



DEVELOPMENT OF BACHELOR PROGRAM IN AGROECOLOGY WITH DUAL EDUCATION  
IN KAZAKHSTAN

**Let's save our land for the future**

**Quality Control Manual Metrics  
for the study and LLL programs**

[agrokaz.kineuprojects.kz](http://agrokaz.kineuprojects.kz)



<b>Project acronym</b>	AGROKAZ
<b>Project full title</b>	Development of bachelor program in agroecology with dual education in Kazakhstan
<b>Project number</b>	101082564
<b>Funding scheme</b>	ERASMUS Lump Sum Grants (ERASMUS-EDU-2022-CBHE-STRAND-2)
<b>Project start date</b>	01/02/2023
<b>Project duration</b>	3 years

<b>TITLE OF DOCUMENT</b>	Quality Control Manual Metrics for the study and LLL programs
<b>Work package</b>	WP6
<b>Deliverable</b>	Report
<b>Responsible Team members</b>	Quality Committee
<b>Due date</b>	31.05.2024.
<b>File name</b>	Quality Control Manual Metrics for the study and LLL programs
<b>Number of pages</b>	27
<b>Dissemination level</b>	Deliverable 6.1.

<b>Abstract</b>	<p>The Quality Control Manual Metrics for the study and lifelong learning programs define internal monitoring and quality assurance (action plan, questionnaires) and external quality assurance (evaluation). Metrics are set through qualitative and quantitative indicators. This Manual defines the minimum quality requirements and provides the mechanisms for collecting, monitoring and analyzing the management of the project, its implementation and deliverables. The main techniques described in the Quality Control Manual Metrics are related to gathering feedback from participants/students and utilizing it to improve the course development delivery and content, and the accessibility of the courses for the teacher/trainers.</p> <p>This Quality Manual is made according to ISO 9001:2008 standards</p>
-----------------	--



Co-funded by  
the European Union



### **VERSIONING AND CONTRIBUTION HISTORY**

<b>Version</b>	<b>Date</b>	<b>Description</b>	<b>Responsible members</b>
1.0	29.05.2024.	Quality Control Manual Metrics for the study and LLL programs, V.1. /Draft Version	QC
2.0	31.05.2024.	Quality Control Manual Metrics for the study and LLL programs, V.2. /Final Version	QC

### **DISCLAIMER**

*Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency. Neither the European Union nor the granting authority can be held responsible for them.*



Co-funded by  
the European Union



## ABBREVIATIONS

<b>AE</b>	Agroecology
<b>AGROKAZ</b>	Development of bachelor program in agroecology with dual education in Kazakhstan
<b>BA</b>	Bachelor program
<b>DE</b>	Dual education
<b>HEI</b>	Higher Education Institution
<b>IT</b>	Information technology
<b>KE<sub>n</sub>EU</b>	KOSTANAY ENGINEERING AND ECONOMICS UNIVERSITY NAMED AFTER M. DULATOV
<b>KazNARU</b>	KAZAKH NATIONAL AGRARIAN UNIVERSITY
<b>LLL</b>	Lifelong learning
<b>PSU</b>	TORAIGHYROV UNIVERSITY
<b>QC</b>	Quality Committee
<b>WP</b>	Work package



Co-funded by  
the European Union



## CONTENT

<b>1. Introduction</b>	5
<b>2. MONITORING OF QUALITY INDICATORS</b>	7
2.1 Quality assurance - teachers/companies' mentors	7
2.2 Quality assurance – lecture rooms, laboratories and practicums	8
2.3. Quality assurance - network of institutions and companies for professional and scientific cooperation	9
2.4. Quality assurance – evaluation of students	9
2.5. Quality assurance - supervision of study programs	10
<b>3. DISSEMINATION OF QUALITY ASSURANCE</b>	10
3.1 Internal monitoring	10
3.2 External monitoring	11
<b>4. Metrics for AGROKAZ</b>	11
4.1 Qualitative indicators – curriculum	13
4.2 Qualitative indicators – organization of dual study program	16
4.3 Quantitative indicators – respondents	17
<b>5. FINAL DISSEMINATION QUALITY ASSURANCE REPORT</b>	18
<b>6. CONCLUSION</b>	19
<b>7. REFERENCES</b>	20
<b>8. ANNEXES</b>	21



Co-funded by  
the European Union



## 1. INTRODUCTION

The goal of the Quality Control Manual Metrics for the Study and LLL Programs is to implement and ensure a continuous increase in the satisfaction of students and all stakeholders who participate in the development and implementation of the sustainable dual study undergraduate program in Agroecology at three universities in Kazakhstan as well as to establish lifelong learning courses for professionals. This approach ensures the expected and demanding quality of graduated students in the field of agroecology, which is the basis and prerequisite for the successful integration of the dual system of education in higher education institutions. In modern agriculture, developing resource-saving technologies for the cultivation of agricultural crops, methods for producing high-yielding and high-quality crop production, effective ways of increasing soil fertility, and methods of agroecological monitoring allows not only to tackle all challenges, but also to successfully deal with fierce competition.

Dual learning programs are increasingly offered by higher education institutions. These programs' main characteristic and greatest challenge is the integration of academic and vocational learning (Rakhimovna, 2024.). Dual education is a form of vocational education that combines learning in a vocational education institution, within a business entity, or at the workplace. Emphasis is placed on high-quality collaboration between education institutions and the business entities. Competencies required by the labour market are effectively acquired by enhancing learning outcomes and standardizing education. An essential feature of dual education is the socialization of students in a real work environment. Throughout their education, students learn of business processes in simulated and actual conditions, significantly increasing their employment opportunities. The primary goal of dual education is to enable young individuals to comprehensively acquire the necessary skills to perform their jobs efficiently, innovatively, independently, and in collaboration with others, thereby meeting the labour market needs and contributing to a booming economy by creating a young, qualified workforce. The main motivational driver for the involvement of economic entities is the training of future employees at a high level (Turk, 2023.). The quality management system is based on European standards and guidelines for quality assurance (ESG), and quality control is reflected in the project through monitoring, dissemination, and exploitation of project activities and results.



Co-funded by  
the European Union



MISSION	VISION
<p><i>By connecting scientific research and the dual education, contribute to the development of the economy and the public sector, educate students for the future jobs and offer advanced solutions for the sustainable development of society at the international level.</i></p>	<p><i>To be a driver of economic and social development in the field of agroecology and a generator of positive changes based on knowledge and innovation by dual education.</i></p>

Fundamental values in quality assurance are *responsibility, openness, ethics, excellence, creativity, and innovation*. The aim of responsibility for every stakeholder in dual education is to promote academic freedom and institutional autonomy as a prerequisite for the true progress of the institution and the sustainable development of society. Also, to promote openness, inclusiveness and diversity as well as all forms of cooperation and connection as the most important prerequisites on the way to a fair society with equal opportunities. The actions of each individual within the system must take place within the ethical principles of the scientific, professional, and social community. Excellence and creativity in higher education - as a measure of the continuous progress of each individual and the institution as a whole - are a prerequisite for quality achievements and the true development of society. It is important to support innovation as a fundamental value of development and this is the key feature to offer cooperation with the economy, the local and regional community and society as a whole.

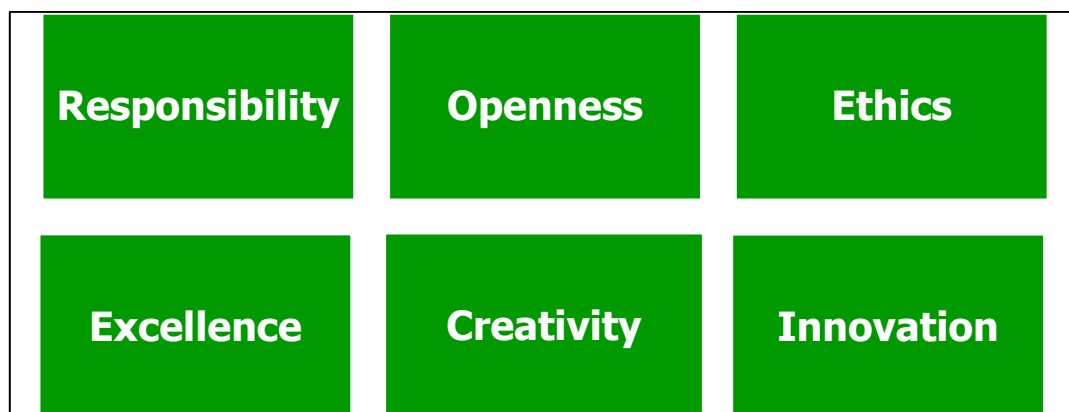


Figure 1. Fundamental values in quality assurance



Co-funded by  
the European Union



## 2. MONITORING OF QUALITY INDICATORS

Monitoring of quality indicators is primarily reflected in the evaluation of teachers, quality of their work, as well as the monitoring of business mentors. This Manual will guide the evaluation process of the LLL courses and study programs, and it can be adjusted, depending on the lessons learned during the evaluation. The main techniques described in the Quality Control Manual Metrics will relate to gathering feedback from participants/students and utilizing it to improve the course development delivery and content, and the accessibility of the courses for the teacher/trainers. At the end of the project, it is necessary to continuously monitor and check the quality of the teaching process as well as improvement with new scientific and technical achievements.

### 2.1. Quality assurance - teachers/companies' mentors

*Teachers* are the most important resource in the educational process and system in general. For this reason, care should be taken that teachers fully know and understand the course they are teaching, that they have all the necessary skills and experience to effectively transfer their knowledge to students in different teaching contexts, and that they receive feedback on their work.

*Company mentors* should provide students with practical application of theoretical knowledge, but also a sense of success and motivation through operational experience, developing independence and responsibility and working ethic's, essential components for a prosperous economy. Namely, work-based learning in economic entities is an important aspect of dual education, which through connection with the real business environment, opportunities and challenges can provide students with specific competencies and more develop skills for employment.

Student opinions expressed in surveys (which are part of this Manual) related to student evaluation of teaching work/company mentors and courses are taken as recommendations with the possibility of improvement. Surveys have multiple effects: on the one hand, they encourage teachers/company mentors to self-evaluate and strive for excellence in teaching, based on the indicators of the survey results. Survey results give a realistic picture of the state of the teaching process and direct action toward improving the quality of teaching work. On the other hand, such survey offer students the opportunity to anonymously and permanently point out problems in individual courses Defining metrics for the assesment of implementation of study program without fear of negative consequences for them.



## 2.2. Quality assurance – lecture rooms, laboratories and practicums

Project activities defined the infrastructure capacities necessary for the implementation of teaching processes while analyzing the needs and expectations of interested parties. The infrastructure includes resources such as space for holding classes, installations, IT equipment, measuring equipment, laboratory equipment, etc. By applying maintenance methods to ensure continuous operation, which includes the type and frequency of maintenance and verification of the operation of each element of the infrastructure, depending on its meaning and use, their required reliability is achieved.

The lecture rooms are equipped with the necessary equipment, and the laboratories and practicums are being equipped with new equipment provided by the AGROKAZ project.

Accreditation of laboratories and study programs as well as the purchase of necessary equipment are the basis for ensuring the necessary level of quality implementation of a successful dual study undergraduate program in Agroecology and lifelong learning courses for professionals.

- KEnEU is planning to purchase: Colorimetric complex for the determination of organic matter (PC + CPK ZOMZ), Flame photometer Jeenway PFP 7 for the determination of potassium and sodium, Spectrophotometer DR 3900 for the determination of nitrates, sulphates, and phosphorus, pH meters for determining acidity, Drying cabinet SPU 200, Laboratory HT-20 Generator, Orbital Shaker, Laboratory Timer, Digital Display Shaker, Small Generator 110V/220V, Laboratory analytical balance CAS CAUW-120D, and Mechanical laboratory pipette Acura 825, volume 5-50 µl.
- PSU is planning to purchase: FED Leaf Diagnostic Laboratory, N-Tester (manual leaf nitrogen sensor) with GPS/GLONASS module, Soil Tester 4 in 1 NEW soil analyzer (acidity, humidity, temperature, light), Minilab SKW 500, Set of sieves SP for soil, Laboratory bath STEGLER WB-6 (6 places, up to 100 °C), Photocolorimeter KFK-3-01, Laboratory scales OHAUS Pioneer PR224 (220 g, 0.0001 g, internal calibration), Magnetic stirrers STEGLER HS-Pro (heated, 380 °C, 20 liters), Flame photometer PFA 378, 500MG PRECISION TORSION BALANCES SERIES JN-B \*3, Set of equipment based on ASV-6 extended (Soxhlet analyzer ASV-6. Drying cabinet DSO-200D. Fume hood with worktop width 900 mm), Flame photometer PFA 378, Vacuum pump Komovskogo, and a set of equipment for analysis Kjeldahl based on AKV-10 extended.
- KazNAU is planning to purchase: Bruker's S1 TITAN Handheld XRF Analyzer, Penetrologger EIJKELKAMP P06.15.SA with GPS, LaMotte Agricultural Soil Testing Equipment Model STH Series, Desktop computers 20 pcs, Printers 5, and All-in-One workstation with OS Equivalent to HP 24-e005ny 8GB 256GB SSD x 3 pcs.



Co-funded by  
the European Union



### **2.3. Quality assurance - the network of institutions and companies for professional and scientific cooperation**

The network of institutions and companies for professional and scientific cooperation as well as project partners in the realization of study undergraduate programs in Agroecology at three universities in Kazakhstan and to establish lifelong learning courses for professionals are:

1. UNIVERZITET U NOVOM SADU
2. KOSTANAY ENGINEERING AND ECONOMICS UNIVERSITY  
NAMED AFTER M. DULATOV
3. KAZAKH NATIONAL AGRARIAN UNIVERSITY
4. TORAIGHYROV UNIVERSITY
5. DIMOKRITIO PANEPISTIMIO THRAKIS
6. UNIVERSITY OF JOSIP JURAJ STROSSMAYER
7. AGRICULTURAL EXPERIMENTAL STATION ZARECHNOYE
8. KAZAKH RESEARCH INSTITUTE OF PLANT PROTECTION  
AND QUARANTINE NAMED AFTER ZHAZKEN  
ZHIYEMBAYEV
9. MINISTRY OF EDUCATION AND SCIENCE
10. CHAMBER OF ENTREPRENEURS OF KOSTANAY REGION
11. KAZAKHSTAN AGENCY OF APPLIED ECOLOGY
12. INDEPENDENT AGENCY FOR ACCREDITATION AND RATING
13. PEASANT FARM "ZAMANDAS"
14. NON-PROFIT JOINT-STOCK COMPANY NATIONAL AGRARIAN  
SCIENCE AND EDUCATIONAL CENTRE

The projects objective is to stimulate a cooperation network at the national and transnational levels, in which companies and universities will interact to develop and boost appropriate skills and competencies. for students.

### **2.4. Quality assurance – evaluation of students**

Evaluation of student activity is very important in the teaching process. For these reasons, evaluation at universities in Kazakhstan should be performed according to internal criteria, rules, and procedures that should be applied consistently. Assessment results can significantly influence students' future careers.

Coordinators of study program as well as the vice-dean/vice-rector for education are responsible for the implementation of assessment procedures in practice. Teachers/company mentors' opinions are expressed in surveys (which are part of this Manual).



## 2.5. Quality assurance - supervision of study programs

Monitoring and periodic checks of programs and qualifications should be aimed at continuously emphasizing the importance and role of quality in all processes of implementation of the study programs. The following activities include:

- Defining the quality policy (at each university)
- Defining responsibility, authority, and communication (at each university)
- Defining goals and quality policy (at each university)
- Organization of communication systems (internal and external)
- Periodic review and revision of the quality system (at each university)

The success of the study program's implementation depends on the responsibilities and expertise of teachers, cooperation and communication with business entities and on satisfaction of current and future students with whole educational experience. Students are, and should be placed at the center of all events and processes, and all engaged parties should aim to work in best interest of students.

## 3. DISSEMINATION OF QUALITY ASSURANCE

Quality Control Manual Metrics for the Study and LLL Programs will ensure that quality assurance is planned for all current and future activities in project but also for continuous supervision of study programs.

<b>FINAL DISSEMINATION QUALITY ASSURANCE REPORT</b>	
Internal monitoring and quality assurance	External quality assurance - evaluation

This Manual aims to ensure that the project processes and outcomes will match the expected quality standards and indicators.

### 3.1. Internal monitoring

Internal monitoring will be carried out by all partners, including self-evaluation, questionnaires /satisfaction surveys of target groups (e.g. participants of dissemination and events).



Co-funded by  
the European Union



<b>Metrix for internal monitoring:</b>	Internal monitoring plan	questionnaires – for students, LLL students, teachers, and companies
--	--------------------------	--

All these questionnaires will help in adjustment of AE programs can be slightly adjusted if necessary, before the second generation of students enroll the program.

### 3.2. External monitoring

External evaluation will be conducted by two external (from two countries which are not members of consortium). They will be engaged to evaluate the quality of the developed BA dual and LLL programs. Two partners from program countries will publish the public call for two experts in the field of dual education and AE. Two experts will have two months to evaluate the program and to write the report on external evaluation. The report will be publicly available on AGROKAZ website. Based on the report, the consortium will correct the study program if necessary.

<b>Metrix for external monitoring:</b>	External quality assurance	evaluation/ questionnaires/reports
--	----------------------------	------------------------------------

## 4. METRICS FOR DUAL STUDY UNDERGRADUATE PROGRAM AND LIFELONG LEARNING COURSES FOR PROFESSIONAL

Defining Metrix for DE methodology in agroecology will be evaluated by the participants who are directly involved in this process: students, teachers/company mentors, and experts. All of these participants will be asked about problems that they encountered during the implementation of the program. Moreover, they will be asked to point out possible ways for further development of the education methodology. Students will give their opinion about the significance of the implemented programs, as well as the competencies that they have acquired. Teachers/company mentors will be asked to identify the advantages of the methodology, which is to identify the differences between students who enrolled in the DE program and those who did not. Experts who attended LLL courses will be asked about the quality of new LLL courses. The feedback information will be included in the final report. All these results will help with the introduction of changes aimed at improving the AE program before the second generation of students enroll the program.



Adequate preparation and curriculum development of the program (new bachelor and lifelong learning courses) will be implemented. Special attention will be paid to quality control, monitoring, and dissemination. A special set of metrics are defined through system of learning analytics for measurement of students’ performance at study program and courses individually. A workshop will be organized to introduce the institutions organizing study program and LLL courses to set quality metrics.

AE curricula are developed in accordance with the needs of companies in Kazakhstan. The new curriculum (program, syllabi of all the courses and the modules, and ECTS) consisting of 21 updated existing courses and 24 new courses at 3 HEIs in Kazakhstan according to the project proposal, but the needs and competencies discussed on the meetings with the companies at the labor market for the future bachelors-agroecologists were discussed with representatives of the business community.

Most employers proposed changing the planned new undergraduate courses in accordance with the Industry Qualifications Framework, and professional standards. Those changes are implement in this Manual.

<b>ToU</b>	
<b>Planned new BA courses</b>	<b>Implemented BA courses</b>
<ul style="list-style-type: none"> <li>○ Biogeocenology</li> <li>○ Soil remediation</li> <li>○ Ecological chemistry</li> <li>○ Basics of environmental regulation and expertise and water protection</li> <li>○ Environmental protection and rational use of natural resources</li> </ul>	<ul style="list-style-type: none"> <li>○ Formation of agrocenosis of fodder and meadow crops</li> <li>○ Agromelioration and reclamation of disturbed lands</li> <li>○ Anthropogenic ecology</li> <li>○ Biology and ecology of soils</li> <li>○ Environmental safety of agricultural products</li> <li>○ Water resources and irrigation technologies in agriculture</li> <li>○ Environmental monitoring and analysis methods in agriculture</li> <li>○ Resource-saving and organic farming</li> <li>○ Processing and utilization of agricultural waste and production of biofertilizers</li> <li>○ Agricultural practices for sustainable development</li> <li>○ Technology of production of high-quality seeds</li> <li>○ Normative legal acts on seed production</li> </ul>



<b>Planned updated BA courses</b>	<b>Implemented updated BA courses</b>
<ul style="list-style-type: none"> <li>○ Forestry Basics</li> <li>○ Phytopathology</li> <li>○ Plant protection</li> <li>○ Agricultural entomology</li> <li>○ Biochemistry of agricultural plants</li> <li>○ Agrochemistry</li> <li>○ Inorganic and analytical chemistry</li> <li>○ Agricultural machinery and technology</li> <li>○ Irrigation and reclamation of crops.</li> </ul>	<ul style="list-style-type: none"> <li>○ Fundamentals of agroecology (with separate module of protective forestry inside)</li> <li>○ Protection of agricultural crops from diseases and pests</li> <li>○ Environmental safety of agricultural products</li> <li>○ Fundamentals of quarantine and phytosanitary surveillance</li> <li>○ Physiology of metabolism of agricultural plants</li> <li>○ Agrochemical service of agricultural production</li> <li>○ The system of application of fertilizers in agriculture and production and technological calculations in agronomy</li> <li>○ Inorganic and organic chemistry</li> <li>○ Fundamentals of scientific research in agroecology</li> <li>○ Agroengineering</li> <li>○ Resource-saving and organic farming</li> </ul>

<b>KEnEU</b>	
<b>Planned new BA courses</b>	<b>Implemented BA courses</b>
<ul style="list-style-type: none"> <li>○ Biogeochemistry and ecotoxicology</li> <li>○ Agroecology of microorganisms</li> <li>○ Environmental mapping and GIS</li> <li>○ Agroecological monitoring</li> <li>○ Man-made systems and environmental risks</li> <li>○ Logistics of production processes in agriculture</li> <li>○ Technical regulation in agroecology</li> </ul>	<ul style="list-style-type: none"> <li>○ Environmental cartography and GIS</li> <li>○ Agroecology of microorganisms</li> <li>○ Biogeochemistry and ecotoxicology</li> <li>○ Agroecological monitoring</li> <li>○ Technogenic systems and environmental risks</li> <li>○ Logistics of production processes in agriculture</li> <li>○ Technical regulation in agroecology -</li> </ul>
<b>Planned updated courses</b>	<b>Implemented updated courses</b>
<ul style="list-style-type: none"> <li>○ Plant ecology</li> </ul>	<ul style="list-style-type: none"> <li>○ Plant ecology</li> </ul>



<ul style="list-style-type: none"> <li>○ Economics and organization of agricultural production</li> <li>○ Ecological safe technologies in agriculture</li> <li>○ Mathematical modelling in agroecology</li> <li>○ Fertilizer system</li> <li>○ Agroecological assessment of land</li> <li>○ Regulatory support and document management in the agro-industrial complex</li> <li>○ Recycling in agro-industrial complex</li> </ul>	<ul style="list-style-type: none"> <li>○ Processing and disposal of waste in the agro-industrial complex</li> <li>○ Regulatory support and document flow in the agro-industrial complex</li> <li>○ Environmentally friendly technologies and rational use of natural resources</li> <li>○ Fertilizer application systems</li> <li>○ Mathematical modeling in agroecology –</li> <li>○ Agroecological land assessment credits</li> <li>○ Economics and organization of agricultural production</li> </ul>
--	--

<b>KazNARU</b>	
<b>Planned courses</b>	<b>Implemented courses</b>
<ul style="list-style-type: none"> <li>○ Basics of bio-indication of environmental pollution</li> <li>○ Nature conservation, rational use and state control</li> <li>○ Geographic Information Systems in Ecology</li> <li>○ Ecological modelling of agroecosystems</li> <li>○ Agriculture and Environment</li> <li>○ Agroclimatology</li> <li>○ Agricultural zoology</li> <li>○ Environmental Ethics</li> <li>○ Principles of Agroecology</li> <li>○ Soil Fertility Management, and Agroecology Practices, Systems and Philosophies</li> <li>○ Ecological basis of sustainable agricultural development</li> <li>○ Basics of agricultural economics</li> <li>○ Soil microbiology and biochemistry</li> <li>○ Principles of Sustainable Development</li> </ul>	<ul style="list-style-type: none"> <li>○ Fundamentals of bioindication of environmental pollution</li> <li>○ Environmental protection and rational use of natural resources</li> <li>○ Digitalization in agriculture</li> <li>○ Technical regulation in agroecology</li> <li>○ Ecological modeling of ecosystems</li> <li>○ Agriculture and the environment</li> <li>○ Agrometeorology</li> <li>○ Plant Biology</li> <li>○ Environmental ethics</li> <li>○ Principles of agroecology</li> <li>○ Soil fertility management</li> <li>○ Ecological foundations of sustainable agricultural development</li> <li>○ Agricultural economics</li> <li>○ Agroecology of microorganisms</li> <li>○ Biogeochemistry and ecotoxicology</li> <li>○ Agrochemistry</li> <li>○ Ecology</li> </ul>



Quality Control Manual Metrics for the Study and LLL Programs defines metrics for quality control of the dual AE study programs and LLL courses. This Manual will contain a list of measurable indicators about the quality of the dual study program in AE and about the project as a whole. The following tasks will be a part of this Manual:

- defining metrics for the assessment of implementation of study program
- defining metrics for the number of contacts with companies,
- defining metrics for the number of engaged students,
- defining metrics for AGROKAZ influence on preparing for a career, defining metrics for employability of students.

#### 4.1. Qualitative indicators – curriculum

Compatibility with the dual study program curriculum objectives following a five-point scale (5 –full compatibility, 1 – no compatibility).

N°	Qualitative indicators	1	2	3	4	5
1.	The objectives of dual education are clear and evident.					
2.	The dual curriculum meets project objectives.					
3.	The dual curriculum meets the objectives of the academic study program.					
4.	The dual curriculum is appropriate for the target group of students (content, workload, class schedule).					
5.	The dual curriculum is feasible both at university and in enterprises.					
6.	The dual curriculum is well structured.					
7.	The dual curriculum provides a good balance between academic studies and practical studies.					
8.	The sequence of subjects is consistent and provides an opportunity for developing knowledge and skills.					
9.	The student workload on the courses is evenly distributed within each semester.					
10.	The dual curriculum ensures the knowledge and skills matching the current qualification profile in IAR.					



11.	The dual curriculum ensures the acquisition of professional skills and key skills for working in a business environment.					
12.	The schedule of the dual curriculum enables students to master the courses successfully.					
13.	The dual curriculum allows students to master the workload both in the university and enterprise.					
14.	The dual curriculum offers students the opportunity to shape their studies according to their interests.					
15.	The dual curriculum enables students to actively participate in the learning process.					
16.	The dual curriculum allows students to work on multidisciplinary projects in a real-life business setting.					
17.	The dual curriculum meets the current skills demands of the industry.					
18.	The dual curriculum corresponds to current trends in higher agroecology education.					
19.	The dual curriculum is in conformity with National and European higher education regulations.					
20.	The dual curriculum provides an opportunity for faster realization on the labour market and youth unemployment.					

#### 4.2. Qualitative indicators – organization of dual study program

Compatibility with the dual study program curriculum objectives following a five-point scale (5 – in full compatible, 1 – no compatible).

N°	Qualitative indicators	1	2	3	4	5
1.	Repeated combinations of theoretical and practical parts followed by continuous reflection.					
2.	The practical phases go beyond the usual scope of a professional internship both in terms of time and in terms of specific of the content.					
3.	The acquisition of competencies defined by curriculum takes place at two learning locations and is characterized by the combination of science-based theoretical and implementation-based phases.					



4.	The company commits to a training obligation and is able to convey the intended course content.					
5.	The organization of the theoretical and practical phases provides the framework with a tolerable total workload (h) for students.					
6.	The admission procedures for university and company are in the responsibility of the respective partners and are coordinated between each other					
7.	The relationship between the three partners (student, university and company) is subject to binding regulations for quality assurance.					
8.	There is a continuous training partnership with appropriate remuneration for internships as part of an employment relationship, which is ideally continued consistently for at least two-thirds of the study period.					

The beneficiaries of the project outputs are: students (about 100 students per year: PSU and KazNAU 40 students per year, KEnEU 20 students per year), teachers, participating universities, companies, professionals (around 10 per year), and higher education system in Kazakhstan as a whole. More precisely, not only the Kazakh system of higher education, but society as a whole will benefit greatly, since through dual higher education the problems of providing qualified personnel to the agricultural sector are solved. Also, the feedback questionnaires will be used throughout the duration of the project.

### 4.3. Quantitative indicators – respondents

Indicators	N°	Respondents (%)
N° of contacts with companies	25	
N° of enrolled students	100	
N° of LLL students	10	
N° of company mentors	10	
N° of academic mentors (teachers)	50	



N° of questionnaires for students on Dual Study programs		80%
N° of questionnaires for students of LLL program		80%
N° of questionnaires for companies		90%
N° of questionnaires for company mentors		90%
N° of questionnaires for academic mentors (teachers)		90%

- defining metrics for the workload of the study program - the proportions of teaching (60%) and professional practice (40%) is defined
- defining metrics for the number of contacts with companies - contacts will be defined by defining metrics for the number of engaged students (student satisfaction will be investigated after the first year of study)
- definition of student employability metrics (the employability of students in the field of agroecology will be investigated through secondary databases).

## 5. FINAL DISSEMINATION QUALITY ASSURANCE REPORT

After developing and adjusting the AE curricula by the needs of companies in Kazakhstan and involving professionals in defining their needs in the area of agroecology, elaboration of the content for the practical training within the dual technology of learning as well as in tutoring of students during their work/training in the company's the final curriculum will be made. Also, the transfer and implementation of best practices from EU countries that have long-term experience in agroecological programs will have a great impact by creating the capacity to hold periodic practical training by academic and company staff. After the internal and external quality implementation reports, a final dissemination report will be created, and this type of quality control and assurance is recommended continuously in long-term period. The feedback information will be included in the final report combining qualitative and quantitative indicators of achieved goals



Co-funded by  
the European Union



## 6. CONCLUSION

We expect the management and quality assurance system defined in this Quality Control Manual Metrics for the Study and LLL Programs to constantly improve and ensure the quality of dual education in the field of agroecology, as an important strategic commitment, and enable faster and more efficient development on the way of achieving excellence in education. Achieving this vision and set of goals is possible by constantly strengthening teacher competencies, which is planned to be achieved through high-quality professional and scientific work. In this sense, it is necessary to continuously improve teaching potential, monitor achievements in the field of agroecology, improve teaching methods and implement new teaching methods and increase cooperation with the business sector. All this will raise academic standards and provide quality support for students. Through the implementation, functioning, and undertaking of improvement measures based on this Manual, a special emphasis is placed on students, process approach, and involvement of teachers, company mentors, and employers through constant improvement in each segment. In addition to these modern managerial principles, we base internal and external quality assurance on principles such as the responsibility of employees and students, good organizational structure, protection of public interests, the satisfaction of needs, demands, and expectations of students, business mentors, employees, and other interested parties, publicity and objectivity of actions, encouraging creativity and innovation and developing quality awareness and culture. Through the implementation of internal and external assessments of the system and other forms of checking the system for management and quality assurance through this Manual, constant supervision is ensured to identify opportunities for improvement and better efficiency. The purpose of this Quality Control Manual Metrics for the Study and LLL Programs is to clearly define the areas of application of the management and quality assurance system, to describe the links and relationships between processes and to point out the need for constant improvement in all segments of development of dual study program in agroecology.



Co-funded by  
the European Union



## 7. REFERENCES

1. Baymurova Nigora Rakhimovna (2024): INTEGRATION OF THEORY AND PRACTICE OF THE DUAL EDUCATION SYSTEM IN THE FIELD OF LIGHT INDUSTRY EDUCATION. European International Journal of Multidisciplinary Research and Management Studies, 4(02), 336–341. Retrieved from <https://inlibrary.uz/index.php/eijmrms/article/view/29910>
2. Turk, Marko (2023): DUAL HIGHER EDUCATION IN CROATIA: A LONG WAY TO GO. EJJMRMS, VOLUME04 ISSUE02, DOI: <https://doi.org/10.55640/eijmrms-04-02-49>
3. Standards and Guidelines for Quality Assurance in the European Higher Education Area (ESG) (2015): <https://ehea.info/page-standards-and-guidelines-for-quality-assurance>
4. Student-centered learning: Approaches to quality assurance; Gover, Loukkola, Peterbauer; European University Association; 2019.



Co-funded by  
the European Union



## 8. ANNEXES

### Education in Kazakhstan: from concept to practice METRIX for AGROKAZ

#### QUESTIONNAIRE for BSC and LLL STUDENTS:

how satisfied they are with dual education (DE)

With this inquiry, you can influence the improvement of the teaching and warn of shortcomings and difficulties in its performance. Your opinion is important to us, so we ask that your responses be honest, and well-intentioned and express your personal opinion.

Your answers are completely anonymous, which guarantees the confidentiality of your opinion.

Date		Course and year of study				
Sex						
a) Male b) Female c) Prefer not to disclose						
Level of study						
a) Undergraduate university studies b) LLL students						
This is the first time that I participate in module with DE (dual education) system						
a) Yes b) No						
Evaluate the module/teachers						
<i>Strongly disagree (1), Disagree (2), Neither agree nor disagree (3), Agree (4), Strongly agree (5)</i>						
1.	Teachers clearly define the learning outcomes and what is expected from the student	1	2	3	4	5
2.	The teachers present the teaching material in a clear and understandable way (in theoretical part)	1	2	3	4	5



3.	The business mentor presents the teaching material in a clear and understandable way (in practical way)	1	2	3	4	5
4.	I am encouraged to actively participate in classes	1	2	3	4	5
5.	I am encouraged to actively participate at business entity	1	2	3	4	5
6.	Teachers encourage interaction and cooperation among students	1	2	3	4	5
7.	Business mentor are motivated while teaching and show enthusiasm in work with students	1	2	3	4	5
8.	How satisfied are you with the level of practical knowledge acquired during the practical work?	1	2	3	4	5
9.	Assess your knowledge and competencies required for successful conduction of practical work	1	2	3	4	5
10.	Lectures and other forms of teaching on the modules are well coordinated.	1	2	3	4	5
11.	Learning resources (literature, lecture notes ect.) are available to students	1	2	3	4	5
12.	The workload on the modules is harmonized with module ECTS credits	1	2	3	4	5
13.	I am generally satisfied with the structure of modules in dual education system	1	2	3	4	5
14.	This type of lecture/education enable the development of skills and the application of knowledge in practice and increases my future employability.	1	2	3	4	5
15.	Do you think that the share of practical work in study program should be increased? a) Yes b) No					
16.	If you wish, please give any additional information, observations, comments or recommendations that may be useful for further development of DE, as well as for the AGROKAZ Project in order to improve our project activities connected with the dual education system.					



Co-funded by  
the European Union



--	--

**Education in Kazakhstan: from concept to practice  
METRIX for AGROKAZ**

**QUESTIONNAIRE FOR TEACHERS/COMPANIES MENTORS:**

how satisfied they are with student’s theoretical and/or practical work

With this inquiry, you can influence the improvement of the teaching and warn of shortcomings and difficulties in its performance. Your opinion is important to us, so we ask that your responses be honest, and well-intentioned and express your personal opinion.

Your answers are completely anonymous, which guarantees the confidentiality of your opinion.

Date	Course and year of study
Sex	
<ul style="list-style-type: none"> <li>a) Male</li> <li>b) Female</li> <li>c) Prefer not to disclose</li> </ul>	
I am participating in classes at	
<ul style="list-style-type: none"> <li>a) Undergraduate university studies</li> <li>b) LLL students</li> </ul>	
I am giving	



<p>a) Theoretical lectures at the university b) Practical lectures at the company</p>						
<p>This is the first time that I have participated in module with the DE (dual education) system</p> <p>a) Yes b) No</p>						
<p>Evaluate the student's work</p> <p><i>Strongly disagree (1), Disagree (2), Neither agree nor disagree (3), Agree (4), Strongly agree (5)</i></p>						
1.	How satisfied are you with the student's motivation/enthusiasm during the theoretical/practical work?	1	2	3	4	5
2.	How satisfied are you with the students' knowledge during the theoretical/practical work?	1	2	3	4	5
3.	Lectures and other forms of teaching on the modules are well-coordinated	1	2	3	4	5
4.	Students often ask me questions and I readily answer them	1	2	3	4	5
5.	The atmosphere in class allows for work, but it is also relaxed enough for two-way communication between teacher and student	1	2	3	4	5
6.	Learning resources (literature, lecture notes ect.) are available to students	1	2	3	4	5
7.	The workload on the modules is harmonized with module ECTS credits	1	2	3	4	5
8.	I am generally satisfied with the dual education system	1	2	3	4	5
9.	This type of lecture/education (DE) enables the development of student's skills/knowledge that will increase their future employability	1	2	3	4	5
10.	Do you think that the share of practical work in study program should be increased? a) Yes b) No					



Co-funded by  
the European Union



11.	If you wish, please give any additional information, observations, comments or recommendations that may be useful for further development of DE, as well as for the AGROKAZ Project in order to improve our project activities connected with the dual education system.
-----	--

Dual Education in Kazakhstan: from concept to practice

### EVALUATION FORM for EVENT

Location: \_\_\_\_\_

Date/time: \_\_\_\_\_

1.	Please rate the overall satisfaction with the event. (1 - very low, 5 - very high)	1	2	3	4	5
2.	Did the event meet your expectations? (1 - not at all, 5 - to the great extent)	1	2	3	4	5
3.	Please evaluate overall quality of the organization. (1 - very low, 5 - very high)	1	2	3	4	5



Co-funded by  
the European Union



4. What were the positive aspects of the event? Please explain.

5. What were the negative aspects of the event? Please explain.

6. What would you recommend to organizers for the future events of this type?

7. To what extent are you satisfied with:

(1 - very low, 5 - very high)

Information provided prior to the event.	1	2	3	4	5
Usefulness of the materials available (agenda, proceedings, handouts).	1	2	3	4	5
Venue (location, facilities, etc).	1	2	3	4	5
Information provided during the event.	1	2	3	4	5



Co-funded by  
the European Union



## Education in Kazakhstan: from concept to practice

secondary databases

### QUESTIONNAIRE FOR COMPANIES AFTER COMPLETING DE

how satisfied they are with employees with dual study program in agroecology

1. Date of survey: \_\_\_\_\_

2. Company (organization): \_\_\_\_\_

3. Activity: \_\_\_\_\_

4. Number of employees:

a) until 30

b) 30 to 100

c) More than 100

4. How many of your employees have graduated with DE? \_\_\_\_\_

6. Please grade from 1 to 5 (grade 1 represents complete dissatisfaction and grade 5 complete satisfaction) rate how satisfied you are with the employees who finish DE

Professional knowledge	1	2	3	4	5
Flexibility	1	2	3	4	5
Independence in work	1	2	3	4	5
Involvement in teamwork	1	2	3	4	5
Working with a computer	1	2	3	4	5



Co-funded by  
the European Union



Commitment to new knowledges	1	2	3	4	5
------------------------------	---	---	---	---	---

7. What do you suggest as a possible improvement in the process of training students who are interested in activity of your company (organization):

---

---

8. If you have a proposal for the cooperation of your company - organization, please state it:

---

Thank you!