

SLOVAKIA CATCHING-UP REGIONS

SECONDARY VET SCHOOLS PROJECT

SUMMARY REPORT



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Minding the Skills Gap and Mismatches:
A Report on Secondary Vocational
Education in the Banská Bystrica Region
of the Slovak Republic

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1818 H Street NW
Washington DC 20433
Telephone: +1-202-473-1000
Internet: www.worldbank.org

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ACRONYMS AND ABBREVIATIONS

BBSK	Banská Bystrica Self-governing Region
BBSK-ED	BBSK Education Department
CSF	Common Strategic Framework
CuRI	Catching-up Regions Initiative
DCS	Data Capture Sheet
EC	European Commission
EC-DG REGIO	European Commission's Directorate-General for Regional and Urban Policy
EU	European Union
GDP	Gross Domestic Product
IIP	Individual Investment Package
IP	Investment Priority
IPP	Investment Package of Projects
IROP	Integrated Regional Operational Programme
LLL	Lifelong Learning
MRC	Marginalized Roma Community
MS	Member States
NGO	Non-governmental Organization
OECD	Organisation for Economic Co-operation and Development
PSK	Prešov Self-governing Region
R & D	Research and Development
ŠIOV	State Institute for VET
SME	Small and Medium Enterprises
SR	Slovak Republic
TAP	Training Assessment Project
VET	Vocational Education and Training

BACKGROUND

This document summarizes the report, *Minding the Skills Gap and Mismatches: A Report on Secondary Vocational Education in the Banská Bystrica Region of the Slovak Republic* (hereafter referred to as ‘the Minding the Skills Gap and Mismatches report’). This summary includes the methodology, findings, recommendations, and discussion from the main report, as well as background context on the Slovak Republic Catching-up Regions Initiative (SR CuRI).

The Minding the Skills Gap and Mismatches report was conducted in the Banská Bystrica Region as part of the larger SR CuRI joint-cooperation program between the European Commission’s Directorate-General for Regional and Urban Policy (EC-DG REGIO) and the World Bank (WB). The current activities of the program in the Banská Bystrica Region are supported through the cooperation between four main parties, namely, the European Commission (EC), the Ministry of Investment, Regional Development and Informatization, the Banská Bystrica Self-governing Region (BBSK), and the World Bank.

The CuRI seeks to address the development challenges of ‘low-income regions’, clustered in the eastern periphery of the European Union (EU), in which the regional gross domestic product (GDP) per capita, although improving, still remains below 50% of the EU average. Two main concerns exist within these low-income regions: 1) the long-term sustainability of their growth and 2) the need to avoid the development trajectory of the low-growth areas.

There are three overall objectives of the SR CuRI in the targeted regions. It will explore and promote regional development opportunities, assist, and build capacity to pursue European financial support, and encourage the competitiveness of businesses.

These objectives are pursued through the following four main components of the initiative, which were identified and designed jointly between all the four initiative partners:

- **Sustainable Transportation**—the focus of the initiative is to integrate the transportation system in the BBSK by creating smart and sustainable public transportation in the region. A proposed strategy will be supported for digitalizing the regional public transport to improve the quality and reliability of this public service.
- **Integrated Health and Social Services Model for Seniors**—the initiative will test integrated services for elders’ health and social services and develop an integrated social services system for seniors.
- **Linking industry and R&D Workplaces in the Region**— the aim of this activity is to analyze the product development and innovation needs of institutions with research, development, and innovation (R&D&I) capabilities, in order to increase their potential for cooperation with businesses.

- **Secondary Vocational Education and Training (VET)**—*which is the focus of this Minding the Skills Gap and Mismatches* report— aims to better understand the skills that small, medium, and large enterprises in the BBSK look for when recruiting new graduates.

**SLOVAKIA VET PROJECT,
BANSKÁ BYSTRICA REGION**

Although it holds great potential for development, the Banská Bystrica Region (650,000 inhabitants) of the central Slovak Republic, has struggled to increase its economic growth and to improve the connection between the supply and demand of the labor market. There are many reasons contributing to this regional stagnation. This region is among the least economically and socially developed and has the second-lowest regional GDP per capita (after Prešov) in the Slovak Republic. It has the third-lowest output per employee, the third-highest rate of unemployment, and the third-highest share of the population at risk of poverty (EU-SILC 2018). At the same time, the Banská Bystrica Region is experiencing the worst population decline among all Slovak regions, while being one of the three regions (along with Trenčín and Nitra) that experienced a natural decline and net outmigration simultaneously¹.

Furthermore, the BBSK struggles with a high unemployment rate for graduates of secondary vocational schools, an inefficient interconnection between the relevant stakeholders and authorities, as well as insufficient international cooperation and promotion of the region. Even though the regional educational system offers a broad spectrum of subject fields, the quality harmonization of the fields is lacking.

Therefore, as part of the SR CuRI, the “Improving Secondary Vocational Education Project” was agreed upon and designed for the Banská Bystrica Region with the overall objective of assisting the BBSK Education Department (BBSK-ED) to improve the quality and relevance of secondary VET schools to meet the labor market needs in Banská Bystrica, and to effectively identify and pursue EU funds to make the necessary secondary VET reforms. Another aspect of the project is the setting up, and improving, of quality assurance systems with policies that can maintain the quality of education and set the quality standards that VET institutions should uphold, while increasing VET school autonomy.

Considering the significant economic and labor issues in the region, the project aims to better understand the recruiting needs of businesses, as well as the extent to which these needs are reflected in the content of VET study programs and the skills of VET graduates. The Secondary VET School Project in the Banská Bystrica Region has three main activities:

Activity 1—Employer Study consists of an assessment of labor market needs for VET graduates, as well as the firms’ perceptions about the existing VET system, the skills it produces, and suggestions for its reform.

Activity 2—Secondary VET Schools Study assesses 63 public and private secondary VET schools in the region, including key features of the existing secondary VET programs, teacher qualifications, and other school and student characteristics. The study offers recommendations to strengthen and improve the VET schools and the VET system, to better match labor market needs.

Activity 3—Investment Packages developed by the Bank, in conjunction with the BBSK-ED, uses results from the previous two activities to determine the investment needs of eight prioritized secondary vocational schools, and design investment packages accordingly.

The *Minding the Skills Gap and Mismatches* report combines the Employer Study (Activity 1), the Secondary VET Schools Study (Activity 2), and the Investment Packages (Activity 3). Analysis and findings reveal that significant barriers exist at the school level and systemic level, both across the

VET system, and in its linkages with the job market. In response to these challenges, short-term and long-term recommendations are proposed. In the near term, investment packages provide guidance for a set of prioritized secondary VET schools, detailing the inputs and costs to implement improvements that will align study programs and the learning environment with labor market needs. Additionally, a set of longer-term recommendations aim to make strategic systemic improvements that will create a sustainable and productive path forward for VET schools, their graduates, and the labor market (see Figure 1).

FIGURE 1. Secondary VET School Project—Summary Approach

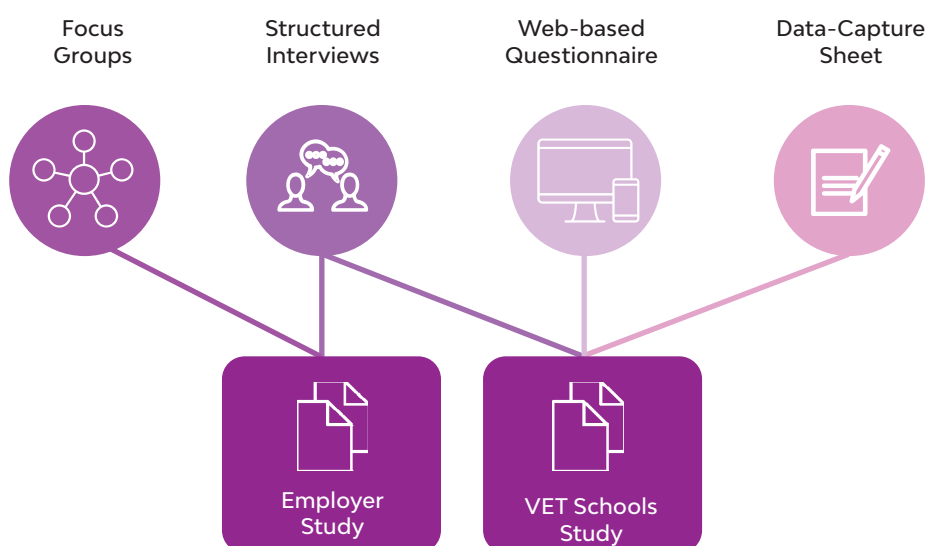
Assessment / Methodology	Analysis & Findings	Recommendations
<p>Employer Study Research Question: <i>What are the causes, nature, and scale of the skills mismatch? What do firms recommend?</i> Data Collection: <i>Structured face-to-face interviews with employers and focus group discussions with stakeholders</i></p>	<ol style="list-style-type: none"> 1. Skills mismatch—evidence and implications 2. Breakdown in cooperation and coordination 3. Siloed curriculum development & teaching, and learning 4. Limited quality assurance and improvement 5. Under-resourced career counselling and lack of lifelong learning focus 6. Teacher qualifications disconnect 7. Uneven facilities and inputs 8. Static business model and lack of innovation 9. Study program decline 10. Rising dropout rates 	<p>Short-term Investment packages proposed for 8 priority pilot VET schools</p>
<p>VET School Study Research Question: <i>How, and how well, are VET schools structured to adapt to companies' needs over time?</i> Data Collection: <i>In-depth structured interviews, web-facilitated follow-up with school leadership, and administrative data capture</i></p>		<p>Long-term</p> <ol style="list-style-type: none"> 1. Formal model for data collection, analysis, and continuous learning 2. Establishing a quality management system 3. Strengthening collaboration, coordination, and communication 4. VET School Innovation

Source: Authors, 2020.

METHODOLOGY

The dynamic and inclusive methodology that underpins this effort examined the VET system, with a particular focus on workforce alignment and economic growth. It was important to engage a wide array of stakeholders from both the VET schools and industry to collect information on the current state of the VET system and its integration with the labor force, as well as to gather recommendations for their improvement. The methodology section in this summary report details the approach for both the Employer Study and the Secondary VET Schools Study, as well as the approach for the selection of pilot schools that would be recipients of investment packages.

FIGURE 2. Data Collection Methods for Both Studies



Source: Authors, 2020.

EMPLOYER STUDY

The Employer Study in Banská Bystrica used two approaches for data collection: structured face-to-face interviews with employers and focus group discussions with stakeholders. Using these two techniques, the study gathered data on the employers' opinions on the nature and size of the mismatch of skills in the region, their opinion on the quality of secondary VET schools and their graduates, as well as any recommendations on how to improve the quality of regional graduates from the secondary VET system.

The Employer Survey and focus group sessions were framed by the following overarching research questions: **What are the causes, nature, and scale of the mismatch between what secondary VET schools are supplying and what firms are demanding? And what recommendations do firms have to reduce the mismatches?**

To this end, employers were directed to provide answers to the following questions:

1. Are there mismatches in what secondary VET schools are supplying and what firms are demanding? If so, to what extent are there mismatches? And why?
2. What are the firms' specific experiences with dual education (or other work-based learning experiences)?
3. What is the firms' experience with various types of school-based learning?
4. How well are schools structured to adapt to the needs of firms over time?

The Employer Survey

The VET Employer Survey implemented in the Banská Bystrica Region was based on the World Bank's *Skills Toward Employment and Productivity (STEP)* instrument (World Bank 2014). The *full STEP Skills Measurement Tool* gathers the following policy-relevant data to enable a better understanding of skill requirements in the labor market: backward linkages between skills acquisition and educational achievement, personality and social background; and forward linkages between skills acquisition and living standards, reductions in inequality and poverty, social inclusion, and economic growth. The *STEP employer-based survey* is designed with five modules that assess the following elements:

1. The structure of the labor force
2. Cognitive skills, behavior and personality traits, and job-relevant skills that are currently being used, as well as skills that employers look for when hiring new workers
3. Provision of training and compensation by employers
4. The level of satisfaction with the education and skills training available in the local labor market

The Banská Bystrica Region's Employer Study used a modified version of the *STEP employer-based survey* to better meet the needs of the study's research questions, adapting it for regional appropriateness. The following aspects were emphasized:

- The BBSK's VET-specific industries, terminology, issues, and employee skills—such as the declining student and employer base (that is, skills shortages and hiring difficulties), and employee skills
- Firms' previous experience with dual education
- Anticipated short-, medium-, and long-term hiring and skills needed
- Two prioritized occupations per firm (specified differently for each firm): *the occupation in which it is most difficult to fill vacancies*, and *the occupation with the most employees at the firm*

The enhancements on the survey also benefited from the lessons learned from the implementation of such an employer survey in the Prešov Region² (World Bank et al. 2019).

The final survey contained the following five modules:

- Module 1: Basic Information and Workforce
- Module 2: Information on New Hires

- Module 3: Skills Used by the Current Workforce
- Module 4: Training and Opinions
- Module 5: Firms' Background

BBSK Employer Focus Groups

Two regional focus group sessions, which complemented and enhanced the Employer Survey, were held during a conference entitled “Current labor market needs and their reflection in vocational education and training in the Banská Bystrica Region” in November 2019. The following four questions were asked in different focus group sessions:

1. How can the communication between employers and VET providers be improved to identify the skills required by your company to remove the mismatch between the labor market needs and the VET graduates' skills?
2. How can employers play a more active role in promoting an interest in VET and support effective school-to-work transitions for new employees?
3.
 - a. North subregion: How can companies and VET providers respond more effectively to the future technological needs and changes of the market?
 - b. South subregion: How can VET providers make the training more effective and attractive for marginalized groups and their future employers?
4. What is your most important recommendation for the improvement of secondary VET education in the Banská Bystrica Region?

The focus groups consisted of a variety of key stakeholders, including officials from the BBSK-ED, school directors from several key regional secondary VET schools, representatives of firms from the survey sample and from other essential regionally based firms, and representatives from organizations whose activities are related to vocational education and training and are part of the ecosystem of vocational secondary education and training.

Survey Sampling and Focus Group Design

The sample for the Employer Survey, as per the CuRI Steering Committee's guidance and approval, consisted of 52 firms in the Banská Bystrica Region, of which 24 'strategically selected' firms were identified. The strategic firms are well-known firms, which are important to the economic development of the region. These firms were intentionally included to ensure that the results represented the views of the most important employers in the region. Six top firms were selected from each of the four subregions (totaling 24 strategic firms). The remaining 28 firms in the sample were randomly selected using a sample frame taken from FinStat⁴, which took into account geographic, sector, and firm size heterogeneity.

The original strata agreed upon called for interviewing 60 firms, but this proved to be difficult, as the refusal rate was much higher than anticipated. After discussions with the BBSK-ED staff, the decision was made to reduce the number of interviews to 50, and for the BBSK-ED to support the World Bank interviewers by contacting employers to aid in setting up face-to-face interviews. In the end, largely due to the support of the regional education department staff, the goal was surpassed, completing interviews with 52 firms.

The survey sample (Table 1) was designed to provide a representational balance between:

- Four subregions⁵ and 13 districts in those subregions
 - North: Banská Bystrica, Brezno, and Revúca
 - South: Zvolen, Detva, and Krupina
 - East: Lučenec, Rimavská Sobota, Poltár, and Veľký Krtíš
 - West: Žarnovica, Žiar nad Hronom, and Banská Štiavnica
- Six sectors/industry groups⁶
 - Forestry, agriculture, and fishing
 - Construction
 - Manufacturing (intermediate and final)
 - Networks and Infrastructure (including transportation)
 - Trade (wholesale and retail)
 - Services (for example, health, social services, information technology (IT), tourism, finance, and real estate)
- Five firm sizes⁷
 - Micro (0–9 employees)
 - Small (10–50 employees)
 - Medium (51–250)
 - Large (251–1,000)
 - Extra-large (1,001 or more)
- Previous experience with dual education

The focus groups were divided into two sessions organized by two groupings of subregions **FG1**: the north, consisting of the districts of *Banská Bystrica*, *Brezno*, and *Revúca* (from the north subregion) and *Žarnovica*, *Žiar nad Hronom*, and *Banská Štiavnica* (from the west subregion); and **FG2**: the south, consisting of the districts of *Zvolen*, *Detva*, and *Krupina* (from the south subregion) and *Lučenec*, *Rimavská Sobota*, *Poltár*, and *Veľký Krtíš* (from the east subregion).

TABLE 1. VET Employer Study Sample Design Matrix—Banská Bystrica

CRITERIA	DEFINITIONS	ACTUAL %
SUBREGION	• North	25% (13 firms)
	-Banská Bystrica	7 firms
	-Brezno	4 firms
	-Revúca	2 firms
	• South	27% (14 firms)
	-Zvolen	5 firms
	-Detva	4 firms
	-Krupina	5 firms
	• East	23% (12 firms)
	-Lučenec	3 firms
	-Rimavska Sobota	4 firms
	-Poltar	2 firms
	-Velky Krtiš	3 firms
• West	25% (13 firms)	
-Žiar Nad Hronom	8 firms	
-Žarnovica	3 firms	
-Banská Štiavnica	2 firms	
FIRM SIZE	# of Employees:	
	• Micro (09–9)	9.5% (5 firms)
	• Small (10–50)	35% (18 firms)
	• Medium (51–250)	21% (11 firms)
	• Large (251–1,000)	23% (12 firms)
	• Extra Large (1,001+)	11.5% (6 firms)
INDUSTRY/ SECTOR	6 Industry/Sector 'Groups':	
	Forestry, Agriculture, Fishing	13% (7 firms)
	Construction	4% (2 firms)
	Manufacturing	58% (30 firms)
	-Intermediate and final	
	Networks & Infrastructure	4% (2 firms)
	-Transportation, communication, utilities, energy, and water	
Trade	8% (4 firms)	
-Wholesale and retail		
Services	13% (7 firms)	
- Health, social services, IT, tourism, finance, real estate, and design		
PREVIOUS DUAL EDUCATION EXPERIENCE	• No Dual Education Experience	46% (24 firms)
	• Yes Dual Education Experience	52% (28 firms)
Strategic Companies		
AGRO CS SLOVAKIA, A.S.	PPS GROUP A.S.	
CONTINENTAL AUTOMOTIVE SYSTEMS SLOVAKIA S.R.O.	SHP HARMANEC, A.S.	
COOP JEDNOTA KRUPINA, SPOTREBNÉ DRUŽSTVO DM DROGERIA	SLOVALCO, A.S.	
ELBA, A.S.	SLOVENSKÁ SILVER, S.R.O.	
EVONIK FERMAS S.R.O.	SLOVENSKÉ MAGNEZITOVÉ ZÁVODY, AKCIOVÁ SPOLOČNOSŤ, JELŠAVA	
FAKULTNÁ NEMOCNICA S POLIKLINIKOU F.D.ROOSWELTA	TAURIS, A.S.	
KNAUF INSULATION, S.R.O.	TECHNOGYM EE., S.R.O.	
LIND MOEBLER SLOVAKIA, S.R.O.	YURA ELTEC CORPORATION SLOVAKIA S.R.O.	
NEMAK SLOVAKIA S.R.O.	ŽELEZIARNE PODBREZOVÁ A.S.	
ONDREJ TRČAN SONNE CRYSTAL	ZVOLENSKÁ MLIEKÁREŇ S.R.O.	

Source: Authors, 2020.

SECONDARY VET SCHOOLS STUDY

To assess the Banská Bystrica regional schools' status and quality of secondary VET education, the Secondary VET School Study focused on the structure of the VET schools and their efforts to adapt to employer requests and the overall labor market needs—particularly with regard to VET programming, teacher qualifications, and facilities. Quantitative information was gathered to explore the status of students, instructors/teachers, study programs, facilities, equipment, and funding. Qualitative information was gathered about the cooperation between schools, firms, and other key entities, while also covering topics such as school data collection efforts, quality management systems, creation and adaptation of curricula, and the structure of the education programs (for example, education levels and certificates, requalification and lifelong learning [LLL] courses, practical and work-based learning, as well as teachers and facilities).

To summarize, the purpose of the study was to describe the current status of the secondary VET schools in the Banská Bystrica Region, identify problematic areas preventing the schools from achieving a higher quality of education (to reduce skills mismatches), and pinpoint the areas in which schools need to improve so they can offer a more suitable and up-to-date VET education. Based on this information, recommendations for VET education have been identified for the consideration of the regional and national authorities. Three main data collection approaches were used: in-depth, structured interviews, a web-based questionnaire, and administrative data capture sheets.

The school survey and web-based questionnaire were framed by the following overarching research question: **How, and how well, are VET schools structured to adapt to companies' needs over time?**

The main research question was supported by five subquestions:

1. How do VET schools interact with different organizations with regard to forms of cooperation, tools, and content?
2. How do VET schools adapt and create their curriculum?
3. How do VET schools evaluate their internal processes (regarding teachers, facilities, infrastructure, financial framework, and results)?
4. How do VET schools perceive and measure quality?
5. What other services do VET schools provide within the subregions on a local level? How well are these services provided?

TAP Survey and Web-based Questionnaire Background

School Survey

The VET School Survey implemented in the Banská Bystrica Region was based on the World Bank's Training Assessment Project (TAP), and specifically on its main tool, the Training Provider Assessment Questionnaire. The Training Assessment Project initiative was launched to identify the current conditions and common practices under which training providers (with a focus on technical and vocational education and training [TVET] institutions) operate, as well as those conditions and practices that contribute to good performance. TAP aims to help the World Bank Group's (WBG) partner countries fill an information gap regarding two questions: 1) what are the conditions and practices that make a training provider successful, measured in terms of the percentage of graduates who find employment after graduation or who enroll in further education or training activities?

and 2) what are the most common constraints faced by training providers, and how do successful institutions address them? Used in the context of the SR CuRI VET project, we focus primarily on the latter of these two questions.

To answer this question, TAP uses the conceptual framework of the World Bank's Systems Approach for Better Education Results Workforce Development (SABER-WfD). The framework identifies the policies and practices that national workforce development systems should have in place to move toward the desired dynamic alignment between skills supply and demand. In other words, it captures the *policy intent* in these systems. TAP is part of SABER-WfD, but with a focus on *policy implementation*.

The main data collection tool in TAP is the Training Provider Questionnaire, which is designed to gather information on the inputs, practices, outputs, and outcomes of training providers. The questionnaire is dedicated to exploring further characteristics, and institutional actions and values that can influence the quality of education and training services. The questionnaire is structured in five sections:

1. Background Information
2. Inputs, which covers the basic characteristics of students, instructors, facilities, and funding
3. Institutional characteristics and actions, which examines the practices of training institutions using the SABER-WfD conceptual framework
4. Institutional values, which explores the extent to which respondents agree or disagree with statements about the institution's role or mandate to undertake certain actions
5. Outcomes, which aims to collect data on the employment status, income, and the educational status of graduates

The Banská Bystrica School Study used a modified version of the TAP Training Provider Assessment to better meet the needs of the study's research questions and for regional appropriateness, emphasizing the following:

- Banská Bystrica Region's, VET-specific industries, terminology, issues, and employee skills identified as important in the Employers Study (Activity 1)
- VET schools' previous experience with dual education, and other forms of work and school-based 'practical' learning
- Schools' understanding of the anticipated short-, medium-, and long-term hiring and skill needs of Banská Bystrica Region employers

The School Survey contained the following five modules:

- Module 1: Background Information—includes basic identifiers such as name, address, and institution type
- Module 2: Strategic Framework—includes questions on management systems, vision statements, frequency of data collection, inspections, and audits
- Module 3: System Oversight—includes questions on financial resources and budget oversight, adaptations of curricula, autonomy of program assessment, and certifications awarded

- Module 4: System Delivery—includes questions on the autonomy to introduce/close programs, basic program information (for example, number of programs, highest enrolment, and so on), evaluations of instructors, contact with other institutions, and internship/work-based training offered
- Module 5: Comments—includes questions on the conditions of school facilities and classrooms

Data Capture Sheet

To reduce the time required to complete the face-to-face interviews and to allow more time for the school principals to accurately and fully answer some questions on the Training Provider Assessment questionnaire, the detailed ‘administrative data’ questions about students, teachers, and schools were pulled out and placed into a separate data capture sheet (DCS). The DCS, in the form of a spreadsheet, was sent electronically to all the VET school principals by the BBSK-ED, which assigned staff as point persons for each school to address any questions or technical issues.

A major addition to these original Training Provider Assessment questions made to the DCS was a section in which school principals were asked to indicate:

- All the study programs they are authorized to offer
- The total enrolment and capacity for each of these study programs five years ago, three years ago, and last year

Response Rates

Overall, 60 VET schools returned their completed DCS for analysis, with a 95% response rate. With regard to the question on the average male and female teachers’ salary, 41 schools did not provide this data; for this question, there was a 32% response rate.

Banská Bystrica Region VET Schools Web-based Questionnaire Activity

As a replacement for the planned focus group event, which was cancelled due to social distancing restrictions in the Slovak Republic over concerns from the COVID-19 pandemic, an alternate activity consisting of sharing an electronic questionnaire was implemented. The web-based questionnaire on the Google Docs word processor was shared with all the secondary VET school directors to gather more in-depth feedback on the key questions asked during the face-to-face school interviews. The questionnaire consisted of seven short answer questions, in which the school directors had nine days (from March 24–April 1) to complete. The results for each question were gathered, along with a brief analysis, and shared with a panel of experts for their comments and ranking of the recommendations developed from the shared questionnaire.

The following seven questions made up the electronic form:

1. What needs to be done to improve the communication among employers, vocational schools, and other public and private actors, in order to eliminate the mismatch between the needs of the labor market and the skills of secondary school graduates? (Please give the three most important recommendations.)
2. 2.1. What would you suggest to improve the quality and content of the education? (Please give the three most important recommendations.)
 - 2.2. What do you think a system to evaluate the quality of secondary vocational education and training in your institution should look like?

- 2.3. What would you suggest to improve the quality and content of the various forms of practical training?
3. How can VET providers make education more attractive, and tailor it to suit specific groups and their future employers (for example, pupils from disadvantaged backgrounds, mentally or physically handicapped, and talented and gifted pupils)? (Please give the three most important recommendations.)
4. In your opinion, what needs to be done in order to make the VET schools better prepared for future innovations and new services? How can the schools become more innovative in response to the changing needs of society and the labor market? (Please give the three most important recommendations.)
5. What suggestions do you have to improve the lifelong learning of teachers?
6. What would you recommend as the most important improvement that is necessary to improve the quality of study at the secondary vocational schools in the BBSK?
7. If you have any comments, suggestions, or comments on the above issues and VET areas, please indicate (voluntary question).

Survey and Web-based Questionnaire Participants and Design

The participants for the VET School Survey, as per the CuRI Steering Committee's guidance, consisted of all the 63 VET schools currently functioning in the Banská Bystrica Region, including public (government-founded) and private schools. The study was comprised of VET schools from various economic and industry sectoral groupings, which were situated in several cities from the four subregions in the Banská Bystrica Region—north, south, east, and west⁸—which corresponded to the same geographic division in the Employer Study.

The survey data collection was designed to include all the secondary VET schools in the Banská Bystrica Region, whereas the analyses examined the main research questions and any subregional and/or sector-specific effects according to the following groupings:

- Four subregions⁹ (north, south, east, and west)
- Four sectoral groupings¹⁰ (agriculture-food/forestry, services and trade, industry, and other)

Representation

Fully completed web-based forms were received from 45 school directors, giving a 71% response rate, and from many districts around the Banská Bystrica Region, including Zvolen, Veľký Krtíš, Banská Bystrica, Lučenec, and Žiar nad Hronom, among others. There was representation from three main sectors—industry, agriculture-food/forestry, and services—as well as from the trade, economics, pedagogy, and health care sectors. School directors from the BBSK VET schools and private VET schools participated in the activity.

SELECTION OF PILOT SCHOOLS FOR THE INVESTMENT PACKAGES

The methodology behind the selection of pilot VET schools was carefully designed and highly collaborative. Ultimately, eight priority pilot VET schools were identified in five areas as representatives of the individual ‘types of schools’. These were selected based on the results of Activity 1 and Activity 2, taking into account a combination of strategic sectors in the region, labor market trends, and the potential for future regional growth and development. The priorities were jointly identified by the BBSK, the European Commission, and the World Bank.

The five types of schools according to their priority focus are:

- Secondary VET school with a focus on industry
- Secondary VET school with a focus on the support of the self-employed, and small and medium enterprises (SMEs)
- Secondary VET school with a focus on services
- Secondary VET school with a focus on new technologies and innovations
- Secondary VET school with a focus on agriculture, food industry, and forestry

Development of Criteria

Table 2 provides a brief summary of the general criteria jointly approved by the partners of the CuRI. The criteria were used individually in the evaluation of 44 VET schools in the Banská Bystrica Region. In accordance with the criteria used, at least three VET schools were nominated for the individual types of schools, according to the priority focus with individual subregions in each of the five categories. These were advanced to the final selection of priority pilot schools in the Banská Bystrica Region, nominated by the World Bank experts.

TABLE 2. Criteria for the Selection of Priority Pilot VET Schools

MAIN CRITERIA	SCORING	EVALUATION CRITERIA
preparedness	30%	Has a vision, realistic concept, or development strategy Can demonstrate action and implementation of specific steps Strong leadership Support for partnership cooperation
Potential impact	20%	Demonstrated capacity to realize goals/concepts Sustainability of activities and results Willingness to cooperate; teamwork
representativeness	10%	Subregion Sector/industry/specialization School size Previous experience with dual education
Strategic Criteria	40%	Significant impact on regional development and local development SME and business support Focus on Roma/marginalized communities Potential for the development of various forms of practical education and training

Source: World Bank STEP Employer Survey 2020, analysis—World Bank experts.

Evaluation and Nomination Process

The evaluation of the secondary schools was based on the publicly available data, documents, and evidence from several public sources, including VET school websites, strategic documents at all levels, and documents of the Banská Bystrica Self-governing Region, *Regional Strategy of Education at BBSK VET Schools for 2020*, *The Concept of the Development of Education, Sports and Youth in BBSK for the years 2016–2020*, the results of the employer survey conducted within the CuRI, the results of the VET school survey conducted within the CuRI, the conclusions of the expert meetings on survey findings, the results of the panel of experts, but also from the website Work Trends (<https://www.trendyprace.sk/sk>), published analyses, and the documents of selected institutions and organizations. If significantly different evidence was found, experts of the World Bank subsequently involved and included the key actors in the territory or sector.

The process of the evaluation and nomination of the VET schools was preceded by consultations with experts from the World Bank and representatives of the Banská Bystrica Self-governing Region with the aim to agree on a procedure for the evaluation and selection of priority VET schools. The following seven-step procedure was the result:

Step 1: An agreement on the criteria and the method for the evaluation and selection of pilot VET schools

Step 2: The decision of World Bank experts on the distribution of percentage importance between the different sets of criteria and scoring scale

Step 3: The detailed specification and description of all the criteria as a source for a scoring scale based on the quantitative data (for example, number of pupils and pupils with special educational needs, unemployment rate and school-leaving examination results); and qualitative data (for example, pupil and school results in different competitions, cooperation, partnerships, diversity of school activities, teacher education, and so on)

Step 4: A chart with the groups of the main and the secondary criteria, according to the detailed specification and description for each criterion

Step 5: Preparation of an evaluation sheet for each school by a specific evaluator with a description of the evaluation of each VET school individually; and the allocation of points to each evaluation criterion

Step 6: Consultation of the expert group; adjustment of the evaluation and its objectification

Step 7: A summary table of the secondary VET schools' evaluation, and a final draft of the VET school nominations table for the selection of the pilot schools

Selection of VET Schools

Table 3 reflects the results of the VET school evaluation in the Banská Bystrica Region after individual evaluation and presents (at least) the three best evaluated schools in each 'type of school' and subregion. The final table shows 21 VET schools, as two schools had the same number of points. The final decision on the selection of the eight priority pilot VET schools was made by the BBSK Education Department based on consultations with the World Bank team.

TABLE 3. Final Results of the VET School Nominations

Subregion/ territorial dimension	VET school with a focus on industry	VET school with a focus on the support of the self-employed and SMEs	VET school with a focus on services	VET school with a focus on new technologies and innovations	VET school with a focus on agriculture, food industry, and forestry
Banská Bystrica, Brezno, Revúca	VET School of Technology and Services 3 Laskomerského Street, Brezno /2,3,4, N, E, €, @	Joint School 7 Banská Bystrica Street, Školská /3,4, N, *VETC, €, @	Hotel Academy 1 Brezno Street, Malinovského 1 /N, 5, €	Jozef Murgaš Industrial VET School 6 Banská Bystrica, Hurbanova /4, *VETC, €,	VET School Banská Bystrica, Pod Bánošom /3,4, N, *VETC, E, €, LLL @
	Private Joint School Železiarne Podbrezová 554/64 Družby, Podbrezová /3, 4, *VETC, €, GaL, LLL, @	Joint School 10 Kremnička Banská Bystrica, /2,3,4, *VETC, €	VET School – Szakközépiskola – MRC 56 Šafárikova, Tornaľa /2,3,4, N, €, @, LLL	VET School of Information Technologies 30 Tajovského Street, Banská Bystrica /4, @, €,	Health VET School Banská Bystrica, 24 J. G. Tajovského /4, @, N, E, €,
Zvolen, Detva, Krupina	Joint School 848 Detva Street, Štúrova /3, 4, €		VET Industrial School of Transport 911/94 Sokolská Street, Zvolen /4, E, €, @	VET School of Woodworking 2193/17 Lučenecká cesta Zvolen /3,4, *VETC, €, @	
Rimavská Sobota, Poltár, Lučenec, Veľký Krtíš	VET School 10 Poľná, Veľký Krtíš /2,3,4, €, @		VET School of Hotel Services and Transport 83 Lučenec Street, Zvolenská cesta /3,4, N, E, *VETC, €, @		Technical and Agri-food VET School - MRC - 61 Okružná, Rimavská Sobota, /2,3,4, N, @, €
			VET School Technical 2 Lučenec, Dukelských hrdinov /3,4, N, €, @		Joint School 5 Poltár, Železničná /2,3,4, N, @, €
Žarnovica, Žiar nad Hronom, Banská Štiavnica	Private VET School Technical 10 Dr. Janského, Žiar nad Hronom /3,4, €,	VET School of Services and Forestry Banská Štiavnica, Kolpašská 1586/9 /2,3,4, N, E, VETC, @, €		VET School of Forestry 16 Akademická, Banská Štiavnica /4, VETC, @,	

Note: Red-marked schools are the prioritized ones; /2,3,4—2-year, 3-year, and 4-year VET school study program provider; N—post secondary program; E—external study program; €—VET school received funding from the EU (one or more projects, or operational programs); @—VET school has an inclusive approach and a significant percentage of Roma pupils or special programs for vulnerable groups; VETC— VET center officially accredited by the Ministry of Education (MoE); and LLL—lifelong learning programs. MRC marginalized Roma community.

Source: WBG experts.

By a mutual agreement, three additional VET schools were selected, bringing the total to eight schools that are eligible for the support of the cooperation with the selected employers and for the financial support from the Operational Programme Integrated Infrastructure (OPII). The purpose of the additional support is to strive for a more targeted involvement of the employers in practical education and the dual education system, through investments in innovative technologies. The additional nominations of VET schools to receive support cooperation with employers included:

- Industrial VET School of Transport, 911/94 Sokolská Street, Zvolen
- VET School of Woodworking, 2193/17 Lučenecká cesta, Zvolen
- VET School, 10 Poľná Street, Veľký Krtíš

ANALYSIS AND FINDINGS

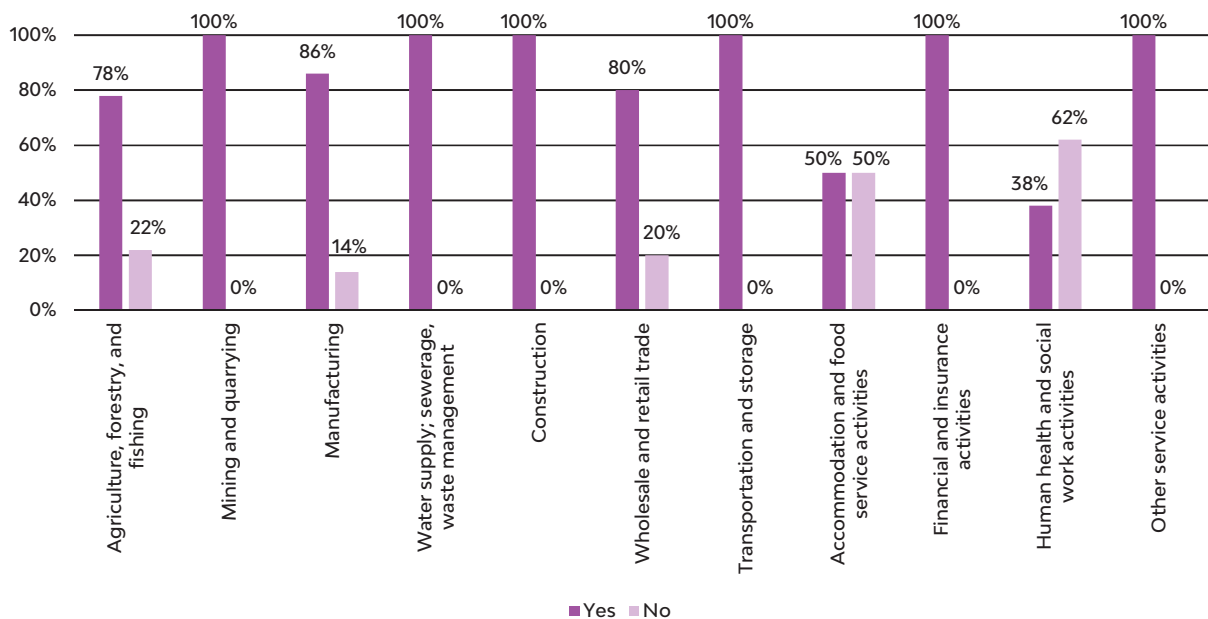
The first part of this section presents the analysis and findings from the Employer Study and the VET Secondary Schools Study. It then moves on to describe the design process used to develop the investment packages, including summaries of each of the individual investment packages.

EMPLOYER STUDY AND SECONDARY VET SCHOOLS STUDY

Evidence and Implications of the Skills Mismatch

There is clear evidence of a mismatch between employer expectations and the quality of skills possessed by the VET school graduates. Even though the VET school graduates are well prepared in language skills and both basic and advanced computer skills, the majority of the firms across sectors indicated that the new hires lacked the skills needed to perform their tasks (see Figure 3). ‘Soft skills’, such as working well with, and listening to others, easily adapting to new tasks/changes, and finding new and innovative ways to do things, emerged as one of the key missing skillsets. This overwhelming mismatch has negative downstream implications on the labor market. The nonavailability of labor and the lack of training are constraints for most firms. Nearly half of the firms perceived labor factors as significantly constraining their growth.

FIGURE 3. Hiring Problem: Applicants Lacked Required Skills (by Sector)



Source: Authors.

Breakdown in Cooperation and Coordination

While the firms are represented in some aspects of the school management, there is limited evidence that they are providing strategic inputs toward the design, implementation, and evaluation of the school programs. All the VET schools in the Banská Bystrica Region reported having a management committee and governance board, with about half of the memberships made up of industry professionals or industry association members. However, investigation revealed that these entities are not effectively engaged with the schools. Less than half of the schools indicated that they developed a strategy to involve industry groups, business associations, or employers in their decision-making processes. Further, while most schools provide internships, these programs offer limited interaction and very little feedback between the schools and the firms. The lack of cooperation and coordination between the employers and the schools makes mutual understanding and meaningful collaboration impossible, which contributes significantly to the skills mismatch.

Additionally, informal hiring practices dominate the recruitment market. Firms are more likely to use internet advertising than they are to use formal means, such as the government Labor Office resources or career placement services.

Siloed Curriculum Development and Teaching and Learning (including Dual Education and Work-based/School-based Learning)

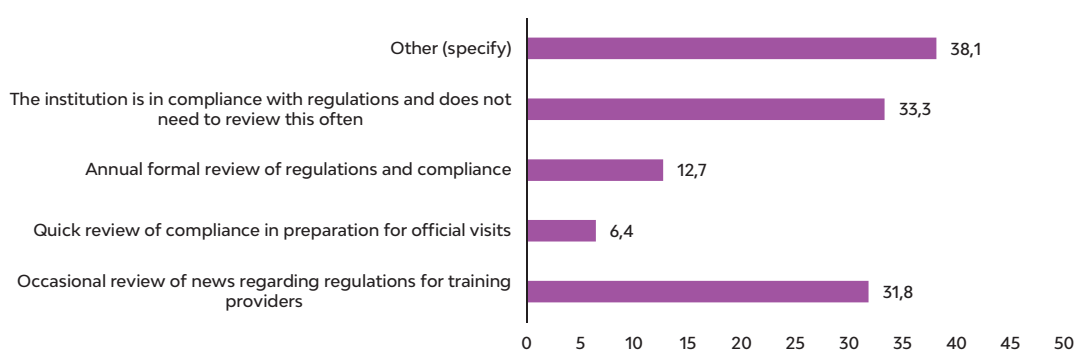
The design, delivery, and assessment of the study program curriculum is too heavily influenced by the need to comply with government guidelines, missing critical opportunities for input from, and alignment with, the job market. Internal annual reviews, a process implemented at most schools, provide an opportunity for: (i) meaningful interaction with, and feedback from, businesses, (ii) redesign of curriculum according to national standards, and (iii) robust and autonomous end-of-program assessments that engage business counterparts. Unfortunately, schools tend to focus on compliance with national guidelines, overlooking the skills needed in the job market. Only 16% of schools indicated that they assess skill needs when determining the study program content. There seems to be a gap in the guiding regulations, or the implementation of regulations, that falls short of ensuring that the curriculum, teaching, and learning processes are relevant to producing the needed skills.

A stark example of this disconnect is evident when examining graduate skills, where only 30% of the schools stated that their graduates are able to perform high-tech processing, one of the highest-ranked skills by the employers. Another alarming revelation is that only a small percentage of the firms are providing all the work-based training experiences in the region. In looking at sector involvement, only four manufacturing companies are providing 91% of the official dual education placements and internships.

Limitations in Internal School-level Processes for Quality Assurance and Improvement

The existing quality assurance process is unstructured, leaving room for error, inconsistency, and poor feedback loops. The most common criteria for assessing performance in schools is the formal evaluation process. Most schools hold internal staff performance meetings once or twice a year, and feedback is collected informally from the students and graduates. The most common approach to student performance assessment, is through work-based training, using evaluation forms sent to the employers, while the rest depend on informal conversations with the employers. However, a quality assurance management system, in which data on the performance of teaching staff is gathered annually from teacher evaluations, is missing in most schools. Only 27% of the regional schools reported having a formal quality management system. Alarming, 33% of schools reported that they are already compliant with regulations and do not need to regularly review them (see Figure 4).

FIGURE 4. What Mechanisms Does Your Institution Use to Ensure Compliance with Regulations (%)?



Source: Authors.

Government regulations, budget constraints, and an inability to find teachers with the appropriate competencies were among the barriers to school improvement described by the school directors. The educational authorities are encouraged to consider finding ways to make the VET teaching profession more attractive to a wider pool of applicants with direct experience in the required skills demanded by the employers. At the same time, the authorities need to give the school directors more freedom to control their course programming, to improve relevance and a better placement of their graduates.

Under-resourced Career Counselling and a Lack of Emphasis on Lifelong Learning (LLL) Services

There are limited resources to support students as they transition into the job market and continue through their professional life. Such resources may include, but are not limited to: (i) dedicated career centers, (ii) trained career counselors with appropriate industry knowledge, (iii) regular orientation, recruitment, and networking events, (iv) teachers with the right competencies, and (v) an ever-growing network that enables internships and apprenticeships across industries. Too often, career counselors are part-time staff, or they hold other staff positions simultaneously. Few schools house a dedicated career center and coordinate hiring requests.

Schools are also not prioritizing lifelong learning services for seasoned workers looking to expand their skills, and for firms looking to offer professional development opportunities to their workers. School directors acknowledge that offering LLL and reaccreditation courses is one important way to ensure that their schools are prepared for innovations and new services in the labor market, but these programs are not being prioritized and expanded.

Disconnect in Teacher Qualifications and Student Outcomes

The VET system maintains a highly qualified teaching staff with advanced degrees, as well as teaching and industry experience, but this expertise is not necessarily translating into better student outcomes and better responsiveness to the employer skill and knowledge requirements. VET teachers tend to hold advanced degrees, the majority work full-time and have over 10 years of industry and teaching experience. It is unclear whether teachers are associated with the skills gap. It is possible that teachers with more years of industry and teaching experience have not 'skilled up' on new industry specific techniques or requirements. It could also indicate a breakdown in the hiring of new teachers with current skills and knowledge. On the other hand, it is possible that teacher qualifications and profiles are not determinants of the skills gap. VET authorities should prioritize research to explore this issue further. Efforts should also be made to establish a more sustainable teacher career development pipeline. As stated above, a data-driven quality assurance management system would also provide greater insight into the impact of teacher qualifications and profiles on student learning outcomes.

Uneven Facilities and Inputs Across VET Schools

Regional and national VET authorities should prioritize supporting schools that are struggling to provide space and equipment to their student body. While schools have functional equipment, a large number of the schools do not have what they need. Only 42% of the schools have adequate space, tools, and equipment, while 26% stated that they are not currently able to supply enough equipment to their students, and 32% indicated that their ability to adequately supply equipment to their students can vary from year to year, depending on enrolment numbers. There is also variation across schools and subregions. School directors stated that improving school facilities, especially the classrooms and workshops, is a key element in preparing their schools for future innovations in the job market.

Static Business Model and the Lack of Innovation

VET schools should think ‘outside the box’ when it comes to how they do business. There is room for innovation in many aspects of the VET sector, and finances and marketing are two prime examples. Schools should explore revenue generation as a way to improve financial health, school infrastructure, and resources for their students. Effective revenue generation also has the potential to enhance the relevance of the schools and the VET system in the region. All but 30% of VET school expenses go to salaries, leaving limited funds for the myriad of resources and activities that schools need in order to be successful. Some schools manage to generate additional revenue to cover categories, such as high infrastructure costs. The VET schools can generate revenue through many means, such as selling items produced by the students and programs (for example, catering/food, furniture, and so on), providing requalification courses, renting spaces, and charging fees for the use of their facilities (for example, swimming pools, workshops, and others) or equipment. Schools should also be aware of the state aid rules in support of innovations and investments to improve quality. Schools are also not taking advantage of marketing opportunities. VET schools and their intersection with the labor market should be viewed as an engine for economic growth. This message should be promoted through the available traditional and social media channels.

Study Programs—Openings and Closures, Enrolment, Capacity, and Analysis

VET schools and programs are grappling with the threat of program viability and declining enrolment, without adequate analysis to make smart decisions. The VET schools and authorities should consider a strategic direction or an optimization strategy to guide their decisions about opening and closing VET schools. Several emerging trends could put resource-constrained schools in an even more challenging position: (i) schools are eager to offer new training programs, (ii) more study programs have been opened than closed (see Figure 5), and (iii) programs with low enrolments continue to exist in many schools.

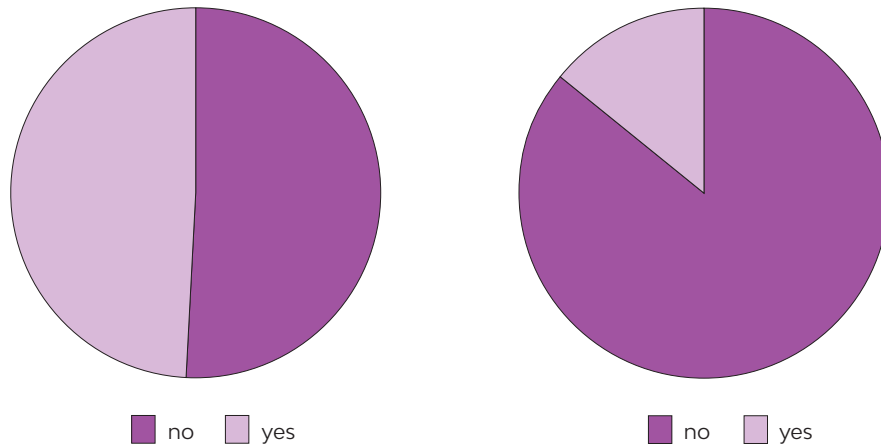
Overall, 13% of the 164 study programs offered at VET schools in the region had no enrolment in the past school year. A combined 25% of programs operating last year had either no capacity or were running at between 19–50% of full capacity. The BBSK-ED and school directors should focus urgent attention and further investigation on this issue.

An examination into why some schools, for example, the agri-food/forestry sectoral grouping, are successfully keeping their programs relevant and maintaining enrolment, would offer valuable information. Further, some schools may benefit from a deeper discussion about the trade-offs of maintaining programs with no enrolment. While schools are optimistic that they will be able to increase interest in these programs in the future, this trend could have devastating consequences if not appropriately addressed.

FIGURE 5 Introduction and Closure of Study Programs for the Past Three Years

Percentage of Study/Training Programs Opened

Percentage of Study/Training Programs Closed



Source: Authors.

Rising Dropout Rate

There is a significant dropout rate from VET programs associated with academic or financial challenges. The BBSK-ED and regional school directors should look more closely at the reasons behind dropouts, especially the 20% of students who drop out because the program is too demanding. Two explanations to consider are that primary schools do not properly prepare students for the secondary VET schools, or that the current VET curriculum needs to be appropriately adjusted to better meet the skill level of the students. With regard to financial challenges, the north subregion had the largest percentage of dropouts (12.7%) due to financial hardship, and the industry and services/trade sectors carried the highest percentage (13%) of students dropping out because they could not afford to continue. The additional pressure on students who are in a lower socioeconomic status makes them more vulnerable to dropping out of school. In response to this risk, funding plans could be created, or existing ones could be expanded, in order to offer support to students with the greatest need. While there is currently little momentum within the BBSK to overcome these challenges, joint efforts from all the stakeholders (for example, school founders, school management, nongovernmental organizations [NGOs], employers, communities, and families) need to be coordinated to address this serious issue.

Investment Packages

The creation of investment package proposals individually for each priority pilot school was the main objective of Activity 3. It is a comprehensive multimonth process carried out in close cooperation with all the stakeholders, following the approval of the priority pilot schools by the CuRI Steering Committee. This process was led by the World Bank and included capacity building at the schools.

The process of creating VET school investment packages was divided into several steps according to the agreed time schedule, but this timetable was significantly affected by the COVID-19 pandemic (Table 4).

TABLE 4. Steps for Creating Investment Packages

1. CuRI Steering Committee Decision	Selection of 5–8 priority pilot VET schools in the region
2. Information/ Acceptance	BBSK Education Department officially informed selected schools and asked the school management to confirm their interest in participating in the creation of the investment packages and individual projects.
3. Kickoff Workshop	Introductory meeting held as an online webinar (due to COVID-19), and included: (a) an explanation of the CuRI objectives in the VET field, (b) purpose and objectives of the investment package, including a specific example, (c) expected tasks of the school project teams, outputs and presentation of first proposals, and (d) time schedule.
4. Online Webinar for VET Schools on the Creation of Investment Packages	<p>Interactive educational program for school project teams with the participation of the representatives of selected BBSK departments and World Bank experts.</p> <p>Provided information on the procedures for creating investment packages and enabled school project teams to process the first concepts of individual projects on the basis of the submitted forms.</p> <p>BBSK is using the communication platform, Microsoft Teams, for school project teams to collaborate across schools and stakeholders.</p>
5. Initial Individual Consultations with School Project Teams	Additional information and guidance, focusing on: (a) first assessment of initial project intentions and real-time feedback from experts, (b) identification of possible obstacles to investment package implementation, and (c) common agreement on the next steps and follow-up to the first investment package proposal.
6. Online Presentations of the First Proposals	Based on the feedback provided by the participants of the online presentation, the school project teams considered modifying the proposals of their individual projects before the preliminary assessment of their feasibility, including their prioritization and the issue of their time-consuming preparation.
7. Follow-up Activities and Preliminary Feasibility Assessment	<p>A feasibility audit was carried out by the BBSK and proposed modifications to the selected individual projects of the pilot VET schools (from the technical, financial, and institutional point of view) were identified.</p> <p>One of the results of the preliminary feasibility assessment were proposals for the so-called joint cross-sectional project of VET schools in the territory of the BBSK.</p>
8. Individual Consultations and Provision of Feedback to VET Schools	Finalization of proposals for individual projects forming an investment package in cooperation with other stakeholders and ministries (for example, Ministry of Education, Ministry of Economy, Ministry of Labor, Chamber of Commerce, and others).
9. Preparation of Final Versions of VET School Investment Packages	Preparation for presentation to the CuRI Steering Committee.
10. Approval of Proposals for Investment Packages of Priority Pilot VET Schools	<p>The CuRI Steering Committee approved draft investment packages of 8 pilot VET schools and the first draft of a joint cross-sectional project of VET schools in the BBSK territory.</p> <p>The CuRI Steering Committee recommended to the BBSK representatives to continue the related preparatory work, such as the preparation of feasibility studies, the public procurement process, preparation of project documentation, consultations with the relevant managing authorities (MAs), and representatives of the employers, trade unions and professional organizations, and others.</p>
<i>June 2020 Meeting</i>	

Source: Authors.

In the months of July–August 2020, intensive consultations were held with the BBSK representatives and World Bank experts in response to changes related to the COVID-19 pandemic and the possibilities of financing the proposed investment packages. At the level of investment priorities (IPs), the investment packages and the joint cross-sectional project of VET schools on the BBSK territory were partially modified. See Annex 2 for a detailed timetable.

Summaries of each of the eight proposed individual investment packages (IIPs) for the VET schools in the Banská Bystrica Region are provided with a uniform breakdown of the following categories: intention, specific objectives, total planned amount of investments, expected results, and impact of the integrated investment.

Proposal for investment package 1: VET school for the industry sector

Pilot school: Joint School, 848 Štúrova Street, Detva

Name of the investment package: INDUSTRY 4.0 as a challenge for vocational education and training

Intention of the IIP:

The intention is to create an educational center that will provide vocational training for pupils in accordance with the needs of the region and modern industry trends. In addition to pupils and pedagogical employees of the school, other VET schools in the BBSK, company employees, or even job seekers will be able to use the services of the educational center.

The objectives are also to promote vocational education and modernize the school curriculum to adapt it to practice, to ensure the continuous improvement of the quality of education, including nonformal education, and to innovate the teaching and school communication channels.

The integrated investment package is developed into three individual projects that pursue their own specific goals:

- Construction of a regional training center for technical professions
- Modernization and innovation of the educational process, support of nonformal education
- Promotion of technical education

Specific goals of the IIP:

To modernize the conditions of vocational education and training at the joint school in Detva in order to increase the number of pupils in the technical professions

In close cooperation with the regional employers, to focus both on the modernization of the practical teaching spaces, and on the innovation of the school curriculum and the improvement of quality

Systematically analyze the needs of the regional labor market so that the school educates graduates with the necessary skills and knowledge

In addition to technical and content modernization, also focus on innovative methods in the form of online teaching, as well as on the education of pedagogical staff

In cooperation with employers, also prepare programs (educational or online) for the education of pupils, pedagogical staff, company employees, and job seekers, so that the results of the proposed modernization can be used effectively

Intensively promote technical education in the primary schools

Implement the international quality assessment system, EQAVET

To set up a career guidance center focusing on primary school pupils and educational counselors; and, through joint activities, to increase interest in the technical professions among children and young people

The total planned amount of the investment is **€4,795,000**, for the modernization of vocational workplaces and related school infrastructure, strengthening of the school's professional capacities, training of pedagogical and professional staff, and new facilities and equipment.

Expected results and impact of the IIP:

The established education center will primarily focus on the preparation of pupils in the engineering professions. The vision is to focus on preparing pupils in the fields of programming, CNC machining, automation, robotics, metrology, computerization, and virtual reality. For this purpose, the mechanical and technological equipment will be supplemented, to carry out practical education, not only for the pupils of the school, but also for other VET schools. The training center will be designed for teachers and pupils from the primary schools in the region, specialist lecturers, and company instructors. Pupils will be able to test their skills and gain a realistic view of current engineering, which is no longer a hard job in difficult conditions. In addition, this will be done in close cooperation with the employers, which will further increase the prospects for future employment in the region. Such an experience will increase the children's motivation to study the technical professions.

An important output of the project will be the update and innovation of the school education program, in close cooperation with the regional employers and professional organizations. This requires regular analysis of the labor market, the participation of companies in the teaching process, permanent improvement of quality, and international cooperation.

In addition to the engineering professions, we would like to focus on the development of dual education for pupils in the study program business academy, and at the same time, to create a consulting center in the field of economic and legal advice to those interested in entrepreneurship.

Proposal for investment package 2: VET schools with a focus on the support of self-employment and SMEs

Pilot school: VET School, 56 Šafárikova, Tornaľa

Name of the investment package: Open friendly school—school for everyone

Intention of the IIP:

The intentions are specified as follows: to make the VET school a modern educational institution not only for pupils, but also for the unemployed and other interested people, such as the marginalized Roma communities (MRC) and other socially weaker groups from the region and the surrounding area; to improve their social status by strengthening their professional skills and subsequent successful employment in the labor market; to improve communication with the VET actors, and; to promote the link between education and guidance in the context of lifelong learning.

The school will achieve these goals through the following projects:

- **Motivating school**—creating a motivating and safe environment for pupils, reconstruction and completion of the school building, and modifications of the school's surroundings with zones for pupils
- **Inclusive school**—specific training of teachers and professionals, new forms of motivation and support services for students, innovation of content and forms of education
- **Collaborating school**—joint activities and projects of the school with partners in the sectors and the territory; promotion of the school, its results, educational opportunities, and additional services
- **Practical school**—new, specialized workplaces, serving pupils and lifelong learning participants at a training center; new forms of practical training for employers, linking practical training with 'useful' products and services

Specific goals of the IIP:

- To create a motivating and safe environment for pupils
- To support joint activities and projects of the school with partners within the sectors and the territory
- To provide specific training for teachers and school staff
- To establish new specialized workplaces serving pupils and lifelong learning participants
- To improve the educational conditions adapted to the needs of specific groups of pupils (content and form of education, qualified pedagogical staff, and support services)
- To improve the quality of the educational process
- To increase the pupils' motivation to learn, improve pupil attendance and learning outcomes, and support pupil and teacher mobility

The proposed concept of IIP includes: renovations, modifications, and completions within the school building and its surroundings; the establishment of new classrooms and vocational training workplaces, and their modernization with the latest facilities and equipment; training of pedagogical and professional staff in new methods, forms, and content of education (with emphasis on inclusive, practical, and lifelong learning); the introduction and subsequent validation of tools to motivate pupils to provide support services to pupils, and finally; the promotion of the school and the development of new activities and projects with current and future partners.

The total planned amount of the investment is **€3,456,000**, for the development of study programs, material and technical equipment of the vocational workplaces, training of school staff, support for inclusion and cooperation with employers, and the increase in school capacity.

Expected results and impact of the IIP:

The school wants to strengthen cooperation, especially with organizations and institutions in the field of inclusive education, strengthen nonformal community education, and introduce and pilot new educational programs for young people from disadvantaged backgrounds.

Proposal for investment package 3: VET school for the services sector

Pilot school: VET School of Hotel Services and Transport, 83 Zvolenská cesta, Lučenec

Name of the investment package: Innovative school—Novohrad on a plate

Intention of the IIP:

The intention is to create an exceptional educational environment by building a school of lifelong learning and counseling in the fields of agriculture, gastronomy, tourism and services for VET school pupils and those interested in education, and by providing services for startup entrepreneurs and entities operating in the region.

The proposed concept of the IIP is in line with the approved strategic documents at the BBSK and the local level. The proposed concept includes the completion of a modern educational infrastructure, creation of a system of continuous education, creation and innovation of VET content and methods, the support of new school services as a modern European lifelong learning and counseling center in close cooperation with the relevant organizations and institutions (further education, joint zones on the school premises) through specific individual projects:

- Farmstead—health on a plate
- Lifelong learning and counseling center (for selected study programs)

Specific goals of the IIP:

Each of the individual projects pursues its own specific objectives; overall, the objectives of the IIP can be described as follows:

- To develop and make more attractive the agricultural agribusiness study programs—farming, cynology, horse breeding and riding (spatial, material, and technological equipment on school property to better the conditions of pupils studying in these professions)
- To develop and make more attractive the gastronomic study programs of the Hotel Academy—chef, confectioner, waiter, waitress, and entrepreneurship in crafts and services—by introducing new forms of practical training
- To restore traditional agricultural production
- To create a training system for organic farming, together with the introduction of the principle of the welfare of livestock and farm animals
- To introduce a system for the processing and production of ecological raw materials for the gastronomic operations of the school—to prepare and interconnect the supply of its own catering facilities with food from the farmstead
- To raise the regional practice of gastronomy—to teach students to cook healthy and tasty food, bring in new trends in gastronomy, and provide educational activities at primary schools in the field of healthy nutrition
- To introduce new forms of cooperation with the professional and lay public using the farmyard—with parents and primary schools, kindergartens, and others
- To provide specialized services in cynology, farming, and horse breeding and riding to the general public
- To set up a relaxation and rest zone—a contact educational center with domestic animals—where visitors will have the opportunity to see how animal life works and spend their free time in activities
- To rebuild/establish a new modern training and counseling center for the provision of lifelong learning and counseling services for various target groups (for example, employers, employees, the unemployed, and others)
- To modernize the school premises and its equipment and facilities (energy efficiency, adjustment of the school surroundings, and so on)
- To implement new services in the field of lifelong learning and career guidance
- To provide material and technical equipment for vocational education in order to adapt to the current requirements of the regional labor market in the field of agriculture, gastronomy, and services
- To support the education of teachers in new forms of education and work with modern technologies, and exchange stays and internships for teachers

- To prepare and improve the educational system based on the requirements of the employers
- To link the educational program to hobby activities and other additional educational activities through cooperation with partner organizations. Measures in relation to disadvantaged groups will be prepared and implemented in consultation with experts and representatives of the Office of the Government Plenipotentiary for Roma Communities.

The total planned amount of the investment is **€5,449,500**, to improve the school's infrastructure, create new vocational workplaces, train pedagogical and professional school staff, develop new forms of practical training, and cooperate with employers.

Expected results and impact of the IIP:

- A positive change in the attitudes of parents and pupils to the study of the agricultural and gastronomic disciplines, to teaching programs, to manual work, and to working with animals
- Development and innovation of existing fields of study
- Modern premises and well-equipped professional classrooms and buildings (material and technical equipment in the educational process that will contribute to the teaching of new technologies and the improvement of the quality of education)
- Improving the educational process and strengthening the system of vocational education and training
- Creation of conditions for increasing the number of pupils participating in practical training directly at the premises of employment, strengthening the so-called 'internal dual education'
- Increasing the training of pupils and improving their preparation for their future professions, expanding the possibilities of gaining an advantageous position in the labor market
- Ensuring healthy and high-quality agricultural products for gastronomy within the school and for school partners
- Promoting a healthy lifestyle and introducing healthy and quality meals into the diet, raising regional cuisine, raising awareness of the need for healthy nutrition for the school pupils and their partner schools
- Ensuring the meaningful use of the free time of the school pupils, parents with children, use of contact with the workplace by primary school pupils for the practical teaching of science and biology lessons
- Quality educational activities in the system of formal and nonformal education in the fields of agriculture, gastronomy, tourism, and services—connected with the provision of a portfolio of advisory services
- Introduction of support services—support for nonformal education, career guidance,
- Providing innovative, high-quality agricultural, gastronomic services to school partners and clients

Proposal for investment package 4: VET school for the new technologies and innovations sector
Pilot school: Industrial VET School of Jozef Murgaš (SPŠJM), 6 Hurbanova street, Banská Bystrica
Name of the investment package: Educational Innovation Technology Center of the Jozef Murgaš Industrial VET School to support the digitization of industry

Intention of the IIP:

The intention of the IIP is to build an educational innovation technology center on the premises of a VET school, which will realistically enable the cooperation of the VET school with industry and provide graduates with applicable and up-to-date high-level education. The educational innovation technology center will provide an open space for cooperation with companies and partners, with the aim of exchanging information and creating prototypes and demonstrators. At the same time, it will support the pupils' interest in vocational education and enable them to develop personally in the current technological areas.

Specific goals of the IIP:

- To establish the Educational Innovation Technology Center of the Jozef Murgaš Secondary Industrial School with a specific concept of education in the fields of information and communications technology (ICT), electrical engineering, and the mechanical and engineering side of production
- To build a concentrated zone of professional classrooms and general education classrooms with suitable equipment and technological background (existing premises and their superstructure)
- To completely renovate the school buildings (four blocks of the main school building and the canteen) due to their current unsuitable technical condition (wet load-bearing walls in classrooms, cracks in the walls, and so on). Above all, the new look would mean increased energy savings. The reconstruction mainly concerns the insulation of the load-bearing external walls of the buildings.
- To build an information system for a comprehensive intelligent network and server infrastructure for digital communication
- To support all forms of practical education and cooperation with school partners in selected areas of school development

The school plans to achieve specific goals through the following separate projects:

SPŠJM Educational i-TechCentre—completion and establishment of the SPŠJM Educational i-TechCentre

Support of innovative thinking—zone to spend free-time, creation of exciting zones for creative activity and meetings, creation of conditions for teamwork and hobby education

Communication and promotion of SPŠJM—creation of the communication strategy of the school, preparation and implementation of marketing

Attractive environment for vocational education—comprehensive renovation of buildings and reduction of energy intensity

The total planned amount of the investment is **€7,233,000**, for the construction of a modern school infrastructure, the establishment of vocational workplaces, the innovation of the educational program, and the building of the school's professional capacities.

Expected results and impact of the IIP:

- A jointly defined, clear concept of the SPŠJM Educational i-TechCentre determined on the basis of the penetration of school requirements, the laws of the Slovak Republic, and experts from the business sector, professional organizations, and the Banská Bystrica Self-governing Region
- Improving the quality of vocational education and training through the implementation of quality management elements and new forms of cooperation with the center's partners
- Modernly equipped and managed Educational i-TechCentre of SPŠJM
- Attractive presentation of the results of the center, pupils, teachers, and school partners
- Career hub for those interested in education in IT, electrical engineering, multimedia and intelligent technologies in the Banská Bystrica Region
- Reduced expenses for school operation, responsible reduction of energy consumption while creating a new, more attractive appearance for the building
- Hassle-free parking for teachers and future school partners, support for green transport (e-scooters, bicycles, and so on)

The construction of the new Educational Innovation Technology Center of the Jozef Murgaš Secondary Industrial School for education and support of industrial digitization will **create a new educational dimension based on mutual cooperation with business and academia through:**

- Developing education in line with changing trends
- Applied teaching
- Involvement of pupils in the creation and implementation of the teaching process
- Creation of prototypes and technological demonstrators
- Networking—for schools, institutions, companies, and representatives of the region
- Creating a working environment close to real working conditions
- Creation of a system for the continuous building of a knowledge base

Proposal for investment package 5: VET school for the sector of new technologies and innovations

Pilot school: Joint School, 7 Školská Street, Banská Bystrica

Name of the investment package: Education in the field of electromobility

Intention of the IIP:

The aim of the project is to create a comprehensive modern and educational center in the field of service activities for new technologies in the automotive industry and related services, to support new services for participants in education, and to renew the school's educational infrastructure using the current school infrastructure.

Specific goals of the IIP:

- To create at school a modern teaching center of a new branch of automotive technology—electromobility, in order to increase the chances of attracting world car brands to the Banská Bystrica Region, help pupils, graduates, and companies establish cooperation with carmakers in the domestic and foreign markets (Skoda, KIA, Volkswagen, Jaguar Land Rover, and so on), and with organizations operating in the automotive industry (Bosch, Siemens, and others). In this manner, the center will contribute to creating new jobs in the region with an increased emphasis on the knowledge potential of applicants (graduates). Professional workplaces/classrooms/and workplaces in the workshop which will be equipped with state-of-the-art technology for electromobility and car repair departments. It is primarily a ‘car service’, which is necessary because of the downturn in the automotive industry. In addition, electric cars are already being produced, though the service is insufficient
- To build a presentation and career counseling center for the promotion of electromobility. The expected measurable benefit for the school is an increase in the number of applicants and graduates, and in the attractiveness of the new study program. It will also bring the school and its new, innovated premises, technologies, and human capacities to the attention of the professional and lay public
- To develop key competencies in the graduates of the teaching and study programs of the Joint School, to prepare graduates for the possibilities of further study and subsequent university study of technical focus, and to develop the so-called ‘soft skills’ of pupils, teachers, and staff
- To create new and innovative e-learning study materials, materials for teaching pupils and lifelong learning
- The specific objectives of the IIP will be implemented through the following separate projects:
 - Renovation of buildings for the establishment of specialized workplaces—renovation of the buildings and interiors of professional classrooms and workshops
 - Improvement of the quality of the existing practical training—modernization and purchase of technological equipment to equip the existing workshops and professional workplaces for practical training
 - Innovative education for electromobility in the automotive industry—build a presentation center for the new technologies in this industry
 - School promotion and career guidance—provide information and counseling services for career planning in the automotive industry

The total planned amount of the investment is €4,835,000, for the innovation of study programs, material, and technical equipment, completion of the school infrastructure, and the education of school staff.

Expected results and impact of the IIP

In terms of long-term goals, the project triggers a permanent process at the school to develop and improve teaching methods, which will improve the readiness of pupils to live in a modern society. The expected results of the project, thanks to its focus on very attractive and currently sought-after areas, such as the automotive industry, will actively contribute to addressing the needs and removing obstacles to the development of the target group. With the active contribution of the pedagogical

staff included in the target group, pupils will gain the opportunity to acquire the latest and most demanded knowledge for a smooth application to the current Slovak labor market, with the help of new methods of education and modernized forms of teaching.

Proposal for investment package 6: VET school for the agriculture, food industry, and forestry sector

Pilot school: VET School, 80 Pod Bánošom Street, Banská Bystrica

Name of the investment package: Inherited family farms in the hands of an educated farmer

Intention of the IIP:

The purpose, or main objective of the IIP, is to build a modern VET school that will become a leader in comprehensive vocational training in agriculture, food, and rural services in the region. This will be accomplished by handing over the heritage of family farms to young, educated farmers, modernizing material and technical support, supporting lifelong learning, and implementing good examples from best practice, thereby building a school that will become the basic profiling force of the young farmer of the 21st century. This will be a school that implements innovative elements with an attribute of uniqueness in the education system.

Specific goals of the IIP:

The aim is to create a comprehensive, modern, educational infrastructure by building a center of competence and excellence for rural services with an emphasis on mountain and protected areas, in the field of gastronomy, selected related activities, and agriculture.

- To build and equip a model of a family-type training school farm as a modern, comprehensive center of top-level training in agriculture, food, and rural services, in connection with agritourism
- To become the school that will be the basic profiling unit of all participants in education, in order to build a lasting relationship with the land and the native village—to be educated and then build their farms in their birthplace, so that the countryside is not depopulated and rural unemployment is eliminated
- To make the general public more aware as a final consumer, in order to change their way of shopping, so that they learn to buy healthy regional foods directly from the farmer
- To expand and improve the competencies, professional skills, and knowledge of the pedagogical and professional staff through further education, thereby supporting innovation in the content and forms of education
- To create a center of education and counseling, which will become a regional leader of comprehensive education in the agricultural sector, and to contribute to the fulfillment of the key goal of the BBSK strategy—“A region open to new opportunities and respect for traditions, people, and nature ...”
- To innovate the content, methods, and forms of education, and to support the further education of school professionals, in order to implement new trends in education and training
- To educate graduates who have received an education that corresponds to the current requirements of the regional labor market

The total planned amount of the investment is **€4,451,000**, for innovation and the development of new study programs, material, and technical equipment and facilities for vocational workplaces, as well as the completion of the school infrastructure.

The specific objectives of the IIP will be fulfilled through the implementation of the following separate projects:

- Family farm for mountain areas—building a modern VET workplace and innovating the study program
- Development of the food industry and the processing of bee products, with respect for traditions—revitalization of vocational training workplaces
- Quality education connecting the interests of the farmer with the needs of the country and the region—innovation and creation of new content and forms of education
- Promotion of regional products—to create a regional promotion center and advisory center for farmers

Expected results and impact of the IIP:

The expected result of the project is a modern and equipped VET school, which will become the basic profiling force of a young farmer. It will be a school with an adequately created educational environment that is equipped with modern technologies and equipment. It will be a school that implements new skills and best practices in a system of education and training that corresponds to the nature of new jobs. It will be a school that—thanks to its educational, promotional, and advisory activities—will become the leader in the region for education in the sector of agriculture, food, agritourism, and rural services.

In the field of human resources, the expected result is skilled graduates who have mastered the work on modern technological equipment. These graduates will be attractive to the labor market and be able to do business independently and competitively. In addition, support will be provided for pupils from disadvantaged backgrounds through a combination of financial and nonfinancial instruments, based on the pupil's individual educational and career plan.

Proposal for investment package 7: VET school for the agriculture, food industry and forestry sector
Pilot school: VET School Technical and Agri-food, 61 Okružná street, Rimavská Sobota
Name of the investment package: Everything under one roof—agriculture and family business

Intention of the IIP:

The intention of the IIP for the school is to build a modern educational center for agriculture and food under one roof, using the existing school premises in close cooperation with school partners, thus making vocational education and training more attractive.

The proposed concept of the IIP project includes the following objectives: the modernization and reconstruction of the school premises for theoretical and practical education, as well as their equipment and facilities; the creation of specialized workplaces and a multifunctional area with production and recreation zones (used for education, sports and leisure activities, pupils' relaxation, and cooperation with the school community and partners); the establishment of a family business center for agriculture and food that focuses on advisory services, formal, nonformal, and lifelong learning, and finally; the networking of educational institutions with other partners, and the development of new forms of cooperation within the sectoral alliance.

Specific goals of the IIP:

- To create a multifunctional school complex for pupils, the professional public, and the local community—to make the school environment and its equipment more attractive with regard to new trends
- To increase the overall attractiveness of the school for future students, lifelong learning participants, and the public, and to involve the local communities in school (community orchard and garden, and other targeted activities)
- To improve the quality of vocational education and training in the system of formal and nonformal education, with an emphasis on increasing the share and quality of practical education in real workplaces (orchards and gardens)
- To innovate the content and form of education for the existing teaching and study programs, and to introduce new fields of study within the school
- To create the conditions for recreation, hobby, and sports activities for the pupils, as well as for targeted activities on the part of the public
- To use the potential for the production and processing of products in practical training
- To build on agricultural and horticultural traditions—orchards, gardens, small farm-type farming, and the restoration of cultivation of original crops
- To support the development of the entrepreneurial skills of the pupils, as well as others interested in education and family entrepreneurship, self-employment, and so on
- To expand the offer of lifelong learning in the field of business and other areas (including driving school services and the training of pedagogical and professional staff)
- To link the educational process to hobby activities and other additional educational activities in cooperation with the partner organizations and employers
- To enable the recognition of the results of nonformal education, in connection with the hobby education of the pupils and lifelong learning
- To create the conditions for the provision of career and job counseling services, as well as implement new services in the given areas and in lifelong learning
- To support the training of teachers in new forms of education and work with modern technologies, including internships and employer training
- To support new forms of cooperation with partners (practical training with different types of employers, internships, volunteering, study stays, exchange stays, regional and international mobility, joint projects, and others)
- To promote the school and to support the cooperation of the school with the public, parents, pupils, primary schools, and organizations
- To support the networking of educational institutions in the field of agriculture, food, and labor in the country, in order to create a sectoral skills alliance
- To digitize the content and forms of education in close cooperation with foreign partners
- To support the language learning of pupils and teachers/ professionals in everyday life

The specific objectives will be implemented through the following separate projects:

- Attractive environment for vocational education and training under one roof— investments in renovation and increased energy efficiency
- Living orchard and garden as relaxation and production zones—multifunctional external areas of the school on the school premises
- Family Business Center for Agriculture and Food—completion of professional workplaces and the provision of advice, based on interest in entrepreneurship as a career choice
- Sectoral skills alliance for agriculture and food—support for sectoral cooperation between different actors

The total planned amount of the investment is €5,824,250, for the innovation of the content and forms of education, completion of the infrastructure including school premises, building of the professional capacities of school, and the introduction of new support services for the pupils and other participants in education.

Expected results and impact of the IIP:

- The modification of the external and internal school premises (school building, vocational classrooms, and school canteen), and the modernization of its equipment with regard to new trends, will strengthen the attractiveness of the school for future students, lifelong learners, and the public. It will also increase the share, and improve the quality, of practical education through specialized vocational workplaces, and create the conditions for new forms of teaching and the use of new approaches and technologies, such as irrigation systems, and intelligent and smart technologies—the use of ICT in agriculture. The renovation of selected areas of the school will also provide an example of green solutions, and will enable the improvement of energy efficiency, thus reducing the energy costs for the school. The attractiveness of the school will also be supported through the multifunctional campus of the school for students, the professional public, and the local community, which will be used for leisure and sports, but also for production purposes as part of practical education.
- The newly established, modernly equipped, Family Business Center for Agriculture and Food will accomplish the following goals: increase the attractiveness of the school for future pupils, lifelong learners, and the public; provide opportunities for the pupils and other learners to develop their entrepreneurial skills, and; strengthen the vocational education and training system with links to nonformal and lifelong learning.
- The creation of a sectoral skills alliance will lead to new forms of cooperation between the school and educational institutions, as well as partners at different levels in the different economic sectors, thus expanding the school's opportunities for further development. New joint activities and projects will create various forms of cooperation (internships, volunteering, study visits, exchange stays, regional and international mobility, joint projects, and others) and lead to the following benefits: an increase in the quality of vocational education and training; better qualification of the vocational, pedagogical, and managerial staff; and finally, to the greater attractiveness of the school, as well as a better position for the school both within the region and at the national level.

Proposal for investment package 8: VET school for services with a focus on the environment
Pilot school: VET School of Services and Forestry, 1586/9 Kolpašská street, Banská Štiavnica
Title of the investment package: Forestry of the 21st century

Intention of the IIP:

The intention is to create a top training workplace (education center) for those interested in working with the latest technologies and equipment in forestry (harvester and forwarder) that is unique in this field in the Slovak Republic. This education center will facilitate the provision of services and work in the forestry sector in a quality, efficient, and sustainable manner.

The proposed concept of the IIP project includes the following elements: the completion of a modern educational infrastructure; the creation of a system of continuous education; the creation and innovation of VET content and methods; and support for new school services, such as a modern European lifelong learning and counseling center, in close cooperation with the relevant organizations and institutions through specific projects (further education, virtual center, and common zones on the school premises).

Specific goals of the IIP:

- To establish a new modern educational center of European significance—FOReSTLab
- To innovate the existing offer of education (modification of the content and forms of education in the study programs)
- To implement new services in the field of career guidance and lifelong learning
- To provide material and technical equipment for vocational education in order to adapt to the current requirements of the regional labor market in the area
- To digitize the content and forms of education in close cooperation with foreign partners, including support for language learning in everyday life (not only during the times of international mobility of the pupils and teachers/professionals)
- To introduce new forms of cooperation with the professional and lay public—with parents, primary schools, kindergartens, and others, using the school premises and educational trail
- To recognize the results of nonformal education in connection with hobby education
- To expand the offer of lifelong learning, including in cooperation with VET schools of a similar focus—creation of a sectoral alliance of skills, as well as enabling alternative and flexible educational paths for all interested groups
- To support the education of teachers in new methods and forms of education, work with modern technologies, exchange stays, and internships for teachers
- To link the educational program to hobby activities and other additional educational activities in cooperation with partner organizations
- To modernize the school premises in order to improve the quality and possibilities of education, increase the attractiveness of the school, and expand the possibilities for sports, hobby, and extracurricular activities (energy efficiency, other necessary modifications, adaptation of the school surroundings, and so on)

Achievement of the specific objectives of the IIP is ensured through the following individual projects:

- Attractive environment for vocational education and training—revitalize the school premises, increase the energy efficiency of school buildings, establish new vocational workplaces, and provide new equipment for the existing classrooms
- Forest technology operator for the 21st century—innovation of the school program
- Digitization of education—FOReSTLab—a center focused on the use of the latest technologies in forestry
- Sectoral alliance of skills for forestry—support cooperation between various actors in this sector in the Slovak Republic and abroad

The total planned amount of the investment is €4,885,000, for the completion and improvement of the school infrastructure, establishment of a new professional workplace, support of international cooperation, the mobility of the pupils and school staff, and the development of nonformal education and cooperation in the sector.

Expected results and impact of the IIP:

The newly built training center will be a priority as a top specialized center of European importance focused on the forestry professions and support for a green economy. It will use state-of-the-art ICT and simulation programs, and enable practical education and training, not only for school pupils, but also for students from abroad.

An important output of the project will be the updating and innovation of the school education program, in close cooperation with the relevant employers and professional organizations. This requires the regular analysis of the labor market, the participation of companies in the teaching process, the permanent improvement of the quality of education, and international cooperation.

In addition to the forestry professions, we want to focus on the development of dual and practical education for all students, and at the same time, create a consultation center in the field of economic and legal advice for those interested in entrepreneurship.

RECOMMENDATIONS

The first part of the report presents recommendations from the Employer Study and the VET Secondary Schools Study. It then moves on to detail recommendations for the investment packages, including an implementation strategy and guidance on how to create an enabling environment, anticipate potential risks, understand the critical success factors, as well as suggested next steps.

EMPLOYER STUDY AND SECONDARY VET SCHOOLS STUDY

1. **There is a need to establish a formal model for data collection, analysis, peer communication, and learning. Examples include, but are not limited to:**
 - A. **Mechanisms to monitor and forecast the labor market needs in order to inform the design of school curricula and programs.** An advanced example is a workforce data platform that collects and shares information from schools, firms, and the relevant government offices (for example, the government Labor Office). There are also a broad array of less technical mechanisms and strategies to capture information about labor market needs. For example, by simply having employers as active members on school boards, they will be able to share insights about the labor market needs and trends. Additionally, schools are encouraged to collect regular (for example, quarterly) employer surveys about the needed skills, and aggregate those results over time. Having a dedicated role or team that is responsible for managing surveys and reviewing and reporting on results, can help institutionalize this strategy. Finally, any effort to arrange touchpoints between the schools and the employers can help gather information about the labor market needs. For example, networking events can bring industry speakers to schools to speak with the students and faculty about the current trends. School leaderships can invite industry leaders for gatherings to identify and discuss the workforce needs and share information about study programs. The BBSK could also host events or workshops that bring the schools and the employers together. For networking events to be successful, it is important to identify the goals of the event in advance and to design the engagement so that each party is able to share valuable information.
 - B. **A strong VET information system** should provide timely and accurate data about the VET system as a whole, including information on its alignment with the workforce. To capture alignment information, the system should incorporate assessments of the quality of education and educational programming, with feedback loops to share results across the system for improvement, strategic planning, and policymaking. The system should also monitor education quality indicators at all levels. Such a system is the backbone of a quality management system (detailed in the next section).
 - C. **The adoption of a culture of peer communication and learning.** Best practices emerged throughout the research. VET school authorities are encouraged to research what works and share what they learn. Schools can build up research and learning capacity in different ways. In some cases, a natural place for research activities could be within a quality assurance or quality management team. In other cases, there may be a group of staff that would like

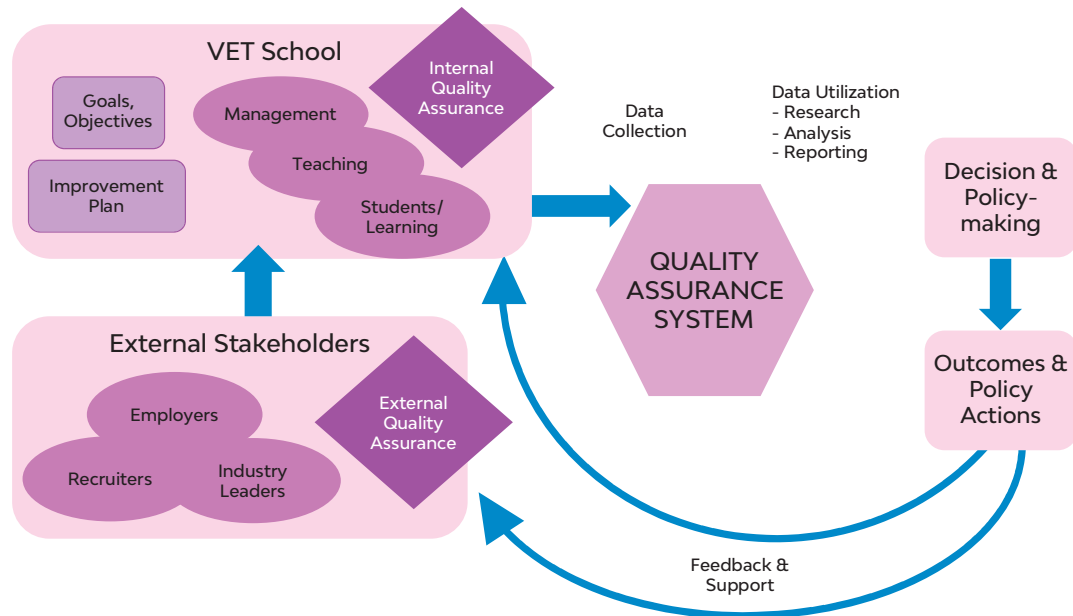
to explore a specific topic of interest. When possible, it is helpful to provide these research groups with some small stipend, especially if they may benefit from visiting with stakeholders off campus. This research and learning process should be installed across the VET system to support continuous improvement.

2. **Ongoing efforts to establish a VET quality management system in the BBSK region are critical. These activities should encompass both quality assurance and program improvement. Examples include, but are not limited to:**

Quality Assurance

- A. **Build and introduce quality assurance measures by determining *what* needs to be measured and by using both internal and external assessments of different school parameters**, such as management and leadership, teaching and learning qualifications and processes, and the learning environment, including workshops for practical education (see Figure 6). There is also a need to assess the preparedness and placement of students, so that they enter VET schools with the appropriate skills.

FIGURE 6. Quality Assurance Framework with Feedback Loop



Source: World Bank, 2020.

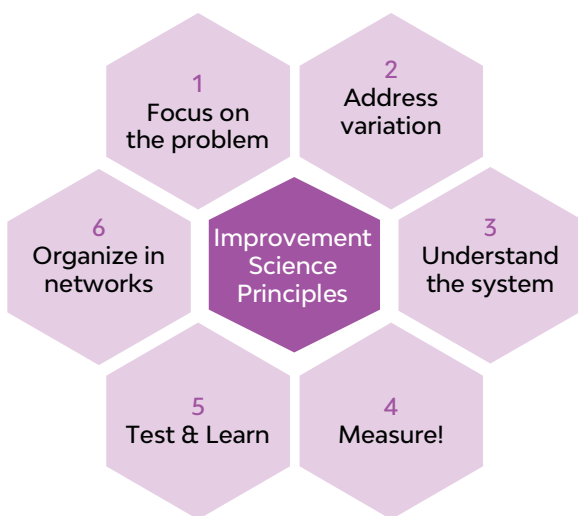
- B. **Establish an enabling environment to ensure the successful implementation of a quality assurance process.** Much can be done across the VET system to create an enabling environment, such as identifying appropriate roles and responsibilities, conducting capacity-building efforts, ensuring a strong information system (detailed above), establishing mechanisms for accountability and transparency, and providing adequate budget and financial resources.
- C. **Operationalize a school improvement system** through steps, such as implementing a process for school self-assessment, preparing school improvement plans, and supporting improvement in response to the assessment.

D. **The regulatory framework needs to balance the government compliance structure with labor market input** to ensure that the demanded skills and priorities of the employers are emphasized in the schools (for example, in program design, offerings, curriculum, and teaching and learning). As a result, there needs to be coordination across government standards, policies, and employer demands and skill expectations.

Program Improvement

A. **The field of improvement science has an array of principles, models, methodologies, and tools that can be adapted to VET and adopted by its leaders and staff.** The Carnegie Foundation has done considerable work on the use of improvement science in education, including distilling six core principles of improvement. Principles are refined here, with a focus on VET (see Figure 7):

FIGURE 7. Six core principles of improvement



Source: Bryk et al., 2015.

1. **Make the work problem-specific and user-centered.** It starts with all the stakeholders coming together to determine the core problem, for example the existence of a skills-mismatch. This co-development orientation engages key participants early and often.
2. **Variation in performance is the core problem to address.** The critical issue is not what works, but rather what works, for whom, and under what set of conditions. By considering multiple factors, stakeholders can reliably advance efficacy at scale.
3. **See the system that produces the current outcomes.** It is hard to improve what you do not understand. This requires learning how conditions shape processes in, and coordination between, the VET schools and businesses. With this understanding, a theory of change can be established and shared.

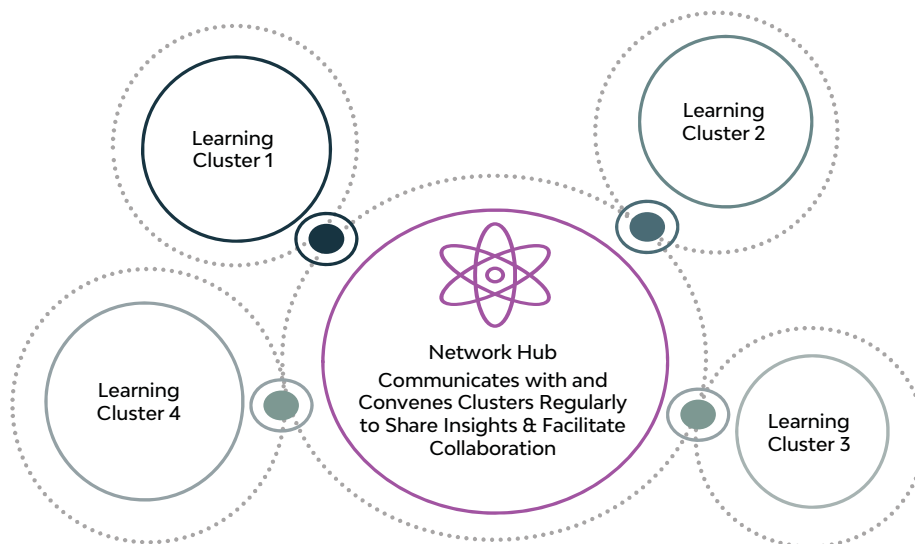
4. **We cannot improve at scale what we cannot measure.** Improvement science hinges on the ability to measure change. Any program improvement needs to include measures of key outcomes and processes to track if the change is an improvement.
5. **Practice improvement must be anchored in disciplined inquiry.** Engage rapid cycles of plan, do, study, and act (PDSA) to learn fast, fail fast, and improve quickly. Changes that aim to alleviate the skills mismatch might fail and that is okay; it only becomes a problem when participants do not learn from failure.
6. **Accelerate improvements through networked communities.** When stakeholders are organized around improvement activities, and are actively sharing information and learning, they become powerful networks, capable of quickly testing and implementing solutions at scale.

B. **There is a critical need for the BBSK-ED, along with the schools, to perform a school optimization exercise** to examine and strengthen the program offerings, enrolment, and expansion trends. With regard to declining enrolment and rising dropouts, funding plans could be created, or existing funding could be expanded, to offer support to students with the greatest need. Schools should also work proactively to identify students at risk of dropping out and connect them with the available financial and academic resources, before they

make the decision to dropout. Efforts should also focus on strengthening the efficiency and cost-effectiveness of dual education models and other work-based programming, to make practical training programs more attractive to the regional companies— in particular, for micro, small, and medium enterprises.

- C. **It is essential for the BBSK-ED and school leaders to ensure that proper resources and equipment are available** at all schools, as some sectors and regions are lagging behind. Additionally, it is imperative that the VET schools prioritize career counseling through resources such as dedicated, full-time counselors, and career centers.
 - D. **Regional authorities and curriculum planners should re-examine the current VET school curriculum to link content with practice, and include modern competencies demanded by the employers, such as ‘soft’ skills or 21st century skills.** They should consider the creation of these courses, not only in VET schools, but as a fundamental skillset for employee training programs. Authorities should also recognize that teachers may require professional development training in 21st century skills and other current job-specific technical skills. Other competencies for future economic growth should be developed, such as problem-solving bility, digital/computer literacy, and entrepreneurship.
3. **There is a need to strengthen collaboration, coordination, and communication between the VET schools and the employers, as well as the broader community of stakeholders. Examples include, but are not limited to:**
- A. **Developing a regional platform for the key stakeholders to connect and build relationships is important.** This should include a framework for the systematic exchange of information and coordination between the relevant VET actors, to mobilize local and regional authorities and institutions, including the design of procedures for the involvement of key actors in the external and internal management processes of the secondary VET schools. Through a regional platform, the BBSK-ED could convene different stakeholder groups to learn and innovate around specified topics (see Figure 8). Networking events to connect various actors would also be beneficial, as would idea exchanges in which the stakeholders discuss and develop strategies to close the skills gap.

FIGURE 8. Simple Network Model



Source: Authors, 2020.

- B. **More work and effort must be put into improving communication and coordination between the companies and the VET schools.** The firms need to play a more effective role in giving feedback and developing curricula to better ensure that the VET schools can meet the needs of the regional job market. The VET schools need to review and update the curricula content and teaching methods to ensure that their students are developing the relevant skills. With improved communication and coordination, VET schools have the potential to resolve the hiring and staffing challenges faced by the employers. With input from the employers, the VET schools could develop lifelong learning programs, and hold targeted staff training workshops, as well as regularly scheduled professional events.
 - C. **There is a need to re-examine how the schools and employers interact for the recruitment and hiring processes.** It is encouraging that evidence points to interaction between the firms and the VET institutions. However, the stakeholders need to review the quality of these interactions, given that most employers look to informal methods of recruitment, instead of using the Labor Office or participating in dual education to meet hiring needs.
4. **Efforts to innovate and modernize VET business practices will help schools become more sustainable, attract talented teaching staff, increase enrolment, and build better partnerships with industry counterparts. Examples include, but are not limited to:**
- A. **There is potential for VET schools to generate revenue,** but funds need to be used for improving schools, strengthening student skills, and strengthening the image and reputation of the schools. Importantly, the schools could also invest revenue to strengthen the relationship between the firms and the VET institutions. Funds could also be distributed through scholarship programs to reduce the dropout rate. The schools can also utilize state aid funds to strengthen their capacity to make revenues, encourage practical training, and make the programs more attractive to students and their families, as such activities will bring them closer to their future profession.
 - B. **VET schools should also dedicate resources to marketing as a way to increase enrolment, attract qualified teachers, and engage employers.** The image of the VET sector as an engine of economic growth should be communicated strategically and promoted across multiple channels. Networking events should be publicized. Leaders should draw attention to this position in interviews and at speaking events. As this message is adopted across the region—in communities, households, and in the workforce—energy, participation, and engagement in the VET system are likely to expand.

Discussion–Best Practices and Examples

A strong base of evidence supports the potential of VET to contribute to productivity and economic growth, and in Europe, it has been used as an instrument for economic transformation (CEDEFOP, 2014; Comyn and Barnaart, 2010; Bordeaux Communiqué, 2008). Such potential cannot be realized when VET systems are not aligned with the labor market.

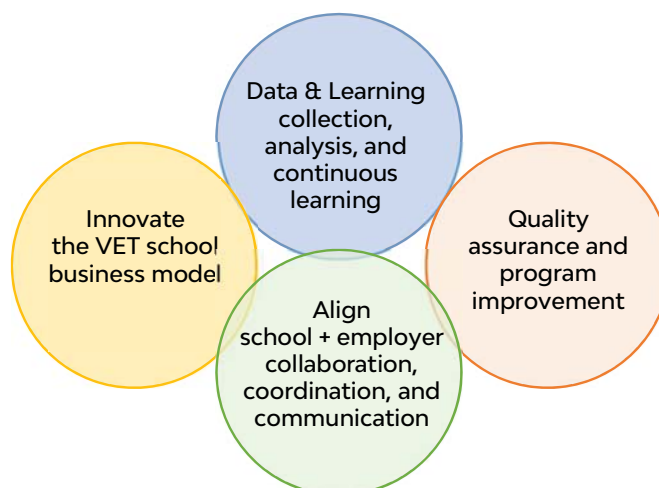
The *Minding the Skills Gap and Mismatches* report aims to reduce VET school and labor market misalignment in Banská Bystrica, by understanding the nature, scale, and underlying causes of the skill mismatches, and by offering a roadmap to strengthen the quality and relevance of the secondary VET schools to meet the labor market needs.

VET schools in Banská Bystrica can be key drivers of economic growth in the region; however, such advancement will not be realized without critical changes in the VET system, at the school level, and across VET school linkages with the labor market. The report's recommendations fall into four broad categories: (i) data collection, analysis, and learning; (ii) quality assurance and program improvement; (iii) school and employer alignment; and (iv) VET business model innovation (see Figure 9).

Data and Learning

Effective data collection, analysis, and use are the backbone of a healthy education system. Combined, they enable transparency and accountability, good governance, quality assurance, informed decision-making, empowered and qualified faculty, and continuous improvement (Abdul-Hamid, 2017). Data collection and management can be advanced and complex, with data sharing agreements, data warehouses, and advanced analytics; but it can also be simple and targeted, involving surveys, and frequent touchpoints with the key stakeholders. Both approaches, when executed thoughtfully, can yield strong results. Additionally, the active use of data and feedback is strengthened when organizations have a culture that is characterized by curiosity, learning, and peer communication.

FIGURE 9. Summary Recommendations



Source: Authors, 2020.

Combining education and workforce data is a powerful approach that helps schools inform strategic planning decisions about programs and recruitment and retention policies, enables students to make career planning decisions, and assists businesses in filling the needed positions. In the case of more advanced data sharing models, education and employment data are used to determine if there are enough students with the right skills, graduating in the right fields, to meet workforce needs now, and in the future. For these models, there are often data sharing agreements between the labor and industry authorities, education institutions, and in some cases, even the offices that manage wage and income tax records, as well as unemployment insurance data.

In the absence of an advanced workforce data platform, information about labor market needs can still be shared through less technical means, such as employer surveys and events that drive collaboration between the school and industry stakeholders.

Whether the VET system and the labor market have advanced or fairly simple data management approaches, the school leaders, government officials, and employers will benefit from cultivating a culture of peer communication and learning. The report reveals both best practices that are narrowing the skills gap, and challenges that are actively widening it. Many of these cases would benefit from further investigation to understand why certain dynamics are successful and others are not. As curiosity regarding this topic expands, so do the opportunities to collaborate on research, analysis, and share insights and best practices that ultimately can lead to improvement.

One place to start exploring learning topics is to investigate some of the unanswered questions from this paper. Why do the financial/insurance and transportation/storage sectors report no gap in the most common mismatched skills? Why do construction and accommodation/food service firms struggle to find employees with the targeted skills set, while health and social service providers excel in hiring? Why are skills mismatches not reported in firms in the north subregion? Communication between sectors and subregions is crucial to ensuring that positive deviance models are implemented in order to transfer knowledge and expand best practices.

Developing a culture of peer communication and learning takes time and concerted effort. It requires buy-in and support from leadership, active and intentional facilitation, multisectoral engagement, availability and transparency of information, and a process for designing, implementing, monitoring, and evaluating activities. In many cases, capacity development is required to develop both the 'hard' analytical and research skills, as well as the 'soft' collaborative and facilitation skills needed for successful change management. Several important steps for consideration include:

- Provide staff with time to communicate with one another and with external stakeholders, in order to learn from the experiences of others
- Incentivize these practices, if not by monetary rewards, then by recognition. Create leadership forums where staff can share thoughts and ideas, such as insights that they have gleaned from engaging with external stakeholders, or study program changes that they are testing
- School directors should lead by example. By modelling curiosity, asking questions, and requesting feedback, leaders can normalize and encourage similar behaviors in their staff
- Embrace constructive feedback. It is important that staff understand that feedback is not negative, but that it helps the entire institution grow and strengthen. When staff start asking for feedback proactively, this signals a positive shift toward a learning culture (see Box 1)
- Integrate learning and peer communication into evaluations. Not only does this help everyone improve at both giving and receiving feedback, but it operationalizes the process. This could be in the form of peer-to-peer evaluations or 360-degree feedback sessions, which gather feedback from (when relevant) an employee's subordinates, peers, supervisor, and a self-evaluation

BOX 1. Quality Management System Using Evaluation and Feedback

In Hesse Germany, 17 vocational schools work with a quality management system based on evaluation. The model, referred to as Q2E, incorporates a culture of routine feedback. The VET schools are given greater responsibility for quality assurance alongside the requirement to establish greater quality control. The pilot program was launched in 2005, with the support of Hesse's Ministry of Cultural Affairs. The key attributes of Q2E as a quality management system are:

- The school identifies its own quality model and sets its own standards.
- All the teaching staff regularly ask for feedback about their teaching.
- The school regularly checks the quality of its work—in terms of individual departments/priorities, or in terms of overall quality.
- The school management team sees internal quality management as primarily its responsibility
- At the request of the principal, an external evaluation team visits each school to investigate the internal quality management system and to provide school-specific feedback.

External evaluations consider areas, such as quality management concepts, the school's quality management handbook, overall student results, internal evaluation approaches, the importance of quality development (the feedback culture, including student feedback and teacher-to-teacher feedback), and the quality of the management in the school.

Source: EQAVET, <https://www.eqavet.eu/eu-quality-assurance/case-studies/quality-management-in-vocational-schools>

Quality

Over the last two decades, VET quality has been prioritized and guided at both the national and regional European levels by ground-breaking efforts, such as the Copenhagen/Bruges Process. The European Quality Assurance in Vocational Education and Training (EQAVET) Framework has continued to strengthen quality through specific directions for the development of VET quality assurance policies. Similarly, the European Commission established the European Qualifications Framework (EQF) and the European Credit System for VET (ECVET) to link different country qualification systems and frameworks together (EQAVET, 2020; ETF, 2014; EU, 2010). In spite of these efforts, countries vary greatly in how they define, measure, and improve quality.

In the Slovak secondary schools, the introduction of quality assurance is slow, and the use of quality management tools and models, such as the Common Assessment Framework (CAF), the ISO 9001, the European Quality Foundation Model (EQFM), and the Total Quality Management (TQM) approach, are uncommon. Some schools combine aspects of these quality assurance and quality

improvement models, but efforts are inconsistent and not systematized. Unlike in higher education, quality assurance in secondary education is not documented in legislation. However, there are signals that this may change. The introduction of quality management systems into the secondary schools is detailed in the National Program of Education (2018–2027)¹¹ issued by the Ministry of Education, Science, Research and Sport (World Bank et al., 2020a).

Additionally, steps are underway at the regional level to develop guidance and build capacity for quality assurance. The *Prešov Region Vocational Education and Training Secondary Schools Quality Assurance Framework (Version 2.0)*, offers guidance on how to establish an enabling environment for quality assurance, as well as tangible steps for the design and implementation of a quality assurance framework (World Bank et al., 2020a).

These ongoing efforts to establish a VET quality management system nationally and regionally are critical and must continue to solidify, along with activities to connect the national and regional quality assurance strategies at the school level. This approach will ensure a coordinated quality management system that monitors processes as well as outputs and inputs, to ensure the relevance of the programs and their responsiveness to labor market needs. The development of a quality management system has several key steps. A natural first step is to define quality, identify what needs to be measured, and determine how to measure it. There are resources available to support this process, some of them mentioned in this section (for example, CAF, EQFM, TQM, and others).

Next, the enabling environment must be structured so that quality management is established at the systemic level and cascaded down to the VET schools (ETF, 2014; Conti, 2010). In addition to aligning policies, much can be done across the VET system to create an enabling environment, such as identifying appropriate roles and responsibilities, conducting capacity-building efforts, ensuring a strong information system, establishing mechanisms for accountability and transparency, and providing adequate budgetary and financial resources.

Once these ingredients are in place, VET schools are well positioned to operationalize a quality management system at the school level. This requires the thoughtful design and implementation of a school improvement plan. Additionally, a continuous process of internal and external school assessments needs to be established and managed, and feedback must make its way into school improvement activities. William Edwards Deming (1993), described continuous improvement as a constant effort to decrease variability and inconsistencies on the way toward achieving a goal. Continuous quality improvement has been widely adopted across multiple sectors, with many examples coming from education. Some themes and activities from schools that have effectively implemented quality management systems, continuous improvement strategies, and improvement plans, include the following:

- Teachers and administrators build on the existing regional and national standards
- When student outcomes are off track, educator teams come together through an inquiry process to identify and test solutions
- District and school leaders actively monitor, review, and discuss results, and also deploy a districtwide systems approach for management that focus on objectives and goals
- Organizational structure, processes, and procedures are strengthened
- Processes and resources are aligned to meet goals, improve overall performance, and satisfy key stakeholders
- Measurable actions under each goal are based on data and are aligned from the district/regional level to the department, campus, teacher, and student levels (see Box 2)

BOX 2. Sample Improvement Plan Content

This example provides three goals that a school might pursue and outlines one strategy for the first goal. A full improvement plan could have 5–7 goals and each goal could have 10–15 strategies. In some cases, the goals may be set at a higher district or regional level, and then each school designs strategies to meet those goals. It is important for each strategy to detail target results, monitoring plans and responsible parties, and any financial or technical needs. The strategies can also document the alignment with regional or national policies, potential risks, and mitigation strategies, as well as formative and summative assessment results. Improvement plans are most successful when they are designed through a collaborative process, circulated widely, actively monitored and discussed, and used as a tool for innovation and adaptation. If target metrics are not met, staff should be encouraged to be flexible and creative in their pursuit of solutions.

Goals:

1. **Student Achievement:** Improve student learning so that student test scores are at, or above, the grade level, and students find employment within three months of graduation
2. **Organizational Efficiency:** Align data and operational systems to strengthen quality education
3. **Stakeholder Engagement:** Expand and deepen the relationships with the students' families, local community, and industry

Sample strategy for Goal 1: Implement a soft skills and work readiness curriculum for all students during their final term

- **Strategy's expected result:** Passing scores on work readiness exam, and positive reviews and feedback from the local employers about the students' soft skills
- **Monitoring strategy:** Teachers work with the school director to review the student exams and discuss student participation in this new study program; a quarterly industry luncheon gathers employer feedback and collects the employer survey on the soft skills of the new hires

Source: Authors, 2020.

It is important to note that VET systems are highly complex with vast internal and external linkages and dynamics. Attention must be given to coordination across government standards, policies, and employer needs, so that the demanded skills and priorities of the employers are emphasized in the schools (for example, in the program design, offerings, curriculum, and teaching and learning). Without a process for coordinating the many players, their relationships, needs and feedback, quality assurance will be fragmented and ineffective.

Finally, a number of areas in the VET system and at the school level has surfaced and require immediate attention. Dedicated program improvements that target several key areas have the potential to boost the efficiency, effectiveness, and quality of VET education:

- Perform a school optimization exercise to examine and strengthen the program offerings, enrolment, and expansion trends
- Ensure that proper resources and equipment are available at all the schools
- Prioritize career counseling through resources, such as dedicated, full-time counselors, and career centers
- Re-examine the current VET school curriculum to link content with practice and include topics on the use of soft skills or 21st century skills

Taken together, these efforts will strengthen educational quality. Improvements in these areas will also better position the VET schools to respond to the labor market needs and engage with the industry stakeholders.

Alignment

Today's labor market is constantly changing. The *Bruges Communiqué on Enhanced European Cooperation in Vocational Education and Training* (2010) recognized this reality and underscored the need for flexible, high quality education and training systems which respond to labor market needs. To be successful, VET needs to be flexible and adaptive, which requires labor market actors, VET leaders, and government officials to be in constant and systematic communication, cooperation, and alignment (EU, 2017a; EU, 2010).

There are numerous examples of initiatives and programs that engage and align multisectoral stakeholders, especially in academia and industry. One of the pioneering examples is that of the telecommunications leader, Motorola, which launched the Motorola Training and Education Center in 1981. Over the next decade, the center would evolve into Motorola University (MU), which touted impressive linkages with academic partners. MU and its college partners exchanged faculty, jointly developed curriculum, shared lab equipment, and used mutual feedback mechanisms. Upon recognizing a significant skills gap, MU engaged with engineering schools, as well as elementary and secondary schools, about their needs and how they differed from what schools provided. These were not one-off conversations, but regular meetings every few weeks with leaders across institutions. MU also created a dedicated position, the director of institutional relationships, with the goal of understanding and trying to improve the supply lines that run from elementary schools, high schools, and colleges to Motorola. The purpose of this role is to bridge the gaps between the schools and the company by diagnosing mutual needs and funding projects (Wiggenhorn, 1990).

We offer an insight into what the globally competitive marketplace demands of students and educators. Most colleges are very resource poor. But the dialogue means that they can come into our plants, talk to us, study state-of-the-art manufacturing, and they can use our facilities to pursue their own staff development... We believe—and I think they believe—that the mutual benefits are huge.

- William Wiggenhorn, formerly Motorola's Corporate Vice President for Training and Education and President of Motorola University (Wiggenhorn, 1990)

BOX 3. STEP Ahead, Slovakia, the Czech Republic, and the United Kingdom

Between 2015 and 2017, the Erasmus+ Programme led the STEP Ahead Initiative, a transnational cooperation between VET schools, private companies, and NGOs, which aimed to ensure that the supply of skilled car technicians matched the demand from automotive businesses. The partnership included SOŠA Bratislava (coordinator of the project), INAK oz (SK), NAPA Trucks (CZ), the Institute of Motor Industry (UK) and Automotive Technician Training (UK). The design of the initiative was informed by the needs of 71 respondents in an online research survey among 87 secondary IVET schools in Slovakia from automotive professions.

The initiative focused on the professional development and distribution of resources for Slovak VET teachers. Given the fast pace of the automotive industry and its expanding use of cutting-edge digitalization and automation techniques, the theory of change was that by equipping VET teachers with current skills, they would pass on that knowledge to their students. Professional development activities included three national conferences and an intensive training program. Additionally, new curricula and digital teaching materials (for example, interactive learning screens) were provided.

Source: EU, 2017a; EU, 2017b.

More recently, technology leaders have paired up with colleges to offer classes and certifications targeting highly relevant and practical skills. In 2017, Apple announced a curriculum for its Swift coding language that would be available in 30 community colleges. The two-semester course was designed by Apple engineers and educators to teach students how to code and design fully functional applications (Lieberman 2018). That same year, IBM partnered with Northeastern University, allowing students to use IBM-issued badge credentials toward three professional master's degree programs (Northeastern 2017). IBM also has a digital badge program with Wake Technical College. In 2018, the California Cloud Workforce Project, a consortium of 19 Los Angeles County community colleges and their sister high schools launched a Cloud Computing Certificate designed collaboratively

by faculty at Santa Monica College and Amazon Web Services Educate, with the support of subject matter experts from Amazon and other Los Angeles-based tech companies to equip students with the cloud skills needed for careers in the tech industry (Amazon 2018). In the Slovak Republic, STEP Ahead (see Box 3) was a multisectoral collaboration that provided professional development for VET teachers to help prepare students for jobs in the automotive industry.

There are a variety of frameworks and strategies for aligning stakeholders around common needs and programs. Improvement networks (sometimes referred to as a networked improvement community or NIC), offer an example that has gained considerable attention over the past decade. Improvement networks are intentional, structured, and they engage people around shared, high-leverage and practical problems by using continuous improvement methodologies (Cannata et al., 2017; Russell et al., 2017; Peurach & Glazer, 2012). Importantly, these networks are highly coordinated and therefore are able to spread solutions rapidly, enabling members to improve quickly (Bryk et al., 2013). Similarly, learning collaboratives align actors around a common cause. They engage and align multiple individuals or groups that come together to accomplish a goal and build knowledge. Learning collaboratives are particularly effective within the context of quality improvement by accelerating the diffusion and implementation of innovation (Nix et al., 2018).

Strategies used to develop successful improvement networks, learning collaboratives, and effective teams offer helpful guidance toward the development of a regional platform that would enable VET, industry, and the community stakeholders to connect and collaborate. For example, a regional platform needs to be organized by decision makers, with some governing documentation that explains the purpose of the platform and outlines multisectoral coordination mechanisms. This could take the form of more formal legislation, or the use of something like a charter, which is a flexible document that answers questions such as:

- Goals—What do we aim to achieve? How will we monitor our progress?
- Values—What beliefs, behaviors, and activities are most important to the group?
- Participation—How do we encourage participation?
- Decision-making—How do we make decisions?
- Meetings—How often do we meet? How long should our meetings be?
- Conflict—How will the team encourage positive/creative conflict?
- Reporting pathway—Who reports to whom, how to engage the leadership if the group is off track?
- Outcome measures—How is success measured?

Some regional platforms have found success in aligning around a conceptual framework that articulates what they aim to accomplish and how they plan to work together to achieve their goals. Understanding stakeholders is another key ingredient for a successful regional platform, because it builds empathy and teamwork across members and focuses participants around building practical solutions. Stakeholder mapping activities, sensitization sessions, and multisectoral coordination meetings are all examples of ways to build connectivity and understanding across stakeholders.

Successful regional platforms also integrate proven team-building approaches. For example, successful teams often have these attributes:

- Multidisciplinary—engaging people from across the organization and the community
- Everyone participates equally and is accountable for results

- Clear expectations and responsibilities
- Reporting structure and stakeholders are clear
- Deliver outputs that meet established goals
- Contribute to the learning and growth of each member
- Build competence over time
- Sense of shared purpose—find meaning and satisfaction within the group

Even without a regional platform, VET schools and employers have many opportunities to align on collaboration, coordination, and communication. Stepping into alignment activities on a smaller scale can be as simple as participating in networking events and conducting surveys of the employer needs. The government can play an important role in helping to facilitate, strengthen, and systematize these activities. As multisectoral groups continue to align and work together, they will find an abundance of areas that would benefit from collaborative improvement, such as feedback on, and development of, curricula, design of lifelong learning programs and staff training activities, and the formalization of recruitment and hiring practices.

Innovation

While many of the recommendations and examples discussed above offer innovative solutions—improvement networks, industry partnerships, an enabling environment for quality assurance—it is also important to call out innovation as its own category. In so doing, we open a pathway to encourage innovation at all levels of the VET system and at the intersection with employers. This involves taking a step back from the status quo and thinking outside of the box, looking to best practices nationally, regionally, and globally, and developing a mindset and culture that embraces change, even if that means that some change does not go as planned.

There is certainly opportunity for VET schools to consistently generate revenue. Increasingly around the world, secondary and post-secondary schools are rethinking how they deploy their assets. For example, some schools rent out facilities and equipment when it is not in use by the teachers and students. Some schools rent out office space and leverage their networks (for example, faculty, alumni, board members, and others) to provide consulting and advisory services. Increasingly, schools are offering incubator and accelerator programs that cater to local entrepreneurs in return for equity, service charges, rental fees, and so on. While these activities generate revenue, they also help to rebrand schools as hubs for innovation and centers for entrepreneurs and changemakers. This can help to attract new students and faculty, as well as industry partnerships.

The concept of rebranding VET schools is an important one. In addition to revenue-generating activities, efforts that bring visibility and publicity to schools can also attract students, faculty, and employers. By investing in marketing and public relations activities, schools can draw attention to their work and even brand themselves as engines for economic growth. For example, developing relationships with the local media and inviting them to events can encourage coverage in the local news sources. Public speaking engagements, social media, even school websites all offer ways to expand the visibility of school activities. Thinking strategically about this messaging is important. Define the message and brand that the school wants to build and then repeat that message in different ways and through different channels. Profile stories of successful graduates and post them on social media. These are all ways to promote the important work of VET schools.

INVESTMENT PACKAGES

The development of skills for smart specialization, industrial transformation, and entrepreneurship will require not only support for higher education, but also systematic support for the vocational training of elementary school graduates and upper secondary education. One of the means of improving the quality of secondary vocational schools, as well as ensuring fair competition between secondary schools, is to create conditions for more intensive regional, subregional, and international cooperation, as well as international mobility for the secondary school pupils and staff. The application of VET quality standards and recommendations accepted in the European region emerged from the *Minding the Skills Gap and Mismatches* report as a critical gap and a key step in the strengthening of vocational education in the Slovak Republic.

Although the legislative environment of the Slovak Republic allows secondary schools to regulate the content of vocational education and training, and to provide joint educational programs, there is no single secondary school with such a program, nor a program in the BBSK.

As articulated in the report, factors influencing the low attractiveness of VET include: insufficient material and technical, spatial, and didactic equipment in the secondary schools; insufficient use of new technologies, or a lack of practical education in their use; and insufficient investment in the professional development of the teaching staff. Further, the lack of lifelong learning offerings at secondary schools contributes to a workforce that is underqualified and unable to adapt and evolve their existing skills to align with Industry 4.0 trends, such as automation, rapid and disruptive technology advancements, and smart specialization.

In light of these global workforce and industrial changes, as well as the challenges facing vocational education, part of the intention behind the design of the investment packages was to act as a catalytic force for innovation within the priority pilot secondary schools that could lead to the following results:

- Implementation and use of innovative (digital and other technologies) methods in vocational education and training aimed at the competencies and personality of the students and teachers¹²
- Preparation and pilot validation of various educational programs, including the credit system and joint programs (international and intersectoral cooperation), and links to the first level of higher education
- Programs for gaining access to experts from practice, support for the entry of employers into the professional development of pedagogical and professional staff
- Support for all forms of mobility at the regional, national, and international levels between schools, institutions, and companies
- Preparation and pilot verification of a system for verifying the results of nonformal and informal learning in selected sectors/qualifications
- Support for new, especially digital and entrepreneurial, skills for pupils
- Gradual transformation of the secondary schools into modern educational institutions of the 21st century

Recommended Implementation Strategy

Most of the selected pilot secondary schools already have real experience with the preparation and implementation of projects financed from external sources, including projects financed from the European Structural and Investment Funds (ESIF) in the form of demand-oriented open calls.

Due to the limited time period of the current programming period, it would be most appropriate for the managing authority (MA) to prepare a time and thematically closed call, with predefined specific conditions that are in line with the recommendations and objectives of the CuRI, as well as the focus of the relevant operational program.

One of the critical success factors in implementing the proposed investment packages is the coordination and cooperation of all the stakeholders at all levels, including in the method of consultation for the design of individual calls, in line with the expected results and impacts of projects. In order to determine the most suitable financing model, we propose the following procedure, based on experience and best practices:

The first step after finalizing the investment package proposals, including stand-alone projects, should be to anchor cooperation within project partnerships and define the roles of individual partners, with the possibility of creating a formalized partnership or of delegating tasks, with the appropriate involvement of the already formalized partnerships.

The second step should be the preparation and signing of an agreement with the individual parties on the preparation and implementation of a specific individual project or its selected activities, including a detailed time schedule and procedure, which guarantees the achievement of planned results—sustainability.

The third step should be the creation of a joint project platform by the main project partner and other partners, who can also involve external entities in the project implementation. Joint preparation of the project before its implementation is a critical factor in the success of each proposed project or project activities. It is also appropriate that each interested MA designates a contact person responsible for the communication and coordination of tasks, in relation to the pilot secondary school projects.

The fourth step should be to finalize the project intentions of individual projects by the joint project team in the form required by the relevant MA, the provider of funds, or the rules of a specific grant scheme—the so-called draft project application.

The fifth step should be the elaboration of a long-term school development plan with a proposal for key future investments (for example, future projects, integrated projects, and investment packages financed from various sources) at the same time as the planned implementation of the quality system.

Creating an Environment for Effective Implementation

A similar procedure as described above is also necessary at the level of the founder of the secondary school, where close cooperation of the pilot secondary school with the founder and authorized representatives of the relevant department or division of the Banská Bystrica Region is expected to ensure the provision of all the necessary documents, such as project documentation, and so on.

Experiences with the preparation of project plans, and plans for financing and implementation, show that the main obstacles are the low level of strategic planning, of local government preparedness, and in some cases, of access to additional funding. The integrated approach and application of EU financial instruments requires a high degree of communication and coordination between all the stakeholders and the use of all available capacities at the local and regional level—from preparation through implementation to evaluation of secondary investment packages—especially funding organizations led by capable project managers.

One of the proposals and recommendations of the World Bank team is to create a joint project platform for the pilot secondary schools that would enable joint action and coordination in the preparation and implementation of the secondary school investment packages, and a joint project at the BBSK

Office with the representatives of all the relevant stakeholders for the preparation to implementation of investment packages for the pilot secondary schools, preparation and implementation of related projects and activities, and other investments in the territory or sector.

Mitigating Risk

The preparation and implementation of the investment packages for the pilot secondary schools is a demanding and complex process. For this reason, the anticipation of possible risks and the preparation of measures for their mitigation is one of the important activities already in the preparation and planning phase and at the level of individual projects. Possible identified risks include:

- Delayed approval of relevant regulations and guidelines
- High administrative burden in processing documents for obtaining financial support
- Different financing models (for example, co-financing rate, advance payments, pre-financing, combination of funds and financial resources, and so on)
- Application of state aid rules
- Change in the conditions for providing funding or relevant legislation (not only with EU funds)
- Support and involvement of key actors and collaborating organizations
- Failure to build sufficient capacity of applicants or partnerships
- Lack of interest in cooperation of key actors

Important and effective measures aimed at the significant elimination of risks in the implementation of investment packages and individual projects are the identification of all possible risks, and then the possibility of consulting the applicant, with the provider, in preparing the call on the conditions for participation. The following are examples of conditions for participation: 1) partnership and partner eligibility, 2) specific focus of activities, 3) the eligibility of the planned expenditure, 4) the amount of the advance and the method of financing the project, 5) the procedures in the public procurement process, and 6) the method of mutual consultation and communication after the signing of the contract for the provision of funds. During the preparation of the project, it is recommended to pay increased attention to the identification of possible risks, to prepare a risk analysis, and a proposal of possible steps and procedures in the event of their occurrence.

We assume that the relevant funding organizations will sufficiently publish any possible changes in the provision of funding in the form of manuals, methodologies, and guidelines for applicants aimed at reducing the administrative burdens and simplifying procedures. In connection with the preparation of the new programming period, multisource project funding should be simpler, the management and control of the ESIF allocations should be closer to the applicants, more attention should be paid to integrated projects, flexibility, and taking into account the specific approaches to topics and applicants.

Critical Success Factors

During the implementation of Activity 3 of the CuRI VET 3 component, increased attention was paid to the assessment of critical success factors in relation to the existing funding opportunities and the conditions for the implementation of the proposed investment packages for the pilot secondary

vocational schools. Critical success factors were analyzed and evaluated in the areas of planning, preparation, and implementation options at the level of processes, expertise, capacities, legislation, and the involvement of key actors.

The most important success factors in the preparation and implementation of investment packages include:

- Professional and administrative capacities of the joint project team
- Capacity building at the pilot secondary schools
- Creation of a sufficient financial reserve at the level of the founder (BBSK) and the future applicant
- Cooperation with the various actors in the subregion and within selected sectors and industries
- Coordination of the managing authorities and selected representatives of the state administration on the national level
- Technical support from the World Bank and the EC

The World Bank team, in cooperation with the BBSK project team, has prepared a practical guide for the preparation of individual projects included in the proposed investment packages, with examples of best practices and models of planning and support forms, with an emphasis on the critical success factors.

Suggested Immediate Steps

After close consultations with the representatives of the selected MAs, partners, and relevant actors on the possibilities of financing the approved investment package proposals for the pilot VET and joint project of VET in the BBSK, a joint agreement on further steps leading to the preparation of the relevant selection, needs to be reached. Part of the agreement will be the evaluation and approval procedures for individual projects, especially in connection with the ending of the programming period 2014–2020, the possibilities of drawing new financial resources in response to the COVID-19 pandemic, and preparing to draw funds for the new programming period of 2021–2027. It is necessary that the first calls of the operational program (OP) for the prepared separate projects be announced by the end of 2020. In this context, it is subsequently necessary to develop a detailed schedule of the procedure at the level of each pilot VET.

Given the involvement of the BBSK as the founder of the secondary schools, and the impact of the proposed activities and individual projects on the budget of the local authorities, it is appropriate to prepare a detailed summary of information on the state of the preparation and implementation of secondary school investment packages for the relevant BBSK commissions and councils at the BBSK Office. This will ensure that publicity and information will be disseminated about the prepared and implemented investment packages of the pilot secondary schools, and other support activities of the BBSK and its partners in the pilot secondary schools.

The proposed investment packages of the secondary schools and a joint cross-sectional project for secondary schools in the Banská Bystrica Region are based on the existing strategic and conceptual documents in vocational education and training. However, these concepts need to be embedded in a new analytical and strategic framework for policy implementation in the context of lifelong learning and lifelong guidance.

It is important to pay attention to school development plans in order to maximize the benefits of the planned investments and sustainability, access the state aid and strategic educational infrastructure development at the subregional level (in connection with the regional development priorities and the preparation of investment packages for other secondary schools under BBSK foundation), as well as access funding opportunities offered in the form of EU resources. The preparation of transformation plans for the schools will make it possible to prepare other investment projects for the planned investment programs (Recovery and Resilience Plan, OP Slovakia).

A decisive milestone is also the preparation of the strategic documents at the regional and local level in relation to EU funds, which will create a financial and implementation framework for the individual projects of the secondary schools and their partners (as well as other related projects), with a planned implementation after 2021.

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ANNEX 1:

VET SCHOOL STUDY— BREAKDOWN OF SCHOOL STUDY PARTICIPANTS

SR CuRI—VET Project

VET School Study —Study Participants Breakdown¹³

CRITERIA	DEFINITIONS	ACTUAL %
SUBREGION	North (Districts: Banská Bystrica, Brezno, and Revúca)	30% (19 schools)
	South (Districts: Zvolen, Detva, and Krupina)	20.6% (13 schools)
	East (Districts: Lučenec, Rimavská Sobota, Poltár, and Veľký Krtíš)	20.6% (13 schools)
	West (Districts: Žarnovica, Žiar nad Hronom, and Banská Štiavnica)	28.6% (18 schools)
SCHOOL SIZE ¹⁴	# of students:	
	Small (0–149)	19.3% (11 schools)
	Medium (150–250)	35.1% (20 schools)
	Large (251 or more)	45.6% (26 schools)

Source: Authors, 2020.

ANNEX 2:

INVESTMENT PACKAGE TIMETABLE

Name of PROJECT	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	II.	III.
JOINT SCHOOL DETVA - Industry 4.0 as a challenge for VET														
P1.1 Construction of a regional training centre for technical professions	P													
P1.2 Modernization and innovation of the educational process, support of non-formal education (CVET)							P		R					
P1.3 Promotion of technical education				P	P	R								
VET SCHOOL TORNAĽA - Open friendly school - a school for everyone														
P2.1 Motivating School	P										R			
P2.2. Inclusive School				P		R								
P2.3 Collaborating School				P		R								
P2.4. Practical School	P			P		R								
VET SCHOOL FOR HOTEL SERVICES AND TRANSPORT LUČENEC - Innovative School - NOVOHRAD on a plate														
P3.1 Farmstead - health on a plate	P									R				
P3.2 Lifelong Learning and Counseling Centre /for selected fields/	P												R	
SECONDARY INDUSTRIAL SCHOOL of Jozef Murgaš BANSKÁ BYSTRICA														
P4.1. Educational i-Techcentre of SPŠJM	P									R				
P4.2 Promoting innovative thinking - Free-time Zone	P									R				
P4.3 Communication and promotion of SPŠJM	P									R				
P4.4 Attractive environment for the vocational education				P	R									
JOINT SCHOOL BANSKÁ BYSTRICA - Education in the field of electromobility														
P5.1 Reconstruction and preparation of professional workplaces in workshops of practical teaching and training in Vlkanová	P													
P5.2 Improving the quality of existing practical training														
P5.3 New/innovative training for electromobility in the automotive industry														
P5.4 VET School promotion, career counselling	P													
VET SCHOOL BANSKÁ BYSTRICA - The heritage of family farms in the hands of educated farmer														
P6.1 Family farm for mountain areas providing VET - a modern centre of VET in agriculture, agritourism, food and rural services	P													
P6.2 Development of food industry and processing of bee products with respect for tradition	P													
P6.3 Quality education connecting the interests of the farmer with the needs of the country and the region				P		R								
P6.4 Promotion of regional products				P	R									
VET TECHNICAL AND AGRI-FOOD SCHOOL RIMAVSKÁ SOBOTA - Everything under one roof - agriculture and family business														
P7.1 An attractive environment for VET under one roof	P													
P7.2 Living orchard and living garden - production and realxation zones														
P7.3 Family Business Center for Agriculture and Food Industry				P		R								
P7.4 Sectoral Alliance of Skills in Agriculture and Food Industry														
VET SCHOOL OF SERVICES AND FORESTRY BANSKÁ ŠTIAVNICA - Forestry for 21st Century														
P8.1 Attractive and sustainable environment for VET														
P8.2 Forest Technology operator for the 21st century														
P8.3 Digitalization - a basic prerequisite ... FOReSTLAB					P		R							
P8.4 Sectoral Alliance of Skills in Forestry					P	R								
Supporting /Network projects														
SP1 - Modern Regional Educational Area														
BBSK CURI VET II - Quality Assurance Framework														
NP Digitalization														

NOTES

	VET SCHOOL DETVA
	VET SCHOOL TORNAĽA
	VET SCHOOL LUČENEC
	VET SCHOOL BANSKÁ BYSTRICA JM
	VET SCHOOL BANSKÁ BYSTRICA ŠKOLSKÁ
	VET SCHOOL BANSKÁ BYSTRICA BANOŠ
	VET SCHOOL RIMAVSKÁ SOBOTA
	VET SCHOOL BANSKA ŠTIAVNICA

M 1 - we expected September 2020, no later / P - preparation phase / R - realization phase

NOTES

1. Source: http://datacube.statistics.sk/#!/view/sk/VBD_DEM/om7106rr/v_om7106rr_00_00_00_en
2. Source: <http://documents1.worldbank.org/curated/en/610971561036926530/pdf/Minding-the-Skills-Gap-and-Mismatches-A-Report-on-Secondary-Vocational-Education-in-the-Prešov-Region-of-the-Slovak-Republic.pdf>.
3. The north subregion is made up of the districts of Banská Bystrica, Brezno, and Revúca. The south is made up of the districts of Zvolen, Detva, and Krupina. See Table 1 for a full description of the strata used.
4. FinStat is a private web portal providing financial information on Slovak companies. More information is available at <https://finstat.sk/>
5. The subregions were uniquely constructed for survey purposes but are recognized in the Banská Bystrica Region.
6. The sectors/industry groups were based on the National Economic Class System (NECS).
7. The firm sizes used a modified classification based on categories from the European Commission classifications.
8. The north subregion is made up of the Banská Bystrica, Brezno, and Revúca districts. The south is made up of the Zvolen, Detva, and Krupina districts. The east consists of Lučenec, Rimavská Sobota, Poltár, and Veľký Krtíš. The west consists of Žarnovica, Žiar nad Hronom, and Banská Štiavnica. For a full description of the strata used, see Annex 1.
9. Subregions were uniquely constructed for survey purposes, but are also recognized in the Banská Bystrica Region.
10. The sectors/industry groupings were based on the National Economic Class System (NECS).
11. According to the Ministry of Education, a new strategy is forthcoming and will replace the national program.
12. Teachers will also need to be trained to use new methods.
13. Percentages are out of a total of 63 secondary VET schools in the Banská Bystrica Region, unless otherwise noted.
14. Percentages are out of the 57 schools that provided this data. As of April 20, 2020, one school did not give this data, and the remaining five schools have not submitted their DCSs.

