

## **DOMINO – THE SWISS-BULGARIAN DUAL EDUCATION PROJECT AS AN OPPORTUNITY FOR THE LONG-AWAITED REFORM OF THE BULGARIAN VOCATIONAL EDUCATION AND TRAINING SYSTEM**

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**Abstract.** Business often blames educational institutions that they do not provide students with the necessary skills for the labour market. On the other hand, schools complain that business and companies do not always provide information what type of specialists and what skills exactly they really need. Dual education is the form of training which can solve this problem of mismatch. This is the type of education in which companies and schools not only share the expenses for the training of students but most of all they share the responsibility for the quality of vocational education.

**Keywords:** vocational education and training, dual education, skills, qualification, professional education, youth, youth unemployment

It has been very common among Bulgarian policy-makers in the past five years whenever asked how the Bulgarian Vocational Education and Training (VET) System should be reformed to mention dual education. However, not much has been done in practice to enhance the introduction of dual education in the VET schools than a few legislative amendments. That is why when the opportunity to start with dual education implementation within the Swiss-Bulgarian pilot project DOMINO became a reality in 2015 the business got really interested. The project, financed within the Swiss-Bulgarian Cooperation Programme, aims at showing a model of dual education following the Swiss dual education principles in a small number of Bulgarian schools which could then be replicated into many other VET schools where business is ready to cooperate. We say “principles of the Swiss model” as the aim is not to fully replicate the Swiss dual education system rather to build a Bulgarian dual education system using the best from the Swiss experience.

The need to speed up the reform in the VET system and to increase the quality of VET has been clearly identified in recent Audit Report of the Bulgarian National Audit Office.<sup>1</sup>

The project started in April 2015 and will end in 2019. It is financed by the Swiss Agency for Development and Cooperation with CHF 3 million plus 15 % national co-financing provided by the Ministry of education and Science. The main Swiss partner for the implementation of the project is the Swiss Federal Institute for Vocational Education and Training (SFIVET).

The project has been given the name DOMINO which is the Bulgarian abbreviation for Dual Education for the Modern Requirements and Needs of Society.

The main activities in this project are the following:

- To introduce a new methodology for curriculum development for dual VET with the participation of professionals from the companies;
- To help establish partnerships between VET schools and companies;
- To train Bulgarian experts in this new methodology;
- To train teachers from the Bulgarian VET schools how to work within a dual education system;
- To train instructors from the companies who will work with the students;
- To promote dual education through a wide communication campaign.

The main partner for the implementation is the Ministry of education and Science and the other partners include the Ministry of Labour and Social Policy, Ministry of Economy and the National Agency for Vocational Education and Training. There is a special appointed Project management Unit which is embedded in the Ministry of Education.

### **Present context**

Bulgaria joined the European Union (EU) in 2007. Presently, the main strategic document of the EU is EUROPE 2020. Three of the five major goals of EUROPE 2020 are directly linked to vocational education: employment for 75 % of the population aged 20-64, percentage of early school leavers under 10% and share of university graduates of 40 %. This is the reason why VET has been mentioned as a priority in the National Development Programme Bulgaria 2020.

What is the present employment situation in the country in numbers:

<b>Bulgaria in figures</b>	<b>National Statistics Institute April 2016</b>
<b>Population</b>	<b>7 153 784</b>
<b>Employment rate (20-64 y)</b>	<b>68.1 %</b>
<b>Unemployment rate (20-64 y)</b>	<b>7.9 %</b>
<b>Youth unemployment (15-29 y)</b>	<b>14.5 %</b>
<b>Youth unemployment (15-24 y)</b>	<b>22 %</b>
<b>Students in secondary general education schools</b>	<b>129 354</b>

<b>Students in vocational schools</b>	<b>135 578</b>
<b>VET Schools (8/9-12 grade)</b>	<b>423</b>
<b>Male/Female VET students ratio</b>	<b>60 % / 40 %</b>
<b>VET Professions</b>	<b>239</b>

**Table 1.**

The figures showing youth unemployment in Table 1 are among the European average, however, the trend for the coming years is quite negative. Also, we have to mention the biggest in the EU number of young people who are not involved neither in education nor in employment.

The main conclusion of the fore mentioned Audit Report of the Bulgarian National Audit Office is that the activities undertaken so far in the area of VET are “not efficient enough for the provision of conditions for quality and effective school vocational education to meet the needs of the labour market”.

The Bulgarian Industrial Chamber announced in April 2015 the results of survey which showed lack of qualified professionals in more than 190 professions. This makes the business and the companies active in pressing the state institutions to reform the Bulgarian VET system and make it much more market oriented.

The present DOMINO Project comes at this very important moment and has the chance to pilot the new dual education model and really adjust the Bulgarian VET system to the needs of the business. Being part of the Swiss-Bulgarian Cooperation Programme with many state institutions involved it should guarantee the sustainability of the system and make it nationally applicable.

### **Scope**

The initial plan for DOMINO project has been to develop new curricula every year for two professions and implement it in three schools per year, starting from the 9<sup>th</sup> grade:

Year	Professions	Schools	classes/profession	Students
2015	2	3	2	240
2016	2	3	2	240
2017	2	3	2	240
2018	2	3	2	240
2019	2	3	2	240
Total	10	15		1200

**Table 2.**

The plan also involved the training of at least 30 dual education experts, 100 to 120 teachers from VET schools and 240-300 instructors from the companies.

In September 2015 the implementation of the dual model started for the professions “machine technician – CNC machines” in Kazanluk and “dairy production technologist” in Sofia.

This start gave a positive sign to all stakeholders and for the next school year 2016/2017 there has been a decision to develop curricula for three instead of two new professions: electrical technician, gas technician and cook. There are requests from VET schools and companies from over 14 new cities which proves the findings of different studies that the business in Bulgaria really suffers from insufficiently trained staff.



- Domino cities started in 2015
- Domino cities scheduled for 2016

**Table 3.**

The main criteria used for the selection of professions and schools are:

- Evidences of strong commitment for cooperation between the companies and the VET schools;
- Evidences for sufficient interest from students to get enrolled in dual education and sufficient demand for employees in the specific profession on the side of the companies;
- High added value, produced in the sector;
- High demand by business/companies and insufficient supply of skilled workforce;
- Critical mass of workforce and businesses, sufficient for disseminating the project experience.

### Model for implementation

The introduction of dual education in the VET schools starts from the admission campaign. It is accompanied by a wide range of promotion activities which aim at attracting students and their parents to this new type of vocational training. These activities include work with local authorities, media, and meetings with students/parents/teachers/companies.

The students enrolled should pass the full four year education cycle – from grade 9 till grade 12.

Here the main differences with the existing Bulgarian vocational education system are the increased number of hours for practical training as well as the fact that during the last two grades – 11<sup>th</sup> and 12<sup>th</sup> students spend two days at school and three days in the company working under labour contracts which means they receive a salary for these three days.

The distribution of days in the week for theoretical and practical training is shown in Table 3:

Days per Week →	grade			
	9th	10th	11th	12th
4.0		3.0	1.0	1.0
	4.0		3.0	3.0
	1.0	1.0	1.0	1.0
General Education	4.0	3.0	1.0	1.0
In-Company-Training	0.0	1.0	3.0	3.0
Professional Theory	1.0	1.0	1.0	1.0

Table 4.

At the beginning of the project it has been assumed that work in the companies could start at grade 10<sup>th</sup>. However, due to amendments in the Bulgarian VET Act and Labour Code students can have labour contracts only when they reach the age of 16 which automatically means in the grades 11<sup>th</sup> and 12<sup>th</sup>. The day provided in the above table for practical training in the companies will still be used for initial practical training in the 10<sup>th</sup> grade but students will not have labour contracts yet. The students in grades 11<sup>th</sup> and 12<sup>th</sup> sign labour contracts with the companies. They receive a salary which minimum has been fixed in the Labour code and amounts to at least 90 % of the country's minimal wage with respect to the time spent at work.

At the end of the training the students pass exams for obtaining a level of professional qualification in line with the State Educational Requirements.

Although it has been planned to only start with 9<sup>th</sup> grade students, due to the fact that business requested sooner to see the results of such a model, experimentally it has been decided to also start with 1 class of 11<sup>th</sup> grade students for machine building and 1 class of 10<sup>th</sup> grade students for dairy production technologists along with the two 9<sup>th</sup> grade classes for the two professions. The training hours for these extra two classes could not be increased as the students have been admitted following a different curricula but through regrouping of educational content it is possible even for these students to spend 1 day in the company per week in the 11<sup>th</sup> grade and 2 days in the company in the 12<sup>th</sup> grade.

It is the company's responsibility to appoint an instructor in the company who should be responsible for the practical training of students. According to the Ordinance on dual education issued by the Ministry of Education and Science in September 2015 companies should appoint at least 1 instructor to every 5 students. This is a minimal requirement, if the type of work is more complicated or requires bigger attention companies can appoint more than 1 instructor to every 5 students depending on their own decision.

It is company's responsibility to provide working places for the students and have them equipped with the necessary machines. They should strictly follow the health and safety regulations and provide good working environment for the students. The companies should also take part in the practical exams of the students.

### **Approach for developing curricula for dual vet**

With the expertise and participation of experts from the Swiss Federal Institute for Vocational Education and Training (SFIVET) a new approach for development of curricula for dual vocational education has been set up. The approach consists of the following steps:

During workshops organized within the project, professionals having at least 5 years of professional experience in the profession list down all professional situations covering the profession with which a graduate student with the same level of professional qualification should be able to cope with and perform. When this is done the immediate superiors of the same professionals review the list and descriptions of situations and give their approval or comments for improvement. The final multitude of professional situations forms the Situation profile of the profession.

In another workshop, this time involving not only professionals but also teachers in professional theory and experts from the Ministry of Education and Science and from the National Agency for Vocational Education and Training under each professional situation the knowledge, skills and social competences are listed which are needed by the student to cope with this situation. This document is called a Qualification Profile.

Here is an example of a professional situation developed within the project for the profession “machine technician – CNC machines”:

**Table 5.**

<b>Professional Competence Area</b> Manufacturing parts
<b>Situation Title</b> Manufacturing parts with conventional machines
<b>Example of a Situation:</b> Todor has been assigned to manufacture a rotation part using a conventional lathe. He receives the technical documentation and the rotation workpiece. He studies the technical documentation and prepares the necessary tools. He adjusts the work mode on the lathe (revolutions, cutting/feeding depth). He puts the protective goggles on and mounts the turning steel into the turning-steel-holder. He sets the turning machine in motion and centres the turning steel. He starts processing the front surfaces and proceeds with longitudinal turning. After turning the lathe off, he measures the dimensions obtained to assess if they meet the requirements in the drawing.
<b>Knowledge required</b> – knows how to use and interpret technical documentation – is familiar with the tolerance system – is familiar with the structure and mechanism of action of the lathe, the universal milling machine – is familiar with the type and purpose of cutting tools used on a universal lathe, universal milling machine, drilling machines – is familiar with the structure and application of measuring instruments
<b>Skills required</b> – applies occupational safety and health regulations – applies technical documentation – is able to adjust a universal lathe – maintains the parameters of the lathe knife and milling tools – is able to use measuring instruments
<b>Social competencies required</b> – follows the rules – works autonomously – work well in a team – works efficiently – works accurately/precisely – facilitates communication

On the basis of all knowledge required for all situations in the Qualification Profile the content for theoretical training is planned while all skills needed are included in the in-company training plan. The social skills required are distributed accordingly in the education programmes and in the in-company training plans.

Once the Qualification Profile is ready then the necessary amendments in the curricula for the respective profession are elaborated and then approved by the Minister of Education and Science. Thus all schools planning to introduce dual education for this same profession regardless of the fact whether they are part of the DOMINO project or not can use this same curricula and teach dual education.

One of the findings in the Audit Report “Vocational Education for Employment” of the National Audit Office says: “The Ministry of Education and Science has not developed rules and procedures for elaborating curricula and syllabi. The educational content is written by authors without preliminary approved criteria”.

To overcome this finding the Ministry of Education and Science could use the approach for elaborating curricula for dual education developed within the DOMINO project and incorporate it the legislation.

### **Trainings**

Swiss experts from SFIVET carry out trainings for Bulgarian experts, teachers and instructors in order to build capacity for implementing the dual VET system in Bulgaria.

**1. Dual Track Education Experts** are trained with knowledge and skills mostly in curricula and syllabi development but also on pedagogy, didactics and professional aspects.

**2. Teachers** are trained to acquire knowledge on pedagogy and didactics but also to work with the Qualification Profile.

**3. Instructors** from companies are trained to acquire knowledge on the business/professions/technology transfer at real working conditions.

### **Vet stakeholders involvement**

#### **The Forum on Dual Education**

To ensure equal participation of all stakeholders in the project implementation, the so-called „forum“ approach is applied. It is based on the methodology developed by the Swiss Development and Cooperation Agency and Bulgarian experts for leading structured discussions between a broad range of stakeholders (citizens, organisations, central and local government institutions) in the course of elaborating and implementing various policies and programmes of mutual interest. The objective is to reach a decision acceptable for all stakeholder adopted with consensus.

### **The specific objectives**

The Forum on Dual Education coordinates the efforts of all stakeholders aimed at implementing the dual-track system in Bulgaria: to ensure consensus among them on the main parameters of the secondary vocational education and to coordinate the utilisation of the resources, allocated to reform this system.

**The elements of the Forum are:**

- **The participants** – representatives of all stakeholders described in Table 6.
- **The clear structure and rules of work** – each stakeholder group occupies a separate table (see Table 6) with 6 to 9 participants. The tables are arranged in a circle, which symbolises their equality. Usually, the members of each table discuss among themselves the stated topic or sub-topic and after they reach a common standpoint, they present it to the other participants. At the second level, the discussion is led between all tables, where each participant can take a stand not only as a representative of their group but also based on own experience and conscience as a citizen. The discussion is guided by a moderator who summarises the expressed opinions, identifies common elements between them and support the consensus-building process. As a rule, the moderator is an external person, not involved in the topics and issues discussed, which guarantees his/her neutrality. At the beginning of the work, the participants adopt unanimously the Rules of Work (Code of Ethics) and are bound to observe certain norms and behaviour, which contribute to the constructive work intended solely to the achievement of the Forum goals. The work of the Forum is organised in 7 sessions within the first two years of the project implementation;
- **The topics of discussion** are directly related to the Forum goals. Each session is devoted to a specific topic, where in the course of project, changes may be introduced. These are: main parameters of the secondary vocational education system and the place of dual education; types of professions suitable for dual-track education, priorities; legislation amendments required in relation to the dual-track education; engagement of the branch organisations, their role in the planning of enrolment, funding opportunities for training in enterprises, etc.
- **Reaching a specific result** as an ending of the discussion, adopted with consensus. The result represents recommendations addressed to: the Project Steering Committee – regarding the project implementation; the Education and Science Committee at the National Assembly – regarding the legislation amendments required; the Ministry of Education and Science – regarding the vocational education system; the social and economic partners – regarding their involvement and engagement, etc.

The overall organisation and management of the process is assigned to the Bulgarian-Swiss Chamber of Commerce.

## Structure of the Forum on Dual Education

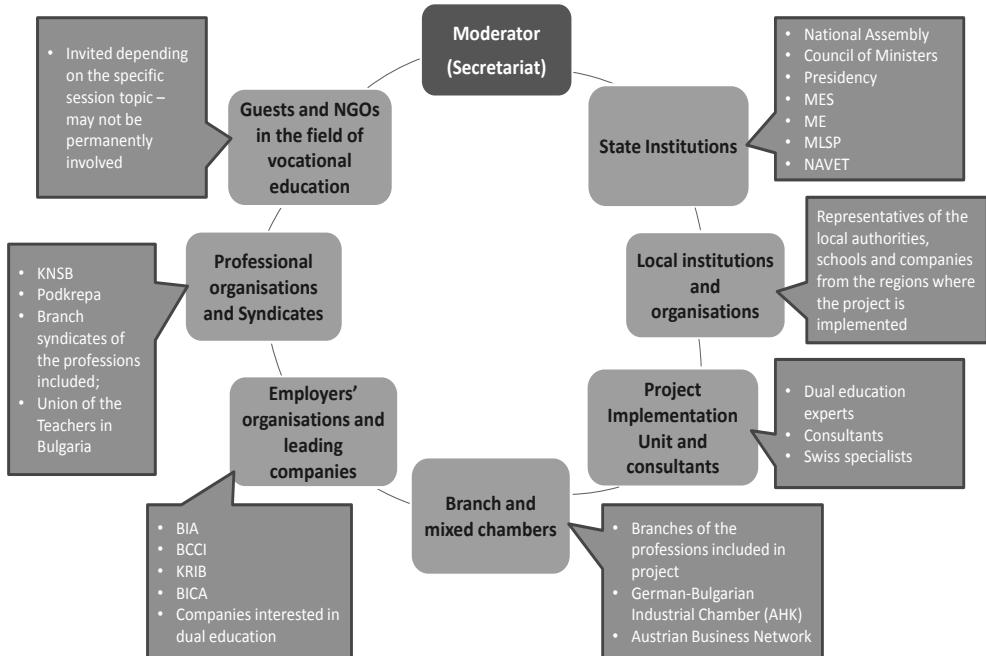


Table 6.

### Financing micro projects

The budget of the DOMINO project contains an Endowment Fund for financing micro projects of VET Schools. The funding for schools covered 100 % of their costs. These include:

- Scholarships for students in the grades 9<sup>th</sup> and 10<sup>th</sup>;
- Small equipment for schools;
- Insurance costs;
- Promotional and visibility activities costs.

To ensure sustainability and cover the greater need for dual education implementation projects the Ministry of Education and Science should take the opportunity to use the European Structural Funds and namely the Operational Programme “Science and Education for Intelligent Growth” and plan calls for projects to be financed under the Operational Programme using the model and experience gained under DOMINO project. A National Programme for Introducing

Dual Vocational Education could also be a good guarantee for the sustainability of the system.

### **Assessment of risks and potential for the dual education in bulgaria**

#### **Risks:**

The introduction of dual education in Bulgaria carries the following risks:

– The commitment for the introduction of dual education should be stable regardless of the dynamic political changes in state institutions as it is strongly supported by the business.

- Vocational education continues to stay in the shadow of general education.
- Lack of confidence and cooperation between companies and vocational schools.
- Concerns of parents that VET is not a prestigious choice and may block the way to university for the students.
- Concerns of teachers that the dual track system may reduce their working time and lead to loss of jobs.

However, the introduction of the dual-track system carries a lot of potentials.

#### **Potentials:**

- To reform the entire Bulgarian vocational education system and bring it closer to the needs of business and companies;
- To establish a model to be introduced and replicated in many vocational schools;
- To use the European Structural Funds (2015–2020) to widen the scope for the implementation of dual education in the country.

But the most important goals should be to provide students with the skill and competences they should have to enter the labour market and to provide business and companies with the qualified staff they expect.

### **NOTES**

1. Audit Report “Vocational Education for Employment” for the period 01.01.2012–31.12.2014, Bulgarian National Audit Office, 18 May 2016

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