



## WP2 | Task 2.0

### Development of flexible dual professional education model for Kazakhstan

KAZDUAL – Implementing dual system in Kazakhstan

(618835-EPP-1-2020-1-KZ-EPPKA2-CBHE-SP)

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Dissemination Level		
<b>PU</b>	Public	
<b>PP</b>	Restricted to other programme participants (including Commission services and projects reviewers)	
<b>CO</b>	Confidential, only for members of the consortium (including EACEA and Commission services and projects reviewers)	<b>x</b>

### Summary of obtained templates and basic recommendation

The report gives an overview of the state-of-the-art on dual system practices, highlights important key points and challenges and thus provides an appropriate basis for further project steps.

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## List of abbreviations

BA	Bachelor
ECTS-AP	European Credit Transfer System-Application Point.
EQF	European Qualification Framework
EU	European Union
HEI(s)	Higher Education Institution(s)
HTL, HAK, HLW	kinds of higher Vocational Education Schools in Austria
IQAA	Independent agency for quality assurance in education
ISCED	International Standard Classification of Education.
MA	Master
MES RK	The Ministry of Education and Science of the republic of Kazakhstan
N/A	not available
NQF	National Qualification Framework
P 1 [SKSU]	South Kazakhstan University and SKSU College
P 7 [KazNPU]	Abai Kazakh National Pedagogical University
P 8 [KSU]	Buketov Karaganda University
P 9 [SSUS]	Shakarim University Semei
P 12	Higher Politechnical College in Karaganda
P 13	Electrotechnical College in Semei
PhD	Doctor of Philosophy
TVET	Technical Vocational Education and Training, Programme der UNESCO
VET	Vocational Education and Training
WP	Work package

# 1 General overview

The last 25 years have seen significant changes in the vocational education and training (VET) system in Kazakhstan, driven by dynamic economic development and the associated structural changes in the labour market. As a consequence, there is a growing demand for skilled labour which also affects education policy. Improving the competitiveness of the country's economy is a priority, which implies the need to reform the existing education system with it. (Kenzhegaliyeva 2018, p. 80)

Against this background, one of the main objectives of the KazDual project is to develop a flexible dual higher education model that supports the different needs and interests of employers, higher education institutions (HEIs) and students in different industrial sectors. In addition, recommendations should be given to higher education institutions for the implementation of dual higher education (Application 2020). (Kazdual WP1 t1.1 Report, p. 4)

“The flexible model for dual Higher Education will represent a synthesis of the needs of different stakeholders (companies, HEIs, students) identified in WP1. The model will be flexible in terms of program concept, duration of internship engagement of students-it will include options of full semester (sequential) or part time (parallel) internships, paid or free internships, as well as all other options identified in WP1.” ( p r o j e c t a p p l i c a t i o n 2 0 2 0 , p . 4 1 )

For this reason, several actions were foreseen under Work Package 1, including a literature review identifying best practice in the VET field, an analysis of practices in the EU and Kazakhstan and results of the study visits to Europe and survey to identify supporters of dual system model among Kazakh companies. The general idea was to create an overview of best practice examples in the field of dual training in Europe and Kazakhstan.

This report provides an overview of the best practice examples provided by the KazDual project partners. The PHT team in Austria analysed examples based on templates that were created for this purpose. The templates were aimed at collecting relevant data for the profiles of the professions and for educator training for these profiles (at college and university level).

The results and recommendations of the above analysis were used to develop the design version of the dual system model.

## 2 The dual model of higher education

In order to achieve these goals, the KazDual project is developing a model for dual higher education that takes into account the different needs and interests of employers, higher education institutions and students in different sectors. To this end, it is very important to take into account the opinions, experiences, wishes and requirements of companies and schools as relevant partners in the future dual education system. (Kazdual WP1 t1.3 Report, p. 23)

Feedback from employers, vocational and higher education institutions in different sectors leads to the following recommendations. In order to strengthen an effective dual education system in Kazakhstan, as well as to improve the current practice of dual education models, a combination of higher and vocational education in Kazakhstan is needed. (ibid)

### 2.1 Aims and objectives of the dual model of higher education

Based on the proposed Model of Dual Training of Workers in Karaganda Region<sup>1</sup> and taking into account the new trends in quality training of competitive professional staff<sup>2</sup> of the Republic of Kazakhstan, it is necessary to take into account the real needs of the economy to increase the investment attractiveness of the regions and changes in the labour market under the influence of:

- industry 4.0,
- digitalization,
- trends in stable professions, their transformation and the professions of the future,
- improvement of higher education institutions according to the new modern university model 4.0.

A prerequisite for the realisation of these objectives is the fulfilment of the following main tasks:

- introduction and widespread adoption of a dual system of higher education,
- ensuring compliance with changes in the labour market and the professions of the future,
- identifying the gap between the needs of the labour market and the activities of higher education institutions,
- training of qualified graduates from the country's higher education institutions,
- creating conditions for the development of working competences,
- increased training time directly on the job,
- increased linkage to production.

### 2.2 Expected results

As a result of the implementation of the set goals and objectives of the dual model of higher education, it is expected that the dual model of vocational education and higher education will be implemented.

This dual model will focus on:

- real production,
- increased enterprise participation in the educational process,
- variation in individual educational programmes,

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<sup>1</sup>Atameken: ( 2 0 1 6 ) :  
<https://karagandy.atameken.kz/ru/pages/646-about-dual-edu>

<sup>2</sup> Kalieva: , . . ( 2 0 2 0 ) : :

development of a system of independent evaluation of the quality of graduates' training, significant increase in the qualifications of staff with higher education, increased prestige of academic professions as a result of the development of new forms of education (Atameken 2016, Kalieva).

Contemporary trends in the development of the education system of the Republic of Kazakhstan, caused by the development of national qualifications framework and professional standards and the transition of higher education institutions to university quality standards, dictate, according to Kashuk<sup>3</sup> (2020), the need to form an integrated model of competencies in the system of continuous multilevel education. This model should cover technical secondary education, Bachelor's and Master's degrees, meet employers' requirements for graduates' knowledge, skills and abilities, and promote effective forms and mechanisms of social partnership in the system 'educational institution - production', which will ensure active participation of the corporate community in its formation and implementation. Focused on direct training of specialists for practical professional activity, dual technology implies direct participation of employers in developing a competence model of graduates and the training process. It differs from the traditional training system in the orientation and the degree of approximation of training content to the real conditions of economic entities.

### 2.3 Advantages of the participant model of higher education

By analyzing the proposed model of dual training of Karaganda region workers (Atameken 2016), proposals for the development of the model by Dzhamanbalin, Ryspayev and Olkinyan<sup>4</sup> and the concept of development of dual training system at Pavlodar State University named after S. Toraygyrov for 2013-2020<sup>5</sup>, the following advantages of the participant model of higher education were identified.

For the training company, it is important that the training for specific technological processes is precisely tailored to the company's requirements. New ideas and impulses from trainees are enriching for training companies. The use of apprentices in the work process not only reduces the time it takes for graduates to settle into the company, but also increases productivity, service and product quality. In the long run, the training performance results in a higher return on capital employed, but the costs for additional training can be reduced. The companies providing the training benefit in dual training or higher education above all by having finished skilled workers with sound knowledge of their company, organization already at the end of the training.

The introduction of duality in the education system of Kazakhstan will lead to:

- improved quality of vocational and academic education,
- new approaches to student career guidance and career management,
- effective training of highly qualified personnel,
- increased competitiveness of the educational organization,
- increased number of applicants,
- development of the material and technical base,

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<sup>3</sup> Kashuk: , . . . ( 2 0 2 0 ) : [https://ak-vobr.ru/adaptirovannaya\\_model\\_dualnoi\\_podgotovki.html](https://ak-vobr.ru/adaptirovannaya_model_dualnoi_podgotovki.html)

<sup>4</sup> Dzhamanbalin, Ryspayev and Olkinyan: , . . . ; , . . . ; , . . . ;

<sup>5</sup>

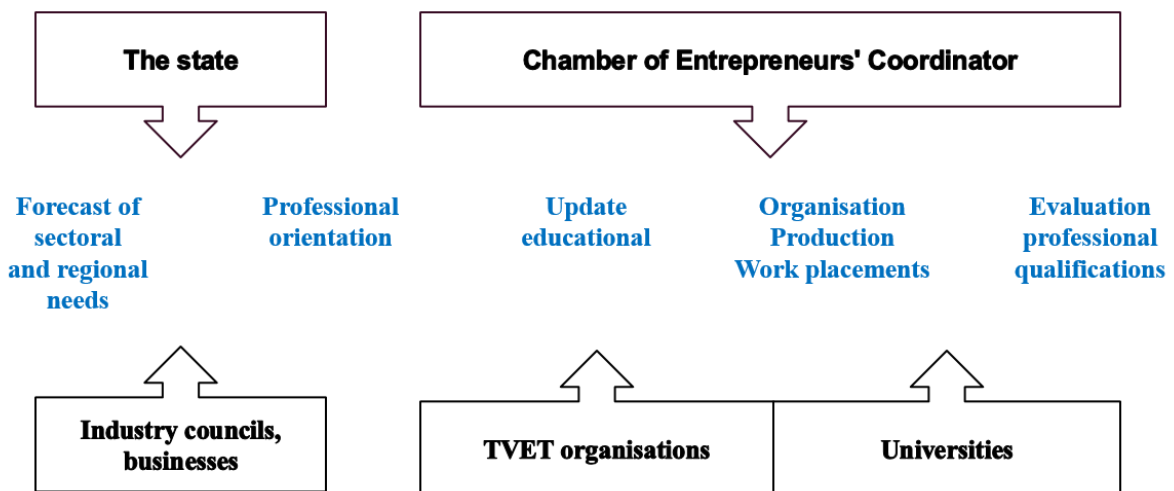
high percentage of graduates' employment.

For future professionals, dual education will not just be a method of qualification, but the acquisition of professional competences and skills for work and working life in general. The remuneration during the internship period will improve the financial situation of the trainees, while the internship in a real working environment at the workplace (machines, installations, work processes, etc.) will increase the motivation of the trainees, as they will see the real application of what they have learned. The apprenticeship not only contributes to the trainee's identification with the company and his or her chosen profession or specialization, but also to his or her competitiveness on the labour market.

Dual training will in turn balance supply and demand on the labour market, increase the investment attractiveness of the region and lead to more efficient management of the vocational education and training system and quality assurance at the government level.

## 2.4 The main participants in the implementation of the dual model of higher education

The state and sector councils and companies work together to identify sectoral and regional labour market needs. On the basis of these forecasts, vocational guidance is followed.



Vocational guidance guides the joint efforts of the chambers of entrepreneurs, colleges and universities, and necessitates the modernisation of educational programmes, the special organisation of work placements and the need to assess not only vocational qualifications, but also the development of the competences of the students.

## 2.5 A regional model for training human resources for the regional economy

In Atameken's (2016) view, a special role in establishing a regional training model for the region's economy is assigned both to businesses in Kazakhstan, which are direct customers for their employees, and to educational institutions, which are responsible for professional training of workers, and to the Chamber of Entrepreneurs and the state itself.

In order to improve the quality of training that meets the needs of enterprises, it is necessary to form an order and requirements for competences and qualifications together with entrepreneurs,

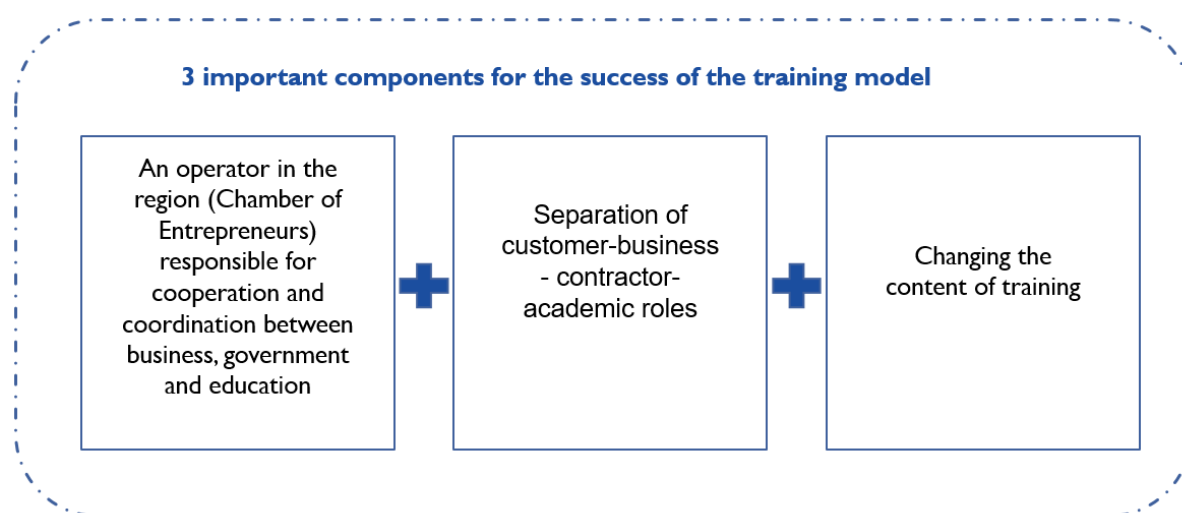
- to develop a mentoring system in enterprises enriched with pedagogical competences,
- to organise training (internships) and
- to involve enterprises directly in assessing the quality of education.

Educational institutions are in turn involved in updating existing curricula and developing new ones, and in providing education.

The Chamber of Entrepreneurs (Atameken 2016) should commit itself to the formation of a consolidated training order for the economy,

- to assist in the signing of agreements within the framework of dual education,
- to audit enterprises for training,
- to monitor the process and quality of training, and
- to accredit educational programmes.

The state, represented by the Ministry of Education, concentrates on creating incentive mechanisms, on participating in the development and approval of the legal and regulatory framework, and on creating and developing training infrastructures.



According to Atameken (2016), key factors for the success of the dual model of higher education for training in Kazakhstan are the cohesion of training actors, the involvement of both enterprises and chambers of entrepreneurs in all training processes and in the modernisation of the content of training programmes.

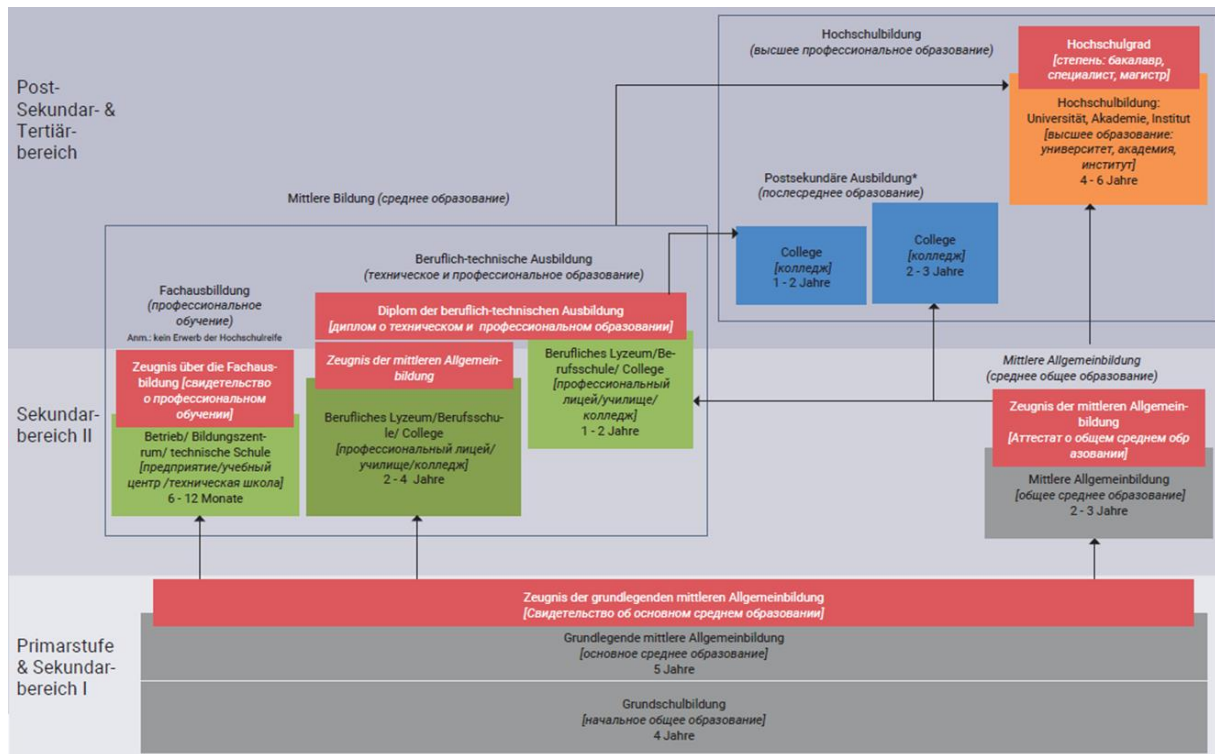
### 3 The education system of Kazakhstan

By the nature of educational programmes, education in Kazakhstan is divided into the following levels of the education system:

- general (pre-school education and training, secondary education),
- vocational education (higher and postgraduate vocational education).



Figure 1: The education system in Kazakhstan



Source: Bq portal (2007)<sup>6</sup>

The Concept of Education System Development of the Republic of Kazakhstan has defined a new model of school, pre-university, higher and post-university education. As the practice shows, the credit system of education, which is widespread in the universities of the USA and most European countries, is the most flexible and effective. It ensures academic mobility and graduate employability in the rapidly changing labour market. This is largely ensured through flexible planning of academic programmes oriented to the demands of the labour market, the elective nature of the curriculum disciplines, improved quality of teaching as competition arises, intensification of the learning process, introduction of information systems, increased role of independent work of the student. The education system of Kazakhstan.

The education system in Kazakhstan needs to become dynamic and capable of responding adequately to the accelerating globalisation and informatisation processes of the world.

### 3.1 Post-secondary and higher education in Kazakhstan

Primary vocational education (working speciality - lyceums, vocational schools) and secondary vocational education (professional, narrow specialist - college) are an integral part of secondary education in Kazakhstan.

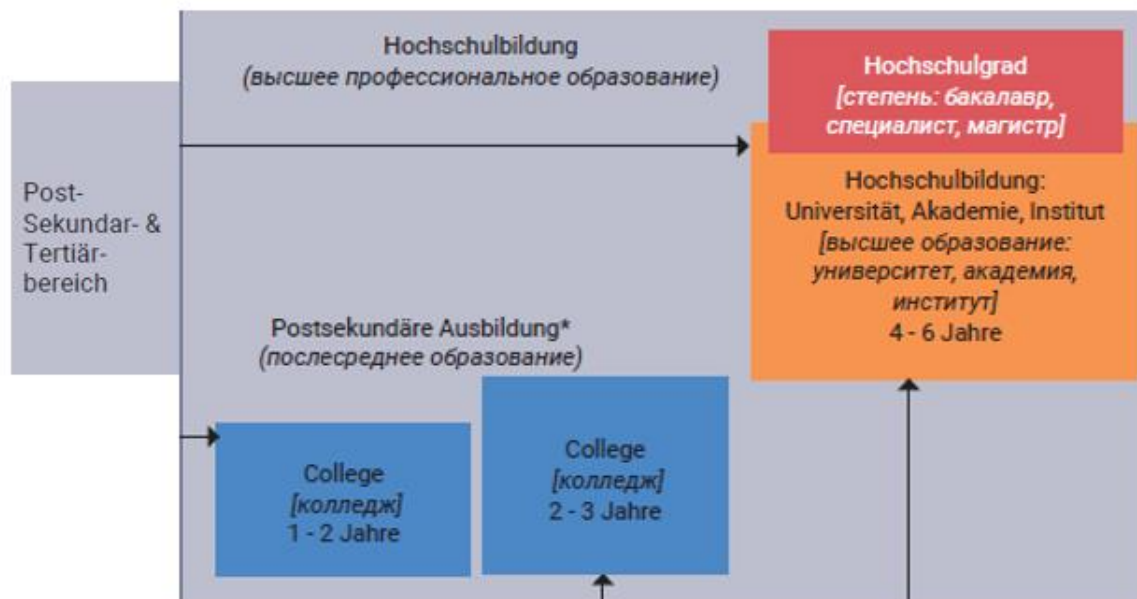
<sup>6</sup> Bq portal (2007): Das Bildungssystem Kasachstans seit 2007. <https://www.bq-portal.de/db/L%C3%A4nder-und-Berufsprofile/kasachstan>

Primary vocational education in Kazakhstan is acquired in 2-3 years in vocational schools and professional lyceums, colleges on the basis of basic general education (9 classes) with obtaining a certificate of general secondary education and a diploma of a college or lyceum.

Primary vocational education includes training, retraining and further training of workers, specialists and unemployed persons (6 months, 1 year 10 months).

Secondary vocational education is obtained in 3-4 years in colleges and schools on the basis of basic general education on a competitive basis.

Figure 2: Post-secondary and higher education in Kazakhstan



Source: Bq portal (2007)

Types of higher education institutions in the Republic of Kazakhstan include: universities, academies, institutes and their equivalents (conservatories, higher schools, higher colleges).

Higher vocational education in Kazakhstan is acquired on the basis of secondary education. For admission to HEIs, school leavers take final and entrance examinations in the form of unified national testing (Unified National Test) / Bachelor's examination for Master's programmes.

Upon graduation from HEI a graduate receives a Bachelor degree (4 years), Master degree (2 years).

Second higher education in Kazakhstan is obtained only on a fee-paying basis with an accelerated period of study (2 years).

### 3.2 Post-secondary and higher education in Kazakhstan in international comparison (KZ-EU)

As shown in the report on Work Package 1 Task 1.1, it is not difficult to see that the good practices of European and Kazakh educational institutions are similar to those of ISCED/NQF/EQF. However, there are a few peculiarities: at the college level, the examples in the EU are classical apprenticeship occupations (ISCED level 3 and NQF/EQF level 3-4). In Kazakhstan, college training is at ISCED level 3-4 and NQF/EQF level 4, with pre-school teachers, primary school teachers and teachers of Russian language and literature also trained at this level. This is very different from teacher training in Europe, where

teacher training is at ISCED levels 5-7 and NQF/EQF 6 (Bachelor) and 7 (Master). At university level there are no differences between Europe and Kazakhstan. (Kazdual WP1 t1.1 Report, p. 9)

Table 1: ISCED level and NQF/QF level of the best practice examples (Kazdual WP1 t1.1 Report, p. 10)

<b>COLLEGE LEVEL</b>		<b>EU</b>	<b>KAZ</b>
<b>ISCED LEVEL</b>		<b>3</b>	<b>4</b>
<b>NQF/EQF Level</b>		<b>3-4</b>	<b>3-4</b>
<b>UNIVERSITY LEVEL</b>		<b>EU</b>	<b>KAZ</b>
<b>ISCED LEVEL</b>		<b>5-7</b>	<b>6-7</b>
<b>NQF/EQF Level</b>		<b>5-7</b>	<b>6-7</b>

It turns out that in Kazakhstan the share of training in colleges is between 40 and 60 %, while the other part is trained in enterprises or in courses (college level in KazNPU) in schools. This means that at least 40 % of the training is organized in colleges. In Europe, the situation is quite different. In traditional apprenticeship training, the share of training in vocational schools is at most 20-30 %, the other part takes place in companies.

There are also differences between Kazakhstan and Europe in terms of dual training at universities. In Europe, the lowest proportion of training at the university is 20 % in the training of vocational school-teachers or teachers of various subjects of technical theory at colleges for higher vocational education. Although theoretical aspects are increasingly addressed at higher levels of education, the need for practical training is still respected and has therefore been included in the formal curriculum. In Kazakhstan, higher education institutions provide at least 35% of education in dual programs.

The information suggests that in the European countries the focus of dual training - also regardless of the level - is on inter-company training and practical work. Theoretical knowledge is used in a supportive way in addition to practical skills and knowledge, but not as the main criterion for training skilled workers. In Germany, Austria and Estonia, the dual training system focuses on in-company training, while in Kazakhstan the emphasis is on theoretical knowledge at universities. (ibid.)

Table 2: percentage the partners are involved in the dual training program, ECTS-AP, overall duration (ibid.)

<b>College Level</b>	<b>EU</b>	<b>KAZ</b>
<b>Part of the college</b>	<b>20 30 %</b>	<b>40 60 %</b>
<b>Part of the company/school</b>	<b>70 80 %</b>	<b>40 60 %</b>
<b>University Level</b>	<b>EU</b>	<b>KAZ</b>
<b>Part of the university</b>	<b>20 85 %</b>	<b>35 80 %</b>
<b>Part of the company/school</b>	<b>15 80 %</b>	<b>20 65 %</b>

In Europe and Kazakhstan, ECTS-AP is not calculated for studies at university level. In addition, the workload for undergraduate studies in Europe is estimated between 180 and 240 ECTS-AP, while in Kazakhstan undergraduate studies mostly include 240 ECTS-AP. It should be noted that it is possible to do more ECTS-AP depending on the internship. In one case, it is stated that the bachelor degree is only 210 ECTS-AP (Semey e-College: 210 BA + 55 ECTS-AP Master of Industrial Training - Educator). The total duration on college level in Europe and Kazakhstan seems to be quite similar (3- 4 years).

At university level there are again differences. In Europe, a bachelor's degree takes a minimum of three years - 180 ECTS-AP (exceptions are degree programmes with appropriate entry requirements). In Kazakhstan, a full-time university degree can be obtained in 2.5 years.

As regards the form of study, it should be noted that full-time and distance learning are common. However, the question arises as to what constitutes distance learning. (Kazdual WP1 t1.1 Report, p. 11)

Table 3: ECTS, overall duration and study mode (ibid.)

COLLEGE LEVEL		EU	KAZ
ECTS-AP		---	---
OVERALL DURATION (COLLEGE & COMPANY/SCHOOL)		36 48 MONTHS	36 46 MONTHS
STUDY MODE		FACE-TO-FACE TEACHING & DIS- TANCE LEARNING	FACE-TO-FACE TEACHING & DIS- TANCE LEARNING
UNIVERSITY LEVEL		EU	KAZ
ECTS-AP		BA: 180 240 BA: 60 (+240)	BA: 240
		MA: 60 120	MA: 120
OVERALL DURATION (UNIVERSITY & COMPANY/SCHOOL)		36 54 MONTHS	30 48 MONTHS
STUDY MODE		FACE-TO-FACE TEACHING & DIS- TANCE LEARNING	FACE-TO-FACE TEACHING & DIS- TANCE LEARNING

Different forms of learning may arise due to the lack of a legal framework for the respective educational fields. If the legal framework in a country concentrates only on theoretical (higher) education, the similarities between the forms of learning are negated and lead to unstructured pro-profiles that diversify manifold. (ibid.)

Table 4: Qualification / degree (ibid., p. 15)

COLLEGE		UNIVERSITY
EU	Journey-level	BACHELOR MASTER
KAZ	Journey level	
	Technician-Technologist (120 ECTS-AP) [SKSU]	
	Pre- B b assistant) [KazNPU]	
	Educator of the organization of preschool education and training [KazNPU]	

Basic vocational training in Kazakhstan (e.g., Electronical College Semey) has parallels to the European system, even though the contractual basis differs from the European one. While in Europe interns receive an extraordinary salary during their internship, in Kazakhstan the internship is treated like an internship in companies and is therefore not paid.

At universities of applied sciences in Europe, students are recruited by companies and employed directly. In this way, workers become employees and students at the same time, acquire qualifications and have the opportunity to stay in the company with a good salary, as they also become familiar with the procedures, organizational culture and values during their studies.

It should be noted that in Austria, for example, the training of vocational school teachers and higher vocational school teachers runs in parallel. The programme concludes with a Bachelor's degree in education, optionally with a Master's degree. In Germany, on the other hand, teacher training is organized according to the principle of "study and practice". The Kazakh teacher training system differs from the Austrian system, but also includes a partner with whom students can complete an internship. Teachers in Kazakhstan have a Bachelor's degree. (Kazdual WP1 t1.1 Report, p. 15)

Table 1: Admission requirements (*ibid.*, p. 16)

COLLEGE		UNIVERSITY
EU	ISCED 3; NQF/EQF 4 (A-level 12/13 years school) + Apprenticeship Contract	ISCED 3; NQF/EQF 5 (A-level 12/13 years school) or lateral entrants (only with suitable exams)
	9/10 years compulsory education + Apprenticeship Contract	Academic degree of at least 240 ECTS-AP relevant to subject + 3 years of professional practice in specified field
	ISCED 3; NQF/EQF 3 (secondary education)	
KAZ	Certificate 9th grade or Certificate 11th grade	general secondary, technical, and professional or post-secondary education + additional testing
	Certificate 11th grade + Apprenticeship Contract	Certificate 11th grade + additional testing
	Certificate 9th grade or Certificate 11th grade + additional testing (general exam + special pedagogical exam)	
	Certificate 11th grade + additional testing	

Various examples from Europe and Kazakhstan are given on entry requirements. In principle, you can start your studies in Europe (college level) in Europe if you have completed compulsory education (9/10 years). A prerequisite is that you have signed an apprenticeship contract. In Germany, a university degree is required for some apprenticeship occupations. In Kazakhstan, depending on the school, completion of the 9th or 11th grade is a prerequisite for entry to university. There are also entrance exams or apprenticeship contracts. At teacher training colleges, a general and a special examination in pedagogy are required.

Access to European universities is usually through the A-levels (post-secondary High School Diploma). In some cases, it is also necessary to pass the relevant examinations. For the professional training of teachers in Austria, at least three years of professional experience is required. Teachers at vocational schools must also have a diploma in the field they will be teaching. In Kazakhstan, a school leaving certificate after grade 11 and an additional examination are required. (*ibid.*, p. 15)

The basis of every dual study program in Germany and Austria is either a training contract with a company or an employment contract with a company (in case of university education => university level). In Estonia, the Education Act of the Republic of Estonia, the Higher Education Act and the Higher Education Standards form the legal basis for dual tertiary education. (*ibid.*, p. 16)

According to the templates, dual training in Kazakhstan is only based on the legal acts presented below (the information provided was complex and varied in many ways, so we decided to show some illustrative examples). There do not seem to be specific rules on the duration of certain training (from 1 to 5 years) or the trainee's own qualifications. Although there is a Vocational Training Act, the basis of higher education is largely based on 'compulsory state higher education', where most of the training takes place at a theoretical level. In Kazakhstan, practical work in the classroom (along the lines of the

vocational school models in Austria and Germany) is very limited, and a pedagogical approach to practice-oriented training is only just beginning. Therefore, at the policy level, a flexible dual system with vocational education and training at the vocational and higher education levels is needed. (Kazdual WP1 t1.1 Report, p. 16)

Table 2: Legal basis (*ibid.*, p. 17)

EU	KAZAKHSTAN
<p>apprenticeship-contract with the company a contract of employment with the company</p>	<p>State compulsory standard for technical and vocational education (approved by order of the Minister of Education and Science of the Republic of Kazakhstan dated October 31, 2018, No. 604). Standard rules for admission to training in educational organizations that implement educational programs of technical and vocational, post-secondary education (approved by order of the Minister of Education and Science of the Republic of Kazakhstan dated October 18, 2018, No. 578). Law of the Republic of Kazakhstan dated July 11, 1997, No. 151-І About languages in the Republic of Kazakhstan Law of the Republic of Kazakhstan dated July 4, 2018, No. 171-V " On Amendments and Additions to the Law of the Republic of Kazakhstan on Expanding the Academic and Administrative Independence of Higher Education Institutions." State compulsory standard for technical and vocational education (approved by order of the Minister of Education and Science of the Republic of Kazakhstan dated October 31, 2018, No. 604). Standard rules for admission to training in educational organizations that implement educational programs of technical and vocational, post-secondary education (approved by order of the Minister of Education and Science of the Republic of Kazakhstan dated October 18, 2018, No. 578).</p> <p>Apprenticeship contract with the company, accorded to vocational training act</p> <ol style="list-style-type: none"> <li>1. The Law of the Republic of Kazakhstan " About Education "</li> <li>2. Typical rules of activities of educational organizations, implementing educational programs of higher and (or) postgraduate education,</li> <li>3. State obligatory standard of higher education</li> <li>4. Rules of educational process organization by credit technology of education</li> <li>5. Standard rules of admission to training in educational organizations</li> <li>6. Partnership agreement with the company</li> </ol>

### 3.3 Main recommendations

Based on the results of the report for work package 1, tasks 1.1 and 1.3, it is recommended that:

- developing a common understanding of duality in TVET and in university education,
- creating a flexible dual system at policy level (vocational education/college level),
- developing a legal basis for cooperation between university, college and company,

creating a contractual obligation between university, college, company and students (training and study agreements in the dual system for the duration of training and/or studies at university, continuity of cooperation and legal certainty for all partners; in-service training of university and training staff (dual system/training of trainers),  
work on increasing the number of full-time PhD lecturers competent in their subject area and offering permanent guidance and supervision during practice (dual training),  
comprehensive promotion of dual study programmes to students and companies,  
involvement of supporters (based on survey results) in the development of the model,  
selection of companies/schools with the highest potential for pilot implementation.

Taking into account the results of the report for work package 1.1, it is necessary to develop schemes for a continuous model for dual TVET and higher education to support the needs of employers, higher education institutions and students in different economic sectors. The introduction of financial support programmes or education support programmes for all partners will be the basis for the attractiveness of the dual education system and the cohesion of all partners.

The balance between theory and practice and the link between theory and practice will increase the motivation of students and show them how the learning content really relates to the working environment, the work situation.

An important role is also assigned to the flexible adaptation of the organisation of dual study to the needs of different providers/regions, the needs of the labour market, the interests of the students and the needs of future development. The introduction of dual study requires the development of uniform approaches to the career guidance of students during counselling and the specification of the duration of certain training courses.

Analysis of the results of the report to work package 1.1 and 1.4 indicates the need:

developing a time model tailored to the needs of the dual partners, while respecting the freedom of each partner institution to choose a suitable mode of study (days per week, weekly and monthly blocks, etc., alternating between university and/or vocational school and enterprise),  
a combination of classroom, on-the-job and distance learning phases, a combination of a learning structure consisting of core subjects, compulsory elective subjects that cover areas of specialisation and major areas (with less freedom in the choice of subjects).

It is particularly important not only to develop and align curricula and learning outcomes at all stages of training with quality assurance activities, but also to develop practice-oriented assessments of degree and assessment criteria.

Based on the results of the report to work package 1 of tasks 1.1 and 1.3 and 1.4 it is recommended that:

preparation of an accreditation process for the relevant TVET and/or HEI curriculum,  
quality development or/and revision of curricula,  
validation of information and communication structures by training institutions and companies,  
development of legislative documents on the definition of duality and on specific regulations for dual study programmes,  
clear identification of key stakeholders,  
provision of financial support, guarantees,  
regulation of internal and external quality assurance, supervision and quality assurance mechanisms,  
establishment of relevant institutional responsibilities by law,

establishment of close cooperation between key stakeholders (between HEIs, TVET and employers).

There is also a need to develop specific standards for dual higher education and TVET programmes.

The results of the report to work package 1.1 and 1.4 identify not only legitimate needs on the way to implementing dual education, but also major challenges and constraints in the development of dual TVET and dual higher education in Kazakhstan that require a strategic approach. Particular attention should be paid to building up cooperation with local companies and enterprises that did not exist before the project, the lack of national legislation and clear standards for the accreditation of dual study programmes.

Barriers to the introduction of dual vocational and higher education may include:

insufficient material remuneration for students and supervisors,  
poor communication between educational institutions and enterprises, and  
low public awareness of the benefits of dual study programmes.

Support strategies to address these challenges and constraints include:

creating more structured institutional responsibilities in the respective field,  
managing crisis aspects by: (1) planning, coping and prevention, (2) addressing soft factors - interactions between people, (3) using project management methods and tools,  
contributing to the development of a common goal, ensuring a common understanding of the goal,  
clarifying the understanding of the result to be achieved by all partners (in the target dimensions of time, resources and results),  
provision of sufficient and timely information (clarification of complex concepts, processes with regard to the main ones),  
creation of framework conditions.

A strategic approach should avoid: postponing deadlines, personal overload and lack of resources.

### **3.4 Modernization of educational system**

Based on the model of dual training of workers of Karaganda region (Atameken 2016) modernization in technical vocational and higher education requires the introduction of a cluster approach, by creating sectoral territorial clusters.

Implementation of the dual model of training (higher qualification) implies both expert participation of the Chamber of Entrepreneurs in all processes and activities related to modernization of technical vocational and higher education and creation of quality assessment mechanisms for personnel training (accreditation of educational programs, assessment of professional qualifications) and rating the usefulness of TVET/universities (expert evaluation of employers).

### **3.5 Implementation algorithm**

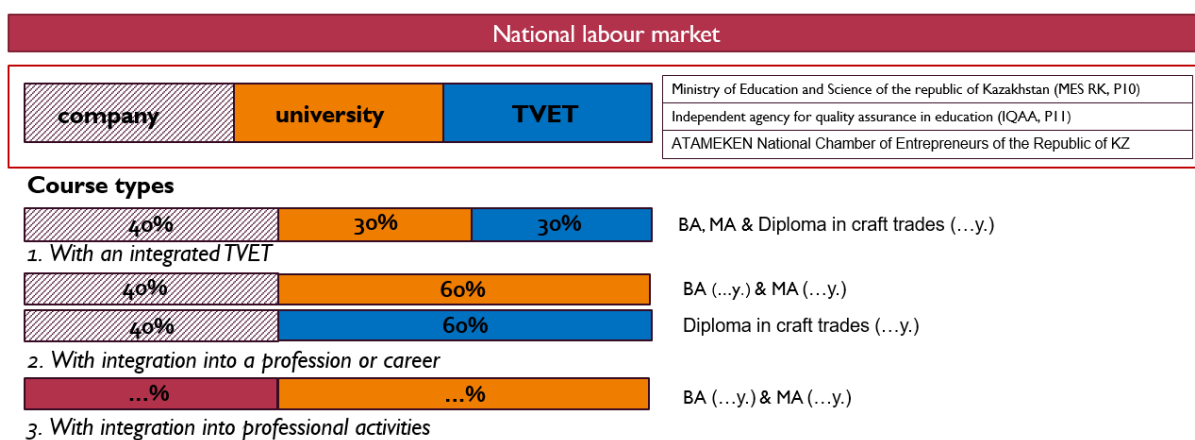
The implementation of the dual training model involves a clear algorithm of implementation, which consists of analysing the need for workers in the medium term, collecting applications for workers from businesses, forming a consolidated order with the Regional Education Department, placing orders



in the vocational education and higher education system together with the Regional Education Department, signing minimum tripartite agreements, adjusting educational programmes and their certification, and employing graduates (Atameken 2016).

### 3.6 Dual model of technical and vocational, postsecondary and higher education

Based on the previously mentioned reports and the results of discussions with education experts in the Republic of Kazakhstan, the following initial version of the dual education model is proposed, which is currently being supplemented and modified according to the conventions of vocational and academic education.



The organisation of training and the development of curricula may look as follows. The organisation of training determines the extent to which higher education institutions and companies are interlinked by subject, time and institution. When looking at the types of dual study programmes according to Hesser (2013, p. 19) the choice falls on:

„ Studies / courses integrating an apprenticeship to the academic qualification

**Studies/courses integrating work experience: have an extended phase of practical work within a company as an integral part**

Studies/courses integrating professional employment: are combined with a full-time professional occupation (reciprocal relationship between theory and practice phases are foreseen but not obligating) (Kazdual WP1 t1.1 Report, p. 25).

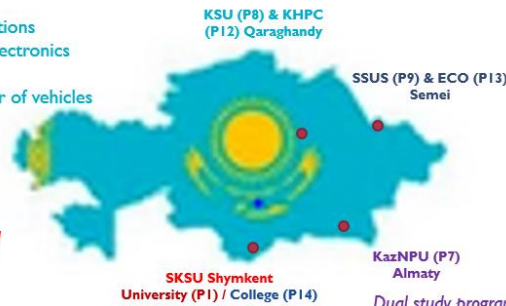
The Ministry of Education and Science of the Republic of Kazakhstan MES RK (P10: Nur-Sultan; Expertise fields: National and Sectoral Qualifications Frameworks, Professional Standards), the chamber of entrepreneurs and the Independent agency for quality assurance in education (IQAA) (P11: Nur-Sultan; Sholpan Kalanova) should be involved in the process and final design of the model.

## 4 Planned regional offerings of the dual system in Kazakhstan

Having analysed the results of the Survey to identify the preferences of dual system models among Kazakh companies and representatives of the education sector, the following preferences for modernising and developing dual vocational and academic training programmes can be seen.

*Dual vocational training programmes and dual study programmes:*

- electrical equipment, heat and power stations and networks,
- radio electronics and communications
- IT entrepreneurship and digital electronics
- restaurant and hotel business
- maintenance, operation and repair of vehicles



*Dual vocational training programmes and dual study programmes:*

- electric power industry
- metallurgy
- chemical technology of inorganic substances
- mechanical engineering
- construction and agronomy
- subject teachers????????????????????

*Dual vocational training programmes or dual study programmes:*

- mechatronics
- logistics
- sustainable energy
- power supply by industry
- machining
- industrial instrumentation and automation
- mechanical engineering
- Pedagogy (P 9) - these are educational programs and individual courses/modules in interdisciplinary fields (economics, management, tourism, IT, etc.)

*Dual study programmes and dual vocational training programmes:*

- pedagogy (IT, primary education, special education, preschool education and teacher-philologist for teaching a foreign language in national schools)

The following slides indicate regional preferences (cities of Shymkent, Almaty, Karaganda and Semey of the Republic of Kazakhstan) and enterprises that have agreed to actively participate in dual vocational and higher education.

**Shymkent city region**

*Dual vocational training programmes and dual study programmes:*

- electric power industry
- metallurgy
- chemical technology of inorganic substances
- mechanical engineering
- construction and agronomy
- subject teachers????????????????????



**EMPLOYER LIST/NEEDS**

СПИСОК РАБОТОДАТЕЛЕЙ/ ПОТРЕБНОСТИ  
**Dual study programmes with SKSU**  
ПРОГРАММЫ ДВОЙНОГО ПРОФЕССИОНАЛЬНОГО И АКАДЕМИЧЕСКОГО ОБУЧЕНИЯ С SKSU

In the field of EDUCATION:

- Nazarbayev Intellectual School of Chemistry and Biology in the city of Shymkent (subject **teachers** )

In the field of INDUSTRY:

- LLP "KARLSKRONA LC AB"(designers, technologists, operators of numerically controlled machine tools, salesmen, turners, milling operators, technical specialists)
- LLP Asia Trafo (power engineering, mechanical engineering)

**EMPLOYER LIST/NEEDS**

СПИСОК РАБОТОДАТЕЛЕЙ/ ПОТРЕБНОСТИ  
**DUAL VOCATIONAL TRAINING AND STUDY PROGRAMMES WITH SKSU etc.**

ПРОГРАММЫ ДВОЙНОГО ПРОФЕССИОНАЛЬНОГО И АКАДЕМИЧЕСКОГО ОБУЧЕНИЯ С SKSU, КОЛЛЕДЖАМИ, (ШКОЛОЙ)

In the field of INDUSTRY:

- BAL TEXTILE LLP (weavers (weaving machine operators) who know how the carpet weaving machine works) (College of SKSU, SKSU, College No5 )
- JSC "3-Energoortalyk" (chemists, technologists, heat engineers, automators, mechanics, IT, etc.) (SKSU, Almaty University of Energy and Communications, industrial complex school)

## Almaty city region

Dual study programmes and dual vocational training programmes:

- pedagogy (IT, primary education, special education, preschool education and teacher-philologist for teaching a foreign language in national schools)

### EMPLOYER LIST/NEEDS

СПИСОК РАБОТОДАТЕЛЕЙ И ПОТРЕБНОСТИ  
Dual study programmes with KazNPU  
ПРОГРАММЫ ДВОЙНОГО ОБУЧЕНИЯ С KazNPU

In the field of EDUCATION:

- Special boarding school 4 for blind and visually impaired children. N. Ostrovsky (typhlopedagogues, speech therapist)
- Special (correctional) boarding school No. 5 for children with hearing impairments in Almaty (educator)



### EMPLOYER LIST/NEEDS

СПИСОК РАБОТОДАТЕЛЕЙ И ПОТРЕБНОСТИ

DUAL VOCATIONAL TRAINING PROGRAMMES WITH KazNPU etc.  
ПРОГРАММЫ ДВОЙНОГО ПРОФЕССИОНАЛЬНОГО ОБУЧЕНИЯ С KazNPU И Т.Д.

In the field of EDUCATION:

Cooperation with KazNPU & Colleges

- Secondary school No. 1 named after I.E.Khalipov (primary school teachers in the Russian class)

Cooperation with KazNPU and Women's National Pedagogical University

- Secondary school No48 named after T.Aybergenov (teachers of Russian, English, teachers of chemistry and physics)
- National Scientific and Practical Center for the Development of Special and Inclusive Education in Almaty (special educators)

## Qaraghandy city region

Dual vocational training programmes and dual study programmes:

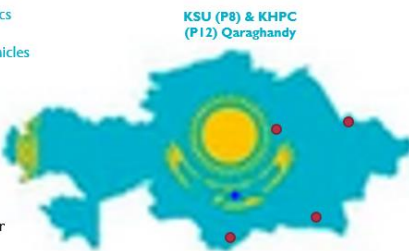
- electrical equipment, heat and power stations and networks,
- radio electronics and communications
- IT entrepreneurship and digital electronics
- restaurant and hotel business
- maintenance, operation and repair of vehicles

### EMPLOYER LIST/NEEDS

СПИСОК РАБОТОДАТЕЛЕЙ И ПОТРЕБНОСТИ  
Dual study programmes with KSU  
ПРОГРАММЫ ДВОЙНОГО ОБУЧЕНИЯ С KSU

In the field of INDUSTRY:

- LLP "Karaganda Energocenter" ЧНП- I (estimator engineer, integrated management system engineer)
- KF JSC Kazakhtelecom (communications engineer, physicist, installation and adjustment of electronic equipment, fiber optic cable laying (based on secondary vocational education))
- Umma Group LLP (IT specialists)
- SHARKCOMPANY LLP (communications engineer)



Dual study programmes with KSU etc.

ПРОГРАММЫ ДВОЙНОГО ОБУЧЕНИЯ С KSU и т.д.

- WOOPPAY LLP (Developers) (KSU, Karaganda State Technical University, Kazakh Economic University Kazpotreboyz, Universities)

### EMPLOYER LIST/NEEDS

СПИСОК РАБОТОДАТЕЛЕЙ И ПОТРЕБНОСТИ

DUAL VOCATIONAL TRAINING PROGRAMMES WITH КНПС  
ПРОГРАММЫ ДВОЙНОГО ПРОФЕССИОНАЛЬНОГО ОБУЧЕНИЯ С KSU

In the field of INDUSTRY:

- OLDIMAX LLP (machine operators)
- D Cloud LLP (communications engineer, fitter)
- Qaz Innovation Technologies LLP (electrician linear structures)
- LLP "Company" AutocenterBakhus (lawyer, car sales manager, warranty engineer, operator "Call center", trading floor administrator)
- Ishim Motors LLP (locksmiths for car repair)

Cooperation?????

- Zhana arka LLP (installers) (?)

## Semey city region

Dual vocational training programmes or dual study programmes:

- mechatronics
- logistics
- sustainable energy
- power supply by industry
- machining
- industrial instrumentation and automation
- mechanical engineering

### EMPLOYER LIST/NEEDS

СПИСОК РАБОТОДАТЕЛЕЙ ПОТРЕБНОСТИ

#### Dual study programmes with SSUS

ПРОГРАММЫ ДВОЙНОГО ОБУЧЕНИЯ С SSUS

In the field of EDUCATION:

- KSU Secondary School 16 named after T.Amanova (educators)

In the field of INDUSTRY:

- RSE "National Nuclear Center of the Republic of Kazakhstan" (technical)
- "GKP Teplokommunenergo State Institution" (heat power engineering, automated control systems for technological processes, electricians, welders)
- SO SMZ (needed Engineering)
- SpetsMontazhProekt LLP (design engineer, estimate engineer, electronic engineer)

- Pedagogy (P 9) - these are educational programs and individual courses/modules in interdisciplinary fields (economics, management, tourism, IT, etc.)



### DUAL VOCATIONAL TRAINING AND STUDY PROGRAMMES

ПРОГРАММЫ ДВОЙНОГО ПРОФЕССИОНАЛЬНОГО И АКАДЕМИЧЕСКОГО ОБУЧЕНИЯ

In the field of EDUCATION (with SSUS, College(s)):

- Nazarbayev Intellectual Schools (NIS) in Semey (subject teachers) (with SSUS, Pedagogical College)

In the field of INDUSTRY:

- JSC "Semey Engineering" (1) (design engineer, process engineer, electronic engineer, electrical engineer, instrumentation and automation engineer) (with SSUS, Electrotechnical College, College of Transportation)
- IT SALE LLP (electronic engineer) (with SSUS, College of Radio Engineering and Communication)

### DUAL VOCATIONAL TRAINING PROGRAMMES WITH COLLEGE(S)

ПРОГРАММЫ ДВОЙНОГО ПРОФЕССИОНАЛЬНОГО ОБУЧЕНИЯ

In the field of INDUSTRY:

- LLP "Kazakhstan Railways - Freight Transportation" - "Semeyskoe Department of State Enterprise" (welders, electricians, locomotive driver assistants) (Electrotechnical College)
- JSC "Semey Engineering" (2) (electronic engineer, instrumentation and automation Locksmith) (with Electrotechnical College, College of Transportation)

The regional preferences presented require further work with potential enterprises and organisations interested in joint training of workers. These works are carried out by the KAZDUAL project participants.

## 5 Reflection and Outlook

The results and recommendations of the reports of work package 1 tasks 1.1-1.4 were used for the development of the design version of the dual system model. In the exchange with the Kazakh partners it came out that this result can however be of a prospective character. In the course of the modernisation of the existing and the development of the new programmes of dual vocational and academic education, the partner enterprises and organisations will be finally engaged.

The draft version of the flexible dual vocational education and higher education model (Delivery date of draft version of the Dual system model: M12 – December 2021) provided to the Kazakh partners was analysed and discussed.

The Kazakh partners are currently in a position to develop regional dual vocational education and higher education models according to subject specificity.

In the joint exchange, the decision was made to proceed inductively and thus to develop the individual regional models in the first step, to analyse them for commonalities and differences and then to combine them into one flexible dual vocational education and higher education model.

Although the final model was not created by the planned deadline (M18 – June 2022), the decision was made to proceed more realistically and to achieve this goal by the end of the project and to optimise it at any time. At a joint meeting in Germany, Austria and Tallinn, we discussed and agreed with all partners and moved this task to month 35 of the project.

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