companies – through cooperation. In the late 1990s, amid fierce criticism from business that the knowledge taught by schools was too abstract and failing to properly prepare students for the real-life working environment, Germany introduced a new curriculum concept known as “areas of learning”. This aimed to bridge and narrow the gap between the places of learning by bringing schools closer to industry reality. Similar criticisms are levelled today at schools in all the

countries studied in Central and Eastern Europe. The core features of the areas of learning concept developed in response to this criticism are as follows (Bader & Schäfer, 1998; Gessler, 2017a):

- Orientation on “vocational spheres of activity”: The essential problem is that school curricula in CEE are largely organised into subjects based on academic reference disciplines (e.g. mathematics, physics). The issues faced by businesses, by contrast, do not follow this academic logic. This is illustrated by the occupation of mechatronics technician: in real-life industry, problems of metals technology, electronics and IT are in constant interplay, and the training of mechatronics technicians should therefore focus on imparting integrated skills. The same principle applies to all occupations. Orientation on vocational spheres of activity means starting from practical problems faced in the workplace. The aim is to enable learners to master vocational spheres of activity in the workplace and solve complex combinations of tasks associated with these. Multidimensional and interdisciplinary (social and personal) aspects and problems always interact in vocational spheres of activity.
- Action-oriented approach through areas of learning and learning situations: Action-oriented curricula are organised not by academic subjects but by areas of learning. Areas of learning are the didactic equivalents of the vocational spheres of activity. The areas of learning for a milling machine operator, for example, include setting up control systems, programming and production using numerically controlled machine tools, manufacturing components using precision machining processes and optimising the manufacturing process. The areas of learning at school are based on the vocational spheres of activity and, like the latter, are structured by work process. They are translated into teaching practice by means of “learning situations”. The use of learning situations enables sophisticated teaching and learning arrangements to be designed for each area of learning. These are then put into practice based on the model of complete action (informing, planning, decision making, executing, checking, evaluating). While theoretical/technical knowledge remains as important as ever, this is communicated through the area of learning in the context of a real practical problem in the workplace. During school lessons, students can plan (anticipate), execute and reflect on (mentally re-enact) actions.

Curricula that follow a practical, action-oriented structure offer excellent opportunities for cooperation with businesses: for example, students can be tasked with finding out how a certain problem is solved or a particular task implemented in a partner company.

Digital transformation and internationalisation

At the beginning of the debate around the digital transformation of the economy, the emphasis was on its anticipated disruptive nature, which heralded a new industrial revolution and

was regarded either as an opportunity (Kagermann et al., 2011) or a risk (Frey & Osborne, 2013). Today's model-based estimates of its impact come to a more nuanced assessment: it is now expected that the disappearance of old jobs and appearance of new ones will cancel each other out in quantitative terms (Wolter et al., 2019). In qualitative terms, however, the need for specialist and technical skills and for interpersonal skills will increase (Spöttl & Windelband, 2021).

In Germany, efforts are beginning to build the necessary technical expertise in this area, particularly in industrial metalworking and electrical occupations and in mechatronics. From 1 August 2018, in addition to adjustments to existing content (e.g. operational and technical communication), a compulsory training component "digitalisation of work, data protection and information security" and seven codified additional qualifications (system integration, process integration, computer-based plant modification, additive manufacturing processes, digital networking, programming and IT security) were introduced for these occupations (BIBB 2018a, 2018b). The new training component has created a set of requirements and tasks that apply across all the occupations. The codified additional qualifications are optional, differentiated by occupation, taught in a structured way by companies during the programme and examined in the Chamber examination (see table below).

Table 17: Additional qualifications in metalworking and electrical occupations

Additional qualification	Electrical occupations	Mechatronics technician	Metalworking occupations
Programming	×	×	
IT security	×	×	
Digital networking	×	×	
Additive manufacturing processes		×	×
Computer-based plant modification			×
Process integration			×
System integration			×

A recent evaluative study of these additional qualifications has found that, although most of their content meets industry needs, they do not yet have widespread appeal. It also concludes that, for metalworking occupations, electrical- and IT-related content should increasingly be integrated into training as standard rather than as an optional extra (Kaufmann et al., 2021).

A set of standard training components that are fundamental to all vocational occupations (not just similar ones such as industrial metalworking and electrical occupations) also form part of every vocational programme in Germany. These standard components, unchanged since the late 1990s, were revised in 2021 and four new components added: (1) Organisation of the company providing training, vocational education and training, employment and collective wage agreement law, (2) Health and safety at work, (3) Environmental protection and sustainability and (4) Digitalised world of work (BIBB, 2021). Standard training components are designed to promote trainees' personal and skills development in a changing and increasingly digital environment. The "digitalised world of work" training component, for example, covers digital media, data security and data protection (BIBB, 2021, p. 6).

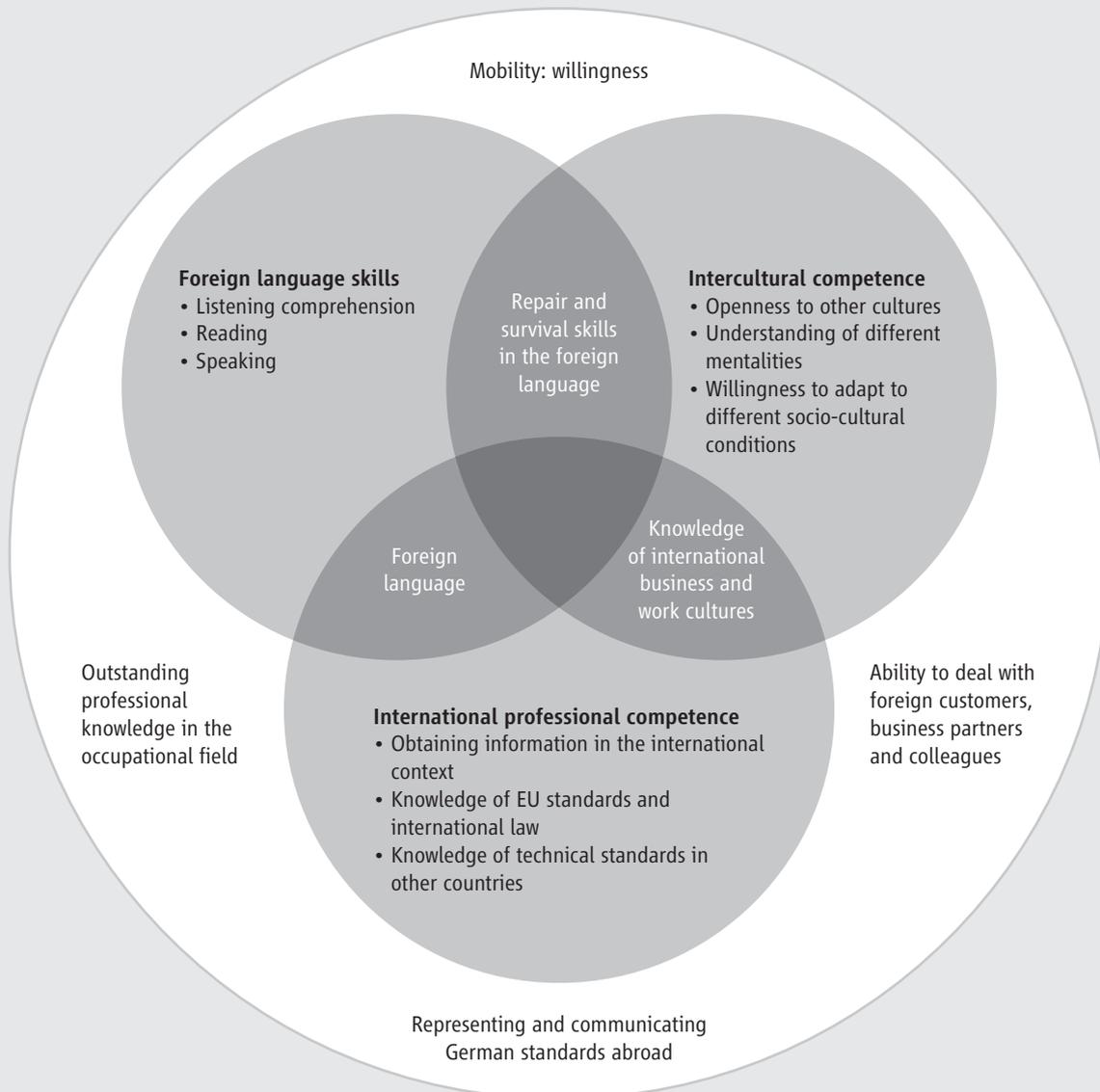
Alongside digitalisation, internationalisation forms the second major area in which vocational education is developing. In Germany, regulatory work and regulatory instruments have not yet dealt with these topics systematically but have at least sporadically incorporated them into reorganised or modernised general training plans. Like digitalisation, however, internationalisation is not an occupation-specific phenomenon but a social and economic constant. It is welcome, then, that the Federal Institute for Vocational Education and Training (BIBB) has developed guidance with specific options for how training requirements could be developed (BIBB, 2022). Based on the competence model by Busse and Frommberger (2016), this identifies three dimensions of international employability skills: (1) international technical and professional skills, (2) intercultural skills and (3) foreign language skills. The BIBB guidance provides options for all three dimensions. The suggestions for international technical and professional skills are so far confined, however, to commercial and IT occupations (e.g. "conduct, manage and evaluate human resources and training management internationally", "plan and implement an international IT assignment"). There is no guidance as yet for metalworking and electrical occupations.

The model by Busse and Frommberger (2016, p. 30) is illustrated in Figure 21.

While digitalisation and international skills are still under development for industrial and technical jobs, there are already various differentiated frameworks for imparting the social and personal skills required in the 21st century.

Digitalisation and internationalisation as the greatest areas of development in vocational education and training

Figure 21: International employability skills



Source: Jürgens & Hollmann, 2020, p. 52 based on Busse & Frommberger, 2016, p. 30.

In a systematic literature review, Voogt and Roblin (2012) compare initiatives including:

- Key Competences for Lifelong Learning (European Commission)
- 21st Century Skills and Competences for new Millennium Learners (OECD)
- Partnership for 21st Century Skills (US government) and Assessment and Teaching of 21st Century Skills (University of Melbourne sponsored by Cisco, Intel and Microsoft).

The authors identify the similarities and differences between the approaches. Building on the findings of Voogt and Roblin (2012), another systematic literature review by Laar et al. (2017)

develops a framework with core 21st century digital skills. The framework encompasses the following seven competences: (1) Technical skills, (2) Information management, (3) Communication, (4) Collaboration, (5) Creativity, (6) Critical thinking and (7) Problem solving. There is thus substantial overlap with the EU and OECD frameworks. In relation to internationalisation, the 21st century skills of intercultural competence and foreign language competence could be added to this list.

While technical and professional competence can be addressed predominantly through the course material taught, the development of personal and social skills requires action-oriented learning formats such as cooperative or problem-based learning. The need to design action-oriented curricula is therefore not only essential in order to bridge the gap between school and the workplace but also to enable trainees to acquire vital 21st century skills.

The content, learning objectives and skills addressed here (including digitalisation of work, data protection and information security, and international employability) should be introduced in schools in Central and Eastern Europe and implemented with the support of the companies providing VET. A purely workplace-based approach would reach only some of the students. Additional subjects (e.g. programming, additive manufacturing processes) could be offered on a voluntary basis along the lines of the additional vocational qualifications described above.

Action recommendation 4	Curriculum reform and development
Aimed at	<ul style="list-style-type: none"> ■ Education ministries in CEE and Germany ■ Business and social partners in CEE and Germany ■ German Chambers of Commerce in CEE ■ German family businesses in CEE and Germany ■ Vocational schools in CEE
Level	Meso level

Teaching in vocational schools should be oriented on vocational spheres of activity and areas of learning rather than academic subjects. School curricula should include vocational spheres of activity and areas of learning relating to working in an international and digital world (e.g. “international project work”, “digitalisation of work”, “data protection and information security”). Action-oriented curricula can also promote action-oriented teaching that develops 21st century skills (including communication, critical thinking and collaboration). Curriculum reform would require the involvement of government ministries in CEE and the national sector skills councils. Curriculum development could be initiated in a bottom-up process via collaboration between businesses and vocational schools.

5. Regional stakeholder networks

In the Gühring case study, Polish respondents reported how impressed they had been with the “skills ecosystem” in Albstadt during their visit to Germany. They noted, however, that Gühring’s Polish branch was too small to play a similar leading role in its region. Yet as the Romania case study shows, skills ecosystems are possible where branches of German businesses, large and small, collaborate locally. While an individual company has little prospect of influencing the regional VET environment, those that act together can change the educational offering on the ground.

Regional stakeholder networks are thus the logical next step, effectively scaling up cooperation between schools and businesses to the regional level. As in Romania, they can be initiated by local business associations or networks (which may be founded especially for this purpose where they do not exist already).

A stakeholder network enables businesses to address common problems together, including the low appeal of VET, which is largely rooted in social stereotypes, prejudice, ignorance and lack of visibility. Joint campaigns (such as learning mobility, competitions, poster campaigns, careers evenings and taster work placements) aimed both at parents and young people would be a good starting point for the stakeholder network. These would be designed to create more visibility of the VET options available. Another key task is to improve the learning environment in schools in terms of equipment and the teaching programme. While the latter can be addressed through joint projects with schools’ partner companies, stakeholder networks would facilitate essential investment and donations to better equip teaching facilities (e.g. electrical engineering labs, manual and machine-based material processing, CNC technology, pneumatics, hydraulics and welding). A third central task is to contact the local and regional authorities (school authorities, mayor’s office, employment office) and become involved in (the usually already existing) structures of participation. This, too, is more easily achieved in partnership with other schools and businesses. The case studies and country analyses clearly show that the current VET system in Central and Eastern Europe is still in its early days and relatively malleable compared with the robust system in Germany.

The Centres of Vocational Excellence (CoVEs) funded by the European Commission starting from 2019 are a second, “extended” version of a regional stakeholder network. These can have a regional, national or international focus. They include a larger range of stakeholders and essentially encompass the “knowledge triangle” of business, education and research along with agencies (e.g. employment agencies) and initiatives (e.g. start-up incubators). This breadth of stakeholders also means that a wider range of qualifications is addressed. While most vocational education and training takes place at levels 3 and 4 of the European Qualification Framework, the CoVEs cover levels 3 to 8. The scope, too, is broader, since the skills

ecosystem to be developed here needs integrated strategies for regional, economic and social development, innovation and intelligent specialisation. The idea to fund the development of these centres was based on similar existing models analysed in the Mapping of Centres of Vocational Excellence report (European Commission et al., 2019). In the period from 2021 to 2027, 100 such Europe-wide platforms are to be funded from a total budget of 400 million euros.

Action recommendation 5	Regional stakeholder networks
Aimed at	<ul style="list-style-type: none"> ■ German family businesses in CEE ■ German Chambers of Commerce in CEE ■ Local stakeholders in CEE
Level	Meso level

Stakeholder networks enable family businesses providing training to work together in addressing areas for improvement in VET: e.g. promoting VET to parents and recruiting young people, improving equipment in vocational schools, joint training, strategic planning of cooperation between schools and workplaces, and involvement in education policy (e.g. via sector skills councils). In a further step, stakeholder networks could be expanded into regional innovation and competence ecosystems through the inclusion of educational institutions, research centres, development agencies and employment agencies.

6. Learning mobility

Germany is one of the world’s major exporting and importing nations and full of internationally oriented companies, yet its VET programmes are largely a domestic affair and rarely involve training or studying abroad. Data from the Federal Institute for Vocational Education and Training shows that in 2019 (i.e. prior to the coronavirus pandemic), 26,858 applications to train/study abroad under the Erasmus+ programme were approved, of which 66 percent or 17,726 related to individuals in the dual system (BIBB, 2020). The Institute’s integrated reporting shows that there were 1,385,013 people in the dual system in 2019, meaning that the mobility rate for that year was 1.28 percent. A total of 441,405 people completed their vocational education and training in the dual system in 2019. The mobility rate calculated based on this figure comes to 4 percent – i.e. 4 percent of the cohort graduating in 2019 had an opportunity to train/study abroad at some point during their VET programmes (DeStatis, 2020). The European Commission’s Erasmus+ statistics indicate that 1,084 individuals trained/ studied abroad for a duration of between three and 12 months (EC/DG, 2020). A much larger proportion (25,744 individuals) did so for between two weeks and three months. The figures for longer stays are not broken down into dual- and school-based VET. For the purpose of simplicity, and given the low number of individuals involved, we have assumed that all those

abroad for longer stays of three to 12 months were in the dual system. The rate of mobility during the year (2019) for this cohort was 0.08 percent, and the rate of mobility during the programme (proportion training/studying abroad at some point during their course) was 0.25 percent. A mobility study conducted on behalf of the National Agency “Education for Europe” at the Federal Institute for Vocational Education and Training found that Erasmus+ accounted for 48.6 percent of those taking advantage of learning mobility (Kröll, 2018, p. 28). The above figures can therefore be extrapolated to determine the true level of mobility. The figures for 2019 are shown in the table below.

Table 18: Learning mobility of dual vocational trainees

	Learning mobility in 2019	
	Erasmus+	Total (extrapolated)
Mobility rate (annual) ¹	1.28 %	2.63 %
of which longer duration: three to 12 months	0.08 %	0.16 %
Mobility rate (during course) ²	4.02 %	8.26 %
of which longer duration: three to 12 months	0.25 %	0.51 %

¹Proportion of vocational trainees training/studying abroad in 2019. ²Proportion of vocational trainees training/studying abroad at some point during their course.

Sources: Datenreport: BIBB, 2020; Integrierte Ausbildungsberichterstattung: DeStatis, 2020; Erasmus+-statistics: EC/DG, 2020; mobility study: Kröll, 2018.

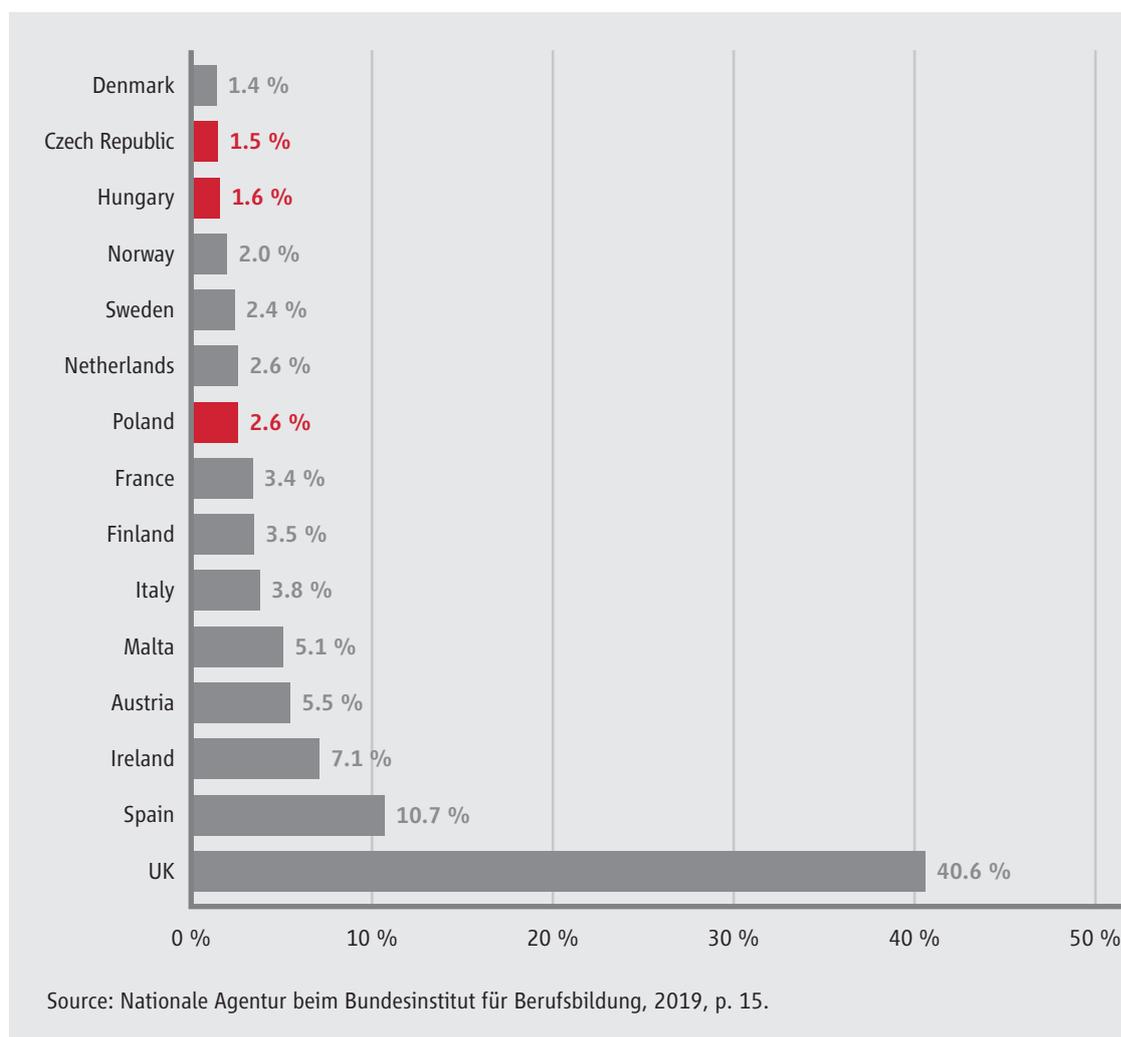
These already low figures look even lower when the distribution by country is taken into account (see figure below): Poland, Hungary and the Czech Republic together account for just 5.7 percent of total outgoing mobility by German vocational trainees in 2016 (Nationale Agentur beim Bundesinstitut für Berufsbildung, 2019). The distribution by country will look different from 2022, as the United Kingdom is no longer participating in Erasmus+ from 2021 onwards.

The mobility figures (Table 18, Figure 22) clearly show considerable potential for greater internationalisation of dual VET in Germany. Given that trainees in the dual system spend around 70 percent of their training time in the workplace, the responsibility for making learning mobility happen lies principally with these businesses, though the vocational schools often act as (co-)initiators of international mobility. Support comes from, among other places, the advice centres of the Chambers of Industry and Commerce, the German government programme Training Without Borders, “pool projects” to facilitate applications by individuals, e.g. those run by SEQUA, BWHW and the National Agency Education for Europe at the Federal

Institute for Vocational Education and Training, which also runs the “Ausbildung weltweit” (VET worldwide) programme.

We have calculated the mobility rates for vocational trainees in Central and Eastern Europe based on data from EuroStat and Erasmus+. The figures are shown in the table below. Unlike with the German data, it was not possible to extrapolate the figures, since it is unclear whether and to what extent there is hidden mobility.

Figure 22: The 15 most important destination countries for German vocational trainees



As in Germany, learning mobility in Central and Eastern Europe is low, though Bulgaria is a positive exception with a figure of over 17 percent. Learning mobility for a duration of three to 12 months is virtually non-existent.

Family businesses should introduce or expand learning mobility for their trainees in both directions. This would have direct benefits with regard to technical, language and sociocultural skills in their own workforces. There would also be indirect advantages: European mobility would improve the prestige of VET in Central and Eastern Europe (and in Germany) and make it more attractive. Finally, it would bring added prestige for the companies themselves, which could facilitate recruitment of staff on local labour markets (Stiftung Familienunternehmen, 2020).

Table 19: Learning mobility among vocational trainees from Central and Eastern Europe

Country	Graduates ¹ 2019 ²	Erasmus+ ³		Graduates ¹ 2020 ²	Erasmus+ ⁴	
		< 3 months	3 to 12 months		< 3 months	3 to 12 months
Poland	207,403	13,692 6.60 %	6 0.00 %	207,423	11,777 5.68 %	15 0.00 %
Czech Republic	63,609	4,171 6.56 %	229 0.36 %	- ⁵	3,790 - ⁵	281 - ⁵
Hungary	48,217	3,671 7.61 %	207 0.43 %	48,953	3,959 8.09 %	154 0.31 %
Romania	123,969	5,494 4.43 %	5 0.00 %	131,513	5,472 4.16 %	19 0.01 %
Slovakia	35,190	3,653 10.38 %	12 0.03 %	35,368	2,193 6.20 %	8 0.02 %
Bulgaria	16,371	2,814 17.19 %	- ⁵ - ⁵	39,311 ⁶	2,642 6.72 %	20 0.05 %
Serbia	46,542	383 0.82 %	- ⁵ - ⁵	46,796	493 1.05 %	- ⁵ - ⁵

¹Graduates = graduates from vocational programmes, ²EuroStat, 2022m, ISCED 35+45, data for Germany: integrierte Ausbildungsberichterstattung, DeStatis, 2020; ³EC/DC, 2020; ⁴EC/CD, 2021; ⁵Figures unavailable; ⁶Break in time series

Action recommendation 6	Learning mobility
Aimed at	<ul style="list-style-type: none"> ■ German family businesses in CEE and Germany ■ Vocational schools in CEE and Germany
Level	Micro level

In CEE, just 5 to 8 percent of apprentices take advantage of opportunities for learning mobility. In Germany, the figure is also only around 8 percent, and countries in CEE are not a common destination. Given how economically intertwined CEE and Germany have become, it is surprising that there is no appreciable mobility of apprentices between them.

German family businesses can and should use their presence in CEE and Germany and make learning mobility a core part of their VET in these countries. This could involve various forms of international mobility: company (CEE) to head office (Germany) and/or vocational school (Germany) and vocational school (CEE) to company (German head office) and/or vocational school (Germany). In addition, family businesses could facilitate contact between vocational schools in CEE and Germany. Mobility would also make apprenticeships more international and attractive. This would benefit vocational education and training not only in CEE but also in Germany, where the dual education system still lags behind in terms of internationalisation.

7. Job shadowing and training

The training and professional development of teachers and instructors is at the heart of every educational reform today: “Over the last 15 years, a consensus has developed around the fact that the quality and character of teaching is a critical driving force for changes and improvements in skills provision. Professional development is often regarded by policy-makers as the preferred tool to bring about this and other desired changes in education” (Stanley, 2022). This is not overstating the matter. The Council of the European Commission, for example, describes teachers as the “cornerstones of the European Education Area” (Council of the European Union, 2020, p. 11).

The next recommendation is not aimed at reforming the system as a whole. It is, however, a reflection of the fact that teachers’ and instructors’ professional development cannot be ignored in any conversation about VET. Unlike much of the literature on the topic (e.g. Bünning et al., 2022), we focus here not on formal, system-related aspects of this professional development, but on informal dialogue and knowledge sharing between experts (teachers/instructors). We propose expanding teacher training and professional development to include job shadowing. But first, what is the real issue?

A fundamental problem with the teaching profession in Central and Eastern Europe is its lack of appeal, rooted partly in its lack of social prestige in the region but also in low salaries: the proportion of teachers who believe their profession is valued by society is just 5 percent in Slovakia, 12 percent in Hungary, 16 percent in the Czech Republic, 19 percent in Bulgaria and 41 percent in Romania. The proportion of teachers satisfied with their salary stands at 18 percent in Slovakia, 23 percent in Romania, 28 percent in the Czech Republic and 28 percent in Hungary (OECD, 2020e; no data for Germany, Poland and Serbia as these countries did not participate in the OECD study). In Hungary, for example, teachers take home salaries 30 percent lower than those of people with equivalent qualifications working outside the teaching profession. This is leading large numbers of people to leave teaching and take up jobs in industry (Ministry of Innovation and Technology, 2019). The situation is improving in some but not all countries: Hungary, for instance, raised teachers' salaries by 30 to 35 percent in 2020 (Hungarian Insider, 2020), and Poland increased salaries by 41 percent between 2005 and 2020 for teachers with at least 15 years of experience (OECD, 2021a). Bulgaria doubled starting salaries in the teaching profession between 2017 and 2021 (European Commission, 2021a). By contrast, the Czech Republic raised teaching salaries by just 10 percent, despite the fact that teachers earn only around 70 percent of the average for those with the same qualifications in other professions (OECD, 2020b).

Another key problem is the schools' ageing workforce, which is not specific to Central and Eastern Europe: in Europe as a whole, 46 percent of teachers are aged over 50. The figure is even higher in Slovakia (55-60 percent), Germany (50-55 percent), Bulgaria (50-55 percent) and the Czech Republic (approximately 50 percent). In Hungary, the proportion aged over 50 corresponds to the European average (approximately 45 percent), while the situation is better in Poland (35-40 percent), Romania (30-35 percent) and Serbia (approximately 35 percent). Better, in this case, does not mean good. It can, however, be assumed that the training of new teachers in Serbia, Romania and Poland will be sufficient to compensate for the numbers retiring (OECD, 2021b; OECD, 2021a; European Commission, 2020d, 2021a).

Improving the appeal of the teaching profession (including its image, salaries, workloads/stress and organisation) is key to resolving the shortfall in numbers. This also means looking at how teachers teach. A substantial proportion of teachers were "educated and trained at a time when teaching emphasised a very different approach, focused on memorisation and knowledge transfer" (OECD, 2020c). Where traditional teaching methods dominate, problem-based, cooperative forms of learning are a rarity, as is reflected in the Teaching and Learning International Survey (TALIS) conducted by the OCED (OECD, 2020e).

This shows that problem-based and cooperative forms of learning (1 and 2) are used most frequently (relatively speaking) in Bulgaria and Romania and most rarely in the Czech Republic.

However, 70 to 90 percent of teachers evidently do not use problem-based and cooperative teaching methods (OECD, 2019). The TALIS study also makes clear that teachers do, however, have the freedom they need to implement such methods. The proportion indicating that they have control over the material they teach stands at 69 percent in Bulgaria, 87 percent in Slovakia, 91 percent in Hungary, 93 percent in the Czech Republic and 93 percent in Romania (OECD, 2020a). Although no data is available for the other countries, the findings are so clear that it is reasonable to assume that teachers also have similar freedom in Poland and Serbia. When it comes to taking advantage of this freedom, however, the picture is less positive.

Table 20: Teaching methods

		Percentage of teachers				
		Bulgaria	Czech Republic	Hungary	Romania	Slovakia
1	Set tasks for which there is no obvious solution.	19.7 %	10.6 %	28.3 %	22.3 %	29.9 %
2	Give students projects that take a week or more to complete.	36.9 %	8.7 %	9.9 %	33.7 %	15.8 %
Average		28.3 %	9.7 %	19.1 %	28.0 %	22.9 %
Percentage of teachers who said they have control over the content they teach.		69 %	93 %	91 %	93 %	87 %

Source: OECD, 2020e.

Continuing professional development for teaching staff in Central and Eastern Europe represents a structural counterpart to learning mobility for trainees. Individuals working in institutions that provide VET are able to participate via the Erasmus+ programme in “short-term projects for mobility of staff” or “accredited projects for mobility of staff” with the goal of personal development. This includes:

- Job shadowing (2 to 60 days)
- Teaching or training assignments (2 to 365 days)
- Courses and other training (2 to 30 days, maximum 10 days of course fees per participant)

Of particular interest for our purposes is job shadowing, for which there are four international options as set out in Table 21.

Job shadowing means being part of a local community of practice (CoP), which can potentially migrate online after the job shadowing to create a new international CoP. In a CoP, commitment and performance arise not from rules, fixed roles and instructions, but from trust, communication and shared interest.

Table 21: *Forms of job shadowing*

		Incoming	
		School	Company
Outgoing	School	Teacher spends time at a school abroad.	Teacher spends time in a training workshop abroad.
	Company	Instructor/trainer spends time at a school abroad.	Instructor/trainer spends time in a training workshop abroad.

Source: Illustration by the Institute of Technology and Education, University of Bremen.

Although it takes some organisation, job shadowing is easy to organize. It could be initiated by the vocational school local to a family business's German head office. After taking advice from the National Erasmus Agency and making arrangements together with the company, this school could then make contact with a counterpart abroad, for example a school close to the company's Polish branch. Given the differences in the education systems – the dominance of the subject- or knowledge-based principle in Central and Eastern Europe versus the situation- or competence-based principle in Germany – a stimulating exchange is guaranteed.

While job shadowing is the method of choice for teachers' continuing professional development, its scope in terms of the number of people it can reach is inevitably limited. This means that action-oriented teacher training formats are still needed, such as those offered in Serbia by Klett Präsenzlernen Osteuropa.

Action recommendation 7	Job shadowing and training
Aimed at	<ul style="list-style-type: none"> ■ Education ministries in CEE and Germany ■ German family businesses in CEE and Germany ■ Vocational schools in CEE and Germany
Level	Micro level

Over 50 percent of teachers in Central and Eastern Europe are aged over 50. They were “educated and trained at a time when teaching emphasised a very different approach, focused on memorisation and knowledge transfer” (OECD, 2020c). International mobility in the form of a job shadowing programme offers a way for teachers from CEE to familiarise themselves with action-oriented forms of teaching in a German vocational school. This exchange could form the nucleus of an international Community of Practice. In addition to this, local, action-oriented teacher training formats are required.

8. Skills competitions

The world of vocational education and training boasts a wide range of awards and prizes. In Germany, these are presented to vocational trainees (e.g. by the Association of German Chambers of Commerce and Industry), business owners (e.g. the Heribert Späth Prize for special vocational education and training efforts, which is awarded by Stiftung für Begabtenförderung im Handwerk e.V.), businesses (e.g. the IHK quality seal) and projects (e.g. the Hermann Schmidt Prize awarded by the Verein Innovative Berufsbildung e.V.). The German Chambers of Commerce Abroad also have their own competitions. Since 2013, for example, the German-Hungarian Chamber of Industry and Commerce has awarded its VET Prize. This aims “to strengthen the public appreciation for and quality of practice-oriented, up-to-date vocational education and training in Hungary through participation in the competition and the publicity generated through the projects presented” (iMove, 2016 [our translation]). Prizes, awards and skills competitions create visibility around the quality of VET and also have the potential to increase its attraction.

In Madrid in 1950, participants from Spain and Portugal took part in a new vocational skills competition, which by 1953 had expanded to include entrants from France, Germany, the UK and Switzerland. Having formalised the organisation in 1957, the initiators founded the International Vocational Training Competitions, today known as WorldSkills and comprising 85 national associations (WorldSkills, 2021). Participants first compete at national level to qualify for EuroSkills (since 2008) and/or WorldSkills.

Among the Central and Eastern European countries, Poland, the Czech Republic, Hungary, Romania and Slovakia were involved in EuroSkills 2021 in Graz, Austria. Hungary hosted the EuroSkills competition in 2018, and Poland is set to do so in 2023. There is clearly a high level of interest in this competition in Central and Eastern Europe, and the occupations covered are also a good fit for these countries. The following are of particular interest:

- Milling machine operator (CNC milling)
- Electronics technician specialising in automation technology (Industrial control)
- Mechatronics technicians (Mechatronics; mobile robotics)
- Construction mechanic – welding (Welding)

Since the skills involved are identical in each country, preparing for and participating in a national, European or international competition could also be combined with learning mobility.

Despite the WorldSkills 2013 in Leipzig, there is little public awareness of the competition in Germany. It is a different story in Switzerland, where the national competition SwissSkills attracted 1,000 competitors and 155,000 visitors in 2014 (Stamm, 2017). Studies of this event and SwissSkills 2018 conclude that “vocational competitions are an important tool, both for promoting the appeal of VET and vocational orientation and for the promotion of excellence and career development among young people” (Stamm, 2020, p. 7 [our translation]).

Participation in national competitions or EuroSkills by trainees at German businesses in Central and Eastern Europe creates a win-win-win situation: for society (increased appeal of VET), for the trainees (improved motivation and professional ethos) and for companies (improved public perception and easier recruitment of trainees/specialists). There is also potential for international cooperation within individual companies. It is no surprise, then, that the Osnabrück Declaration includes the following objective: “Cooperate with other EU countries in preparing national teams for international competitions such as WorldSkills and EuroSkills” (European Ministers for Vocational Education and Training of the Member States, 2020, p. 11).

Action recommendation 8	Skills competitions
Aimed at	<ul style="list-style-type: none"> ■ German family businesses in CEE and Germany ■ Vocational schools in CEE and Germany
Level	Micro level

High-publicity national, European and international skills competitions have the potential to increase awareness of VET and boost its appeal. Teams (trainees, instructors, teachers) should be created at the head offices and local branches of German family businesses to enable participation in national, European (EuroSkills) and potentially global (WorldSkills) competitions. Preparation could also take place internationally, offering an opportunity for learning mobility.

9. Duality plus

While our recommendations so far have looked at the micro, meso and macro levels of impact, our final recommendation instead concentrates on the phases of VET: (a) vocational orientation, (b) training/study, and (c) continuing vocational education and training.

The duality of Germany's system is the aggregate product of its many elements. The focus here will be on the element of "alternating company- and school-based vocational education and training in accordance with the dual principle" (alternance training for short). The dual principle is characterised by "the integration of theory and practice, reflection and action, thinking and doing, situation-based and systematic learning" (Euler, 2013, p. 34 [our translation]). In other words, the dual principle describes, first and foremost, this didactic integration rather than the division into two places of learning (work and school). Practical activities (work-based learning) and theoretical reflection both take place at school, in the workplace and elsewhere. The idea that school equals theory and workplace equals practice is thus an oversimplification. Nevertheless, there are, of course, genuine differences between the two places of learning, for example in terms of the degree of freedom and decision making, the different time structures, the different opportunities for incorporating theory, the different stakes involved and the different degrees of social integration and self-reflexivity. "Alternance training" refers to the regular transition between places of learning combined with the integration of theory and practice at both places of learning in the context of the dual principle.

Central and Eastern European countries are increasingly implementing alternance training and the dual principle in IVET, albeit it at different speeds (Hungary: fast, Czech Republic: slow). Poland, the Czech Republic, Bulgaria and Serbia have created legal frameworks that enable German family businesses in these countries to roll out the model of work-study degree

programmes successfully established in Germany. In the coming years, we can expect work-study degree programmes in these countries to see similar rates of demand and growth as their equivalents in Germany.

However, in vocational orientation, in the transition from vocational orientation to the chosen occupation, and particularly in CVET, application of the dual principle in Central and Eastern Europe is still rather limited (the situation in Germany is not dissimilar). These areas in which the dual model has not yet been implemented in Central and Eastern Europe offer potential in terms of responding to the need for skilled workers: dual vocational orientation would help recruit new workers, while dual CVET would enable existing employees to develop the required skills.

While alternance training is aimed at overcoming inter-organisational barriers, it is also important to strengthen intra-organisational collaboration and capacity by developing team structures in schools. We have termed this “Duality Plus”. This will form a basis for implementing all the above action recommendations such as learning mobility, skills competitions, cooperation between workplaces and vocational schools, and regional stakeholder networks.

The OECD’s Teaching and Learning International Survey (TALIS) gathered information on collaboration between members of teaching staff. Table 22 shows the proportion of teachers indicating that they do not collaborate with colleagues on typical tasks.

Table 22: Collaboration by teachers

	Czech Republic	Hungary	Slovakia	Romania	Bulgaria
Sharing of teaching materials with colleagues.	5.6 %	16.3 %	6.8 %	11.7 %	7.1 %
Joint activities across different classes and age groups (e.g. projects).	10.8 %	12.5 %	13.1 %	9.7 %	10.8 %
Average	8.2 %	14.4 %	9.9 %	10.7 %	8.9 %

The figure in percent shows how often people chose the option “never”. Germany, Poland and Serbia did not participate in this OECD study.

Source: OECD, 2020f.

In Central and Eastern European countries, only a small minority of 8 to 14 percent of teachers indicated that they are not open to collaboration. The willingness of the vast majority to work together provides a strong basis for intra-organisational networking, for professional and

inter-professional collaboration by teachers and for collaboration between school teachers and instructors at training companies.

Projects to intensify vocational orientation and promote alternance training, for example in CVET, could be initiated through bilateral VET partnerships between the German BMBF and education ministries in Central and Eastern Europe (see action recommendation 1).

Action recommendation 9	Duality plus
Aimed at	<ul style="list-style-type: none"> ■ Education ministries in CEE and Germany ■ Business and social partners in CEE and Germany ■ German Chambers of Commerce in CEE ■ German family businesses in CEE and Germany ■ Vocational schools in CEE and Germany
Level	All levels
<p>Alternance learning in accordance with the dual system has been implemented in dual VET in Central and Eastern European countries (with the exception of the Czech Republic). There are also initial moves in Poland, the Czech Republic, Bulgaria and Serbia to transfer this principle to university education (work-study degree programmes). This is not yet the case, however, for CVET or vocational orientation. Promoting and intensifying vocational orientation in general education offers potential to help recruit people into a subsequent vocational education and training programme. The principle of collaboration, which makes alternance learning possible, should be incorporated into all phases of vocational education (vocational orientation, training, study, CVET) as a basic principle, both across institutions (e.g. dual VET, work-study degree programmes) and within institutions (e.g. professional and inter-professional collaboration by teachers).</p>	

F. Appendix

Table 23: Country overview on dual vocational training

Criterion/ country	Bulgaria	Poland	Romania	Slovakia	Czech Republic	Hungary	Serbia
Introduction	Enshrined in law since 2014	Enshrined in law since 2016. The juvenile worker apprenticeship model has existed in the skilled trade sector since the 1930s.	Enshrined in law since 2016	Enshrined in law since 2015	Not introduced, though in-company learning is a component of school-based training.	Enshrined in law since 2011	Enshrined in law since 2017
Practical component	The share of work-based learning is high at 60 to 70 %, but it usually takes place at school. In the second stage (11 th and 12 th grade), the dual programme usually comprises two to three days of practical training per week.	Approx. 30 %, although practical training often takes place at school due to a lack of cooperating companies.	Staggered: ■ First year: approx. 20 % ■ Second year: approx. 60 % ■ Third year: over 70 %	In three-year programmes, more than 50 % of work-based learning takes place at a company, while in four-year programmes it is more than 35 %.	Three-year programmes comprise 35 to 45 % work-based learning and four-year programmes 25 to 40 %, with the school deciding how much takes place where (school or company).	Between 40 and 80 %, depending on the occupation and arrangement, with practical training only allowed to take place at school if no training company is available, which is often the case.	Between 30 and 45 %, depending on the occupation and arrangement
Duration of training	3 years (stage one) and/or 2 years afterwards (stage two)	3 years (stage one) and/or 2 years afterwards (stage two)	3 years	3 to 4 years	3 to 4 years	3 to 5 years	3 to 4 years
Curriculum	Vocational schools are to take educational standards and national framework curricula as a basis for developing curricula adapted to local needs. The educational standards either do not exist yet or, if they do, they are too detailed, which means that there is little flexibility.	VET schools have a large degree of autonomy in designing their curricula on the basis of the national core curricula. Company interests are usually taken into account.	The school curriculum can be adapted by up to 20 % in consultation with the companies.	Instead of detailed curricula, the Sector Skills Councils define standards and learning outcomes, which means schools and companies are largely free to determine the content of the curricula themselves.	Company representatives are involved in the development of the national curricula.	VET schools have a large degree of autonomy in designing their curricula on the basis of the national framework curricula. Company interests are taken into account.	The Ministry of Education and IIE (Institute for the Improvement of Education) develop the curricula. The Chamber of Commerce and Industry also makes suggestions. Schools are responsible for the implementation of the curriculum (incl. training plan) as a whole.

Criterion/ country	Bulgaria	Poland	Romania	Slovakia	Czech Republic	Hungary	Serbia
Training plan	The training plan puts the content of the curriculum into practice, which means that the difficulties described above also exist on the company side.	The content of practical training must be agreed with the schools, which have a great deal of freedom in this respect.	Practical training can be designed flexibly in consultation with the school.	The high degree of freedom also extends to company-based training.	The training plan must put the content of the curriculum into practice. Flexibility only comes once this requirement has been met.	Practical training can be designed flexibly in consultation with the school.	The employer provides training within the framework of the curriculum. The school monitors company-based training in cooperation with the company.
Standard age of trainees	14 to 16 years (stage one) or 14 to 18 years (stage one & stage two)	15 to 18 years	15 to 18 years	16 to 19 years	16 to 19 years	15 to 18 years	15 to 18 years
Contractual basis	Cooperation agreement between school and company. Training contract between company and trainees	Cooperation agreement between school and company. Since 2019, training contracts can also be concluded as an employment contract (student apprenticeship).	Cooperation agreement between school and company. Training contract between company and trainees	Cooperation agreement between school and company. Training contract between company and trainees	Cooperation agreement between school and company	Cooperation agreement between school and company. Since 2021, training contracts are concluded as a vocational employment contract.	Cooperation agreement between school and company. Training contract between school and trainees
Trainee remuneration	Poorly regulated. Remuneration common from grade 11 (stage two) onwards. State scholarships of 5 to 15 % of the national minimum wage are possible	Remuneration can be individually agreed upon on the basis of a scholarship.	The company must pay the trainee at least 200 Romanian lei per month and cover the costs of insurance and medical examinations. In addition, other allowances are possible.	State scholarships for learners in occupations with a shortage of skilled workers. The amount ranges between 25 and 65 % of the national living wage, depending on the trainee's academic performance. Parallel/additional company scholarships are possible and may amount to up to four times the national living wage.	Remuneration can be individually agreed upon on the basis of a scholarship. Amounts from the case study: ■ First year: max. 80 euros ■ Second and third year: max. 120 euros ■ Fourth year: max. 160 euros	Mandatory. On the basis of the vocational employment contract, the amount of remuneration should not be below 60 % of the statutory minimum wage.	Mandatory. The amount of remuneration may not be below 70 % of the statutory minimum wage.

Criterion/ country	Bulgaria	Poland	Romania	Slovakia	Czech Republic	Hungary	Serbia
Company involvement in shaping the training system	<ul style="list-style-type: none"> ■ Economic and Social Council ■ Involvement in the development of national curricula ■ Involvement in examinations 	<ul style="list-style-type: none"> ■ Sector Skills Councils ■ Regional labour market council ■ Involvement in examinations 	<ul style="list-style-type: none"> ■ Sectoral committees ■ Local committees for development of social partnerships ■ VET school administration boards 	<ul style="list-style-type: none"> ■ Sectoral Skills Councils ■ Regional VET council ■ Sectoral assignees ■ Employer council for (dual) VET 	<ul style="list-style-type: none"> ■ Sector Skills Councils ■ Involvement in examinations 	<ul style="list-style-type: none"> ■ Sector Skills Councils ■ Vocational Innovation Council 	<ul style="list-style-type: none"> ■ Sector Skills Councils ■ Involvement in examinations
Work-study degree programme	Pilot programmes, e.g. Technical University of Varna	Enshrined in law since 1997. There are 33 vocational universities (uczelnie zawodowe) with over 50,000 students.	Pilot programmes, e.g. Bosch in cooperation with the Technical University of Sofia	Individual programmes, e.g. Volkswagen in cooperation with the Slovak University of Technology in Bratislava (since 2018)	At the tertiary (but not university) level, there are school-based programmes with a large practical component at technical schools (Vyšší odborná škola).	Enshrined in law since 2014. Modelled on the colleges of advanced vocational studies and Cooperative State University found in Baden-Württemberg, Germany, although in contrast to the Baden-Württemberg model, the programmes are based at regular universities.	Enshrined in law since 2019. Universities can set up work-study degree programmes or add a work-study module to an existing degree programme. They have considerable freedom to design the content of the programme themselves. Formal contract contents are prescribed. The Serbian Chamber of Commerce keeps a register of contracts (employer/student) for this purpose.
Offers by the German Chamber of Commerce Abroad (AHK)	<ul style="list-style-type: none"> ■ Counselling ■ Chamber offers continuing education opportunities in the form of dual VET programmes in cooperation with the German-Bulgarian VET Centre (DBBZ). ■ Chamber is involved in Erasmus+ projects. 	<ul style="list-style-type: none"> ■ Counselling ■ Training ■ Ongoing cooperation with Steico, Heinz Glas, Kirchhoff/Zoeller, Volkswagen, among others 	<ul style="list-style-type: none"> ■ Counselling ■ Training ■ Ongoing cooperation with Brose, Hella, Gewiss, Volkswagen, among others 	<ul style="list-style-type: none"> ■ Counselling ■ Training ■ Ongoing cooperation with Brose, Hella, Gewiss, Volkswagen, among others 	Not involved in training	<ul style="list-style-type: none"> ■ Counselling ■ Training ■ Ongoing cooperation with Audi, Sennebogen, Festo, Lidl, among others 	<ul style="list-style-type: none"> ■ Counselling ■ Training ■ Exchange of experience in the Dual VET working group (since 2021)

Source: Illustration by the Institute of Technology and Education, University of Bremen.

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