



Co-funded by the
Erasmus+ Programme
of the European Union



Project

"Higher education in the field of food production systems and standards in Central Asia"
No. 574005-EPP-1-2016-1-LV-EPPKA2-CBHE-JP

REPORT - EVALUATION

OF STUDY MODULES IMPLEMENTATION

IN TAJIKISTAN'S AND KYRGYZSTAN'S UNIVERSITIES (D5.2)

Dushanbe, Bishkek, 2019

INTRODUCTION

The evaluation of implementation of the new study modules was carried out as the final measure pertaining to their content after the pilot training takes place, the measures for improving the knowledge and skills of lecturers are conducted, and the universities are supplied with the necessary equipment and study literature.

Said measures were carried out in 4 universities taking part in the 'Higher Education for Central Asia Food Systems and Standards' (HECAFS) project number 574005-EPP-1-2016-1-LV-EPPKA2-CBHE-JP, funded by the Erasmus+ programme of the European Union, namely:

- Tajik Agrarian University (TAU)
- Khujand Polytechnic Institute of Tajik Technical University (KPITTU)
- Kyrgyz State Technical University (KSTU)
- Kyrgyz Economic University (KEU)

The assessment was carried out jointly by lecturers from the EU and Central Asia universities involved in the project.

The assessment included the use of materials and documents developed during and after the measures pertaining to the pilot training, competence-boosting events and others, and meetings with European lecturers to discuss the teaching process and its results, and to prepare recommendations for it.

The assessment includes the main conclusions and recommendations for future growth and ensuring the sustainability of the results achieved. The first section of this document describes the general conclusions and recommendations; further sections provide corresponding conclusions for each of the Central Asian universities taking part in the project. A more detailed plan for ensuring the sustainability of results of the project is provided in the document 'Action plan for ensuring result longevity and sustainability for the project "Higher Education for Tajikistan and Kyrgyzstan Food Systems and Standards" as part of higher education in four universities in Central Asia'.

The report includes an overview of the main conclusions and recommendations for further development as well for ensuring sustainability of the results.

1. GENERAL CONCLUSIONS, RECOMMENDATIONS

1.1. Lessons learnt, knowledge and experience

As a result of the project, lecturers from the Central Asian universities involved gained extensive theoretical knowledge and practical skills needed by young specialists learning how to produce and process high-quality and safe foods. The lecturers obtained much information and knowledge about implementing and using the Global GAP and HACCP systems, about the latest technological solutions in food processing, about quality system management, about production hygiene, microbiology, toxicology and other aspects. The opportunity to see, learn and understand the experience of Latvia, Lithuania and Poland in implementing the EU laws and regulations pertaining to food production and processing was highly appreciated in particular.

1.2. Further application of the knowledge, experience and lessons learnt

The knowledge, skills and materials gained will be used for teaching students enrolling in the updated programmes, for improving the teaching process and for informing and educating entrepreneurs and farmers during workshops and consulting events. The equipment will be used for laboratory classes. The study literature will be used to increase the level of knowledge among the lecturers and students. The additional materials (videos and tests) will be used to learn and reinforce the knowledge in the corresponding fields of study. The methods to assess the quality of the updated study programmes will be used to continuously assess and improve in the teaching content and formats, the level of knowledge among the lecturers, the equipment and other factors affecting the quality and results of higher education.

1.3. Key conclusions

The project made it possible:

- 1) To improve the level of professional competence, skills and knowledge of lecturers at the Central Asian universities involved in the project;
- 2) To create a set of methods to help carry out continuous assessments and improvements in the teaching content and formats, the level of knowledge among the lecturers, the equipment and other factors affecting quality and results;
- 3) To improve the equipment available;

4) To carry out pilot training and gain evidence of compliance of the new teaching content and formats with the teaching programmes and level of study selected.

Processes and aspects to be improved:

- The level of basic knowledge among the students was often insufficient, preventing them from fully grasping the new content.
- The students have a poor grasp of the English language. Some do not know the language at all. Some students in Tajikistan have poor Russian language skills. This impedes the due acquisition of knowledge provided by lecturers from European universities.
- The students do not have sufficient skills in working independently, carrying out practical tasks and working in a laboratory.
- Limited opportunities for the use of information technologies make it difficult to learn the content (appropriate laws and regulations in particular), to present examples and to conduct practical classes.
- The technical staff of the laboratories has insufficient skills and is poorly motivated.
- Before this document was prepared, lecturers in some universities had done little to learn the capabilities and uses of the laboratory equipment purchased.

1.4. Recommendations

- ***For lecturers***

To continue their professional improvement using the teaching materials and sources of knowledge recommended by colleagues from European universities, as well as industry experience to achieve this. It is recommended to continuously and regularly maintain the exchange of knowledge and experience among lecturers within their universities and faculties. To continuously improve the teaching materials. To disseminate the knowledge, skills and experience obtained among students, university colleagues, farmers and entrepreneurs.

- ***For universities***

To implement the quality system management subject in other study courses. To continue the implementation and accreditation of new study courses. Whenever possible, to use the study programme quality assessment methods developed for continuously assessing and improving other study programmes. To support the development of teaching materials.

To continue improving the equipment of laboratories, and include the purchase of laboratory accessories and reagents, and well as their maintenance in the annual budget. Create a learning environment with computer equipment and a reliable high-speed internet connection. To arrange preparatory courses in Chemistry, Biology and other subjects forming the basis of the updated study programmes for those enrolling, or first-semester students, in the updated study programmes. It is recommended to increase the proportion of practical and laboratory classes in the future.

It is recommended to continuously and regularly arrange internal events for improving the competence, knowledge and skills of lecturers, incentivising them to participate in courses and workshops organised by other organisations.

- ***For social partners***

Social partners include: industry associations, food production and processing companies, government institutions related to the creation or application of knowledge in the corresponding industries and to the development of higher education.

Regularly submit proposals with the needs of the industries to universities. Support the training of food industry specialists in the field of quality system management. Support the employment of young specialists. Involve researchers in solving the current problems of food producers and processors. Companies must invite students for internships. Participate in providing students with equipment as part of completing their graduate papers, whenever possible.

- ***For future projects***

Carefully organise the enrolment of students in the pilot study groups, assessing their level of relevant knowledge and language skills as part of the selection. In future projects, pay attention to aspects related to and affecting the quality and safety of food products as well as their long-term impact, such as environmental safety, zero-waste production and others. Extend the duration of individual internships for university lecturers in EU universities. Continue strengthening the cooperation between the teaching and research staff of the Central Asian and EU universities.

2. KHUJAND POLYTECHNIC INSTITUTE OF TAJIK TECHNICAL UNIVERSITY

2.1. Lessons learnt, knowledge and experience

The pilot training supervised by our European colleagues was valuable, and the content was easily learnt by the students. The materials of the theoretical and practical classes were presented in a coherent manner and were easy to understand. The bachelor and master students improved their knowledge of the Global GAP and HACCP systems that are vitally important for new specialists. Our European colleagues demonstrated excellent professional competence, especially in the fields of microbiology, food hygiene and expertise, as well as in food toxicology. The lecturers presented the study topics in a clear and concise way. Modern interactive teaching methods were used, prompting the students to actively participate in the entire learning process.

The lecturers as well as bachelor and master students gained knowledge about the use of the Global GAP and HACCP systems in food production, about critical control points, about the integrated agriculture control system, about the requirements of laws and regulations in the field of food safety and copyright, about the latest methods in microbiology, and about the use of food additives.

2.2. Further application of the knowledge, experience and lessons learnt

The improved theoretical knowledge and practical skills in the subjects will continue to be used as part of theoretical, practical and laboratory classes.

2.3. Key conclusions

This is a very useful project that has provided valuable knowledge and skills and made it possible to improve the professional knowledge of university lecturers; it has fostered the effective sharing of best practices among the lecturers of the partner universities, provided support to the implementation of the new disciplines, brought education and industry closer together, and created beneficial conditions for close contact between the teaching and research staff of European and Central Asian universities. The knowledge and skills gained as part of the project support improvements in the training of students in accordance with international standards for food safety along the entire food chain.

2.4. Recommendations

- ***For lecturers***

Continue professional growth activities, intensively researching materials on new teaching subjects, and developing improved teaching materials and presentations. It is recommended to continuously and regularly maintain the exchange of knowledge and experience among lecturers within their universities and faculties.

- ***For the university***

Continue the implementation and accreditation of new study courses and continue working on improving the competence of university lecturers and student mobility. Strengthen connections with industry in developing new products and technologies. To create a learning environment with a high-speed internet connection available. To arrange preparatory courses in Chemistry, Biology and other subjects forming the basis of the updated study programmes for those enrolling, or first-semester students, in the updated study programmes. It is recommended to increase the proportion of practical and laboratory classes in the future. It is recommended to continuously and regularly arrange internal events for improving the competence, knowledge and skills of lecturers, incentivising them to participate in courses and workshops organised by other organisations.

- ***For social partners***

Express interest in employing specialists with knowledge of the Global GAP and HACCP systems of standards. Be aware of the advantages of implementing these standards in companies making food products, and maintain close cooperation with universities, working to bring research and industry closer together. Participation of companies in providing internships to students is highly recommended.

- ***For future projects***

Continue cooperating with EU universities; participate in development projects for improving study programmes and training specialists that meet the needs of the economy and the labour market. Carefully organise the enrolment of students in the pilot study groups, assessing their level of relevant knowledge and language skills as part of the selection.

3. TAJIK AGRARIAN UNIVERSITY

3.1. Lessons learnt, knowledge and experience

The lecturers involved in the implementation of the project have acquired knowledge in the field of setting up agricultural production based on international standards, and have completed courses in the Global GAP system of standards, acquired new knowledge in the fields of food packaging, food storage and processing technology, HACCP system of standards, agricultural product quality plan, quality management system, food microbiology, agricultural management, organic farming, plant product hygiene and inspections, food toxicology and others. As a result of study trips to the countries of the EU, knowledge about implementing Global GAP and HACCP standards in production was acquired. During the workshops, lecturers from European universities explained the relevance of the most important issues.

3.2. Further application of the knowledge, experience and lessons learnt

The improved knowledge, presentations created and provided by European colleagues, and practical materials for new subjects will be used further as part of talks, practical and laboratory classes in food packaging, food storage and processing technology, HACCP system of standards. Currently, new disciplines have been implemented in the curricula of three specialities in three fields of study of the Faculty of Agricultural Business and are taught to students. The methods for

assessing the quality of the updated study programmes are being used for assessing the quality of the updated study programmes.

The implementation of new subjects in the current study plans is a guarantee of the university being able to continue teaching the new disciplines to its students in the future. The study literature obtained is widely used by lecturers to develop talks, teaching aids, to prepare reports and other documents.

3.3. Key conclusions

The project has made it possible to acquire new professional knowledge and skills; it has fostered the effective sharing of best practices among the lecturers of the partner universities, provided support to the implementation of the new disciplines, brought education and industry closer together, and created beneficial conditions for close contact between the teaching and research staff of European and Central Asian universities.

During the events that took place in the EU, the lecturers became acquainted with the matters of implementing and managing the system of product acceptance, delivery and storage, and supporting effective relations with manufacturers and retail chains (in Poland); at the food producing companies (in Latvia and Lithuania), the lecturers learnt about the raw material and finished product quality control system on all production levels, the level of governmental bodies and retail chains. During the university visits, the lecturers were able to explore the operation of research laboratories that comply with international requirements. Sharing best practices and cooperation among lecturers was encouraged during discussions, masterclasses and personal meetings.

3.4. Recommendations

• For lecturers

Consistently study materials pertaining to the new subjects, grow their careers in this field (Global GAP and HACCP standards), develop teaching materials and presentation in each of the disciplines (introduce new information), learn about the latest achievements of research and technology, read web resources and research literature to obtain additional information. Transfer the experience gained to colleagues working in the relevant fields, to students, to industry specialists in food production and quality. It is recommended to continuously and regularly maintain the exchange of knowledge and experience among lecturers within their universities and faculties.

- ***For the university***

Continue the implementation and accreditation of new study courses. Continue working on improving the competence of its lecturers. Strengthen connections with industry in developing new products and technologies. Use the study programme quality assessment methods developed for continuously assessing and improving the updated and other study programmes. Create a learning environment with computer equipment and a reliable high-speed internet connection. To arrange preparatory courses in Chemistry, Biology and other subjects forming the basis of the updated study programmes for those enrolling, or first-semester students, in the updated study programmes. It is recommended to increase the proportion of practical and laboratory classes in the future. It is recommended to continuously and regularly arrange internal events for improving the competence, knowledge and skills of lecturers, incentivising them to participate in courses and workshops organised by other organisations.

- ***For social partners***

Be aware of the advantages of implementing the Global GAP and HACCP standards in companies engaged in manufacturing and processing food products. Maintain close cooperation with universities, working to bring research and industry closer together. Provide opportunities for industrial internships at their companies. Employ specialists with knowledge of the Global GAP and HACCP systems of standards.

- ***For future projects***

Maintain cooperation among Central Asian and EU universities with the goal of improving study programmes and training specialists that meet the requirements of the labour market, as well as improving the competence of professionals in the field. Carefully organise the enrolment of students in the pilot study groups, assessing their level of relevant knowledge and language skills as part of the selection.

4. KYRGYZ STATE TECHNICAL UNIVERSITY

4.1. Lessons learnt, knowledge and experience

Participation in the project has made it possible to expand the potential of our lecturers and provide them with teaching experience. Our lecturers gained up-to-date knowledge, skills, materials and information about quality system management in food industry and about the use of statistical methods for managing food quality and safety systems. Information about the special provisions and exceptions in the HACCP system applicable to the small food enterprises common in Kyrgyzstan was particularly valuable. The lecturers learnt about the applicable laws and regulations and the ways for implementing and using the Global GAP standard in companies manufacturing and processing raw materials. Significant knowledge was provided in the field of food microbiology, food toxicology, food inspections and other subjects. Valuable knowledge was provided in relation to laws governing food industry in the EU, to ensuring food control and safety throughout the turnover cycle of food products, to food industry hygiene requirements, to the principles of HACCP and Global GAP.

4.2. Further application of the knowledge, experience and lessons learnt

The knowledge, the information and materials will be further used to improve the study content, and to continuously enhance the study process as part of training food industry specialists and in the field of food safety and quality control. The knowledge obtained will be used to further train specialists in the field of food production and processing. The knowledge and information gained will be provided to farmers and entrepreneurs.

The methods for assessing the quality of the updated study programmes have already been used during the accreditation of the updated study programmes in 2019, and it has been presented to other specialists of the university as a benchmark, to be used for assessing updated programmes in future work.

4.3. Key conclusions

During the project, the university gained much valuable knowledge, e.g. about the exceptions applicable to small enterprises as part of implementing the HACCP and Global GAP systems etc., which will be used in improving study content and materials. The new teaching

laboratory has made it possible to conduct laboratory classes for students. The videos and tests have made it possible to approximate the teaching methods used to those admissible in a modern teaching environment.

4.4. Recommendations

- ***For lecturers***

Continue cooperation with EU university lecturers in the matters of food safety and Global GAP system development. Continue to independently expand their knowledge related to the topics of the project, organising round-table discussions and workshops with supervising government institutions and the private sector in order to identify their needs in the context of modernising the higher education system, as well as their requirements for the specialists trained. Expand their knowledge about food production and packaging standard systems; organise discussions and workshops with representatives of supervising government institutions and the private sector; identify their needs for future improvement of the study process. It is recommended to continuously and regularly maintain the exchange of knowledge and experience among lecturers within their universities and faculties.

- ***For the university***

Continue the implementation and accreditation of new study courses. Continue working on improving the competence of its lecturers and student mobility. Strengthen connections with industry in developing new products and technologies. Continue creating and updating the disciplines and study programmes intended for implementing international food industry systems and standards, with the purpose of increasing the country's potential for exports. Create a learning environment with a high-speed internet connection available. To arrange preparatory courses in Chemistry, Biology and other subjects forming the basis of the updated study programmes for those enrolling, or first-semester students, in the updated study programmes. It is recommended to increase the proportion of practical and laboratory classes in the future. It is recommended to continuously and regularly arrange internal events for improving the competence, knowledge and skills of lecturers, incentivising them to participate in courses and workshops organised by other organisations.

- ***For social partners***

Strengthen cooperation between universities and industry, providing support in manufacturing internships, in improving the content of

study disciplines, in the development of student research projects carried out within companies, and participating in the preparation of teaching materials. Consider the possibility of creating a company fund. Involve university lecturers and doctoral students in joint research.

- ***For future projects***

The implementation of food safety procedures must be continued, and new specialities must be established. The exports development programme of the Kyrgyz government sets the task of training an enough food safety and control specialists. Further projects must support the completion of this task by modernising the higher education system. Therefore, it is recommended to continue the development of study modules and methods, and to carry out the practical training of specialists. Carefully organise the enrolment of students in the pilot study groups, assessing their level of relevant knowledge and language skills as part of the selection.

5. KYRGYZ ECONOMIC UNIVERSITY

5.1. Lessons learnt, knowledge and experience

The project has produced knowledge in the field of food safety. The lecturers were able to gain much valuable information as well as practical and theoretical knowledge and skills, to become acquainted with European university professors with much experience and knowledge in the field of food safety. The KEU lecturers have obtained theoretical and practical knowledge and advice in applying technical regulations in the food industry. The knowledge about determining the shelf life of foods, about the latest production processes and equipment has been particularly valuable. The well-selected practical examples of Global GAP in agriculture (especially in horticulture) helped in learning the new content. Information about latest methods in microbiology was particularly valuable. The lecturers are using the knowledge acquired as part of their teaching work, in order to improve the competence of young specialists.

The pilot training course for the students involved 16 Commerce students specialising in the Commodity Research and Commodity Inspection speciality and Food Service speciality, as well as 8 lecturers from the Commodity Research, Commodity Inspection and Restaurant Business Department.

The students gained the following skills and knowledge:

1. The ability to use regulatory documents pertaining to technical regulations, standardisation, certification and food quality and safety assessment, to comply with the effective law and regulatory document requirements.
2. The ability to manage the quality and the range of products and services, assessing their quality and identifying defects.
3. The ability to store goods and ensure their required quality level, effectively monitoring the quality of goods and services.
4. The ability to manage trade and production processes as part of a company, to regulate the storage processes, and the processes for identifying and minimising resource costs and losses.
5. Familiarity with methods for authenticating food products and identifying and preventing fakes.
6. The ability to detect and assess different types of hazards accounting for generally accepted criteria.
7. The ability to work with technical documentation necessary for their professional activities.

5.2. Further application of the knowledge, experience and lessons learnt

The new knowledge and materials will simplify improving the study process. The knowledge gained will be used in the future study process, in preparing talks and workshops, because this is very important for improving the food industry of Kyrgyzstan. All the practical examples will be used in practical classes. Based on the knowledge obtained, teaching guidelines for the use of Global GAP at farming enterprises of Kyrgyzstan will be developed. The new teaching laboratory will be used for laboratory classes for students. The videos and tests will be used as teaching materials for acquiring and testing knowledge.

5.3. Key conclusions

All the knowledge gained is very relevant for Kyrgyzstan. Valuable information about the implementation, functions and maintenance of the HACCP system in practice has been obtained. Knowledge of toxicology is important in studying subjects pertaining to the cultivation and processing of farming products. The knowledge gained will be useful in improving further study process, especially in the field of food inspections. Research papers written by the students must emphasise the significance of microbiological research in assessing product quality.

Changes in other relevant study courses must be introduced to improve food safety and increase the export capacity of Kyrgyzstan. Implementing the HACCP system in production is particularly important.

5.4.Recommendations

- ***For lecturers***

Collect as many practical examples as possible pertaining to the quality management system in EU countries, in order to include them in further teaching. Include the information gained in the topics covered by their classes. Continue improving the updated study programmes. Develop teaching guidelines for the new teaching laboratory. Learn the functions of the equipment procured as part of the project in detail. Use the knowledge acquired in improving their study courses. Continue researching the latest scientific literature in the field of toxicology, in order to make their talks and practical classes as interesting as possible; continue investigating new methods for determining food quality. Expand their knowledge in the field of the practical determination of the storage life of foods. It is recommended to continuously and regularly maintain the exchange of knowledge and experience among lecturers within their universities and faculties.

- ***For the university***

Include the materials gained in the expanded syllabus. Develop recommendations for quality system management in food services and food retail. Implement the subject in other university programmes, e.g. management, business management, tourism. Initiate Global GAP awareness activities among students of other specialities at the university. Continue improving the equipment of laboratories. Continue researching animal keeping areas in Kyrgyzstan. Involve researchers in solving the current problems of food producers.

Create a learning environment with a high-speed internet connection available. To arrange preparatory courses in Chemistry, Biology and other subjects forming the basis of the updated study programmes for those enrolling, or first-semester students, in the updated study programmes. It is recommended to increase the proportion of practical and laboratory classes in the future. It is recommended to continuously and regularly arrange internal events for improving the competence,

knowledge and skills of lecturers, incentivising them to participate in courses and workshops organised by other organisations.

Develop and implement teaching instructions for practical assignments and workshops, as well as food chemistry and production safety chemistry. Continue improving the equipment of laboratories and purchasing new books. Implement the Quality Control subject in the Economics and Management specialities. Inform social partners (including the Meat Producer Association) of the knowledge acquired.

- ***For social partners***

Continue training food industry workers, food service workers in the field of quality system management. Use the best practices of Lithuania in implementing HACCP at companies in Kyrgyzstan. Companies must invite students for internships. Participate in providing students with equipment as part of completing their graduate papers. Support the employment of young specialists. Food producers must enable students to see their production processes through guided tours and introductory talks. Enable university lecturers to complete internships at the production companies, to gain practical skills and knowledge.

- ***For future projects***

Expand the content and initiate the training in the field of quality system management and other fields studied as part of higher education. Whenever possible, introduce the subject of Global GAP in the future project, in view of the significance of agriculture in the economy of Kyrgyzstan. Conduct more practical classes and introduce research internships. Whenever possible, introduce one-month individual internships for university lecturers in future projects, enabling a personalised approach with the ability of gaining specific practical skills. Carefully organise the enrolment of students in the pilot study groups, assessing their level of relevant knowledge and language skills as part of the selection.

*This material is elaborated with the support
of the Erasmus+ Programme of the European Union.*

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