

# Forestry study programs at bachelor level in selected countries of the Commonwealth of Independent States

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ARTICLE

## Abstract

In recent years, a lot of interest can be noticed in countries and universities of the former Soviet Union in integrating their higher education systems with the European system. At the same time, after a period of strong interest in studies in West-European countries and in hosting students from the West, the growing interest in contacts with the countries of the former Eastern Block can be observed also in Poland. The study presents the background, conditions and assumptions of forestry curricula in the selected countries of the former Soviet Union: Russia, Kazakhstan, Kyrgyzstan, Uzbekistan and Georgia. General description and discussion is followed by cases describing higher education of forest engineers in Kazakhstan and the role of internationalisation in the development of higher education in forestry in Kyrgyzstan.

**Keywords:** forest, education, CIS, Russian, Kazakhstan, Kyrgyzstan, Uzbekistan, Georgia

## Streszczenie

W ostatnich latach obserwuje się duże zainteresowanie krajów i szkół wyższych byłego Związku Radzieckiego integracją ich programów i systemów edukacji z systemem europejskim. Jednocześnie, po okresie dużego zainteresowania studiami w krajach zachodnioeuropejskich, również w Polsce nastąpiło znaczące ożywienie zainteresowania krajami byłego bloku wschodniego. W pracy przedstawione zostały uwarunkowania, podstawy prawne, warunki i założenia leżące u podstaw programów wyższych studiów leśnych na poziomie licencyjnym w wybranych krajach związanych ze Wspólnotą Niepodległych Państw: Rosji, Kazachstanie, Kirgistanie, Uzbekistanie i Gruzji. Po ogólnym opisie i dyskusji przedstawiono w szczególności edukację inżynierów leśników na przykładzie Kazachstanu oraz rolę kontaktów transgranicznych w rozwoju wyższej edukacji leśnej w Kirgistanie.

## Introduction

In recent years a lot of interest can be noticed in countries and universities of the former Soviet Union in integrating their higher education systems with the European system. This is expressed on one hand by formal activities, including signing international treaties (such as Bologna declaration) and on the other hand by promoting bilateral mobility of academic staff and students. One of the key issues related to that activity is the real compatibility of the systems, which would facilitate international exchange and allow drawing mutual benefits from the cooperation.

Contacts with former Soviet Union countries became especially active in case of existence of funds supporting such collaboration. The most significant source financing the cooperation with countries of the former Soviet Union are TEMPUS and Erasmus Mundus External Cooperation Window projects. The goal of those programs is to promote and support reforms of higher education and to increase mobility of students and staff. A great improvement in the exchange with those countries is the fact that in most cases they have implemented programs of study based on the

qualification frameworks and learning outcomes, and some of them (Russia, Ukraine, Kazakhstan, Moldova, Armenia, Azerbaijan and Georgia - as for December 2011) formally adopted Bologna process.

Despite a great actual interest in cooperation, it is not a formally and practically easy process. The most significant obstacle is relatively high centralization of the system and serious differences in the organization of the education systems at tertiary level, despite the formal adoption of the Bologna system. Language problems are also significant as the learning process (especially at the bachelor level) is possible only in Russian or bad languages.

After a period of strong interest in studies in West-European countries and in hosting students from the West, the growing interest in contacts with the countries of the former Eastern Block can be observed also in Poland. The causes of reduced mobility from Poland to the West still lie in the language barrier, different approach to forest management in European countries, different scale of the study programs and relatively limited (especially on the bachelor-engineer level) offer of study programs compatible with Polish „forestry” major. On the other hand, relatively low interest of students from Europe in studying in Poland arises from the limited didactic offer, especially at the bachelor level, perception of Poland and its forestry by citizens of western European countries and incompatibility of Polish higher education system for forestry (duration of 3.5 years for the engineer and 1.5 years for master programs) with a commonly used in the EU „bachelor-master” (3+2 years) system.

Cooperation with the countries belonging to the former Eastern Block that are currently members of European Union or function under EU influence, such as the Czech Republic, Slovakia, Romania, Bulgaria, Hungary, Balkan and Baltic countries, is relatively easy. This is thanks to the adoption of common assumptions of European Higher Education Area and system flexibility related to the recognition and transfer of student’s achievements.

The situation occurs to be much more difficult in case of the former Soviet Union countries, where - despite formal adoption of the Bologna process or similar systems - conducting studies and realising curricula are strictly regulated on the ministry level. In addition language problems constitute much more serious obstacle due to the relatively low percentage of English speaking population.

The main goal of the paper is to present assumptions and content of „forestry” programs at the bachelor level in the selected countries of the former Soviet Union, i.e. Russia, Kazakhstan, Uzbekistan, Kyrgyzstan and Georgia. Such information allows to learn specifics of forestry teaching in those countries and can be useful in planning the cooperation and mobility with countries within the region. The source material for the study consisted of original ministry standards enforced in particular countries, which are elaborated and approved by ministries responsible for higher education, and of study programs originated from selected universities (Moscow State Forest University, Russia; St. Petersburg Forest University, Russia; S. Seifullin Kazakh Agro Technical University in Astana, Kazakhstan; Samarkand Agricultural Institute, Uzbekistan; K.I. Skryabin Kyrgyz National Agrarian University in Bishkek, Kyrgyzstan; and Iakob Gogebashvili State University in Telavi, Georgia). Contacts with the above-mentioned institutions have been established in the frame of activities of European Forest Institute (EFI), Conference of Deans and Directors of European Forestry Faculties and Schools (ConDDEFFS) and „Curriculum Invoking Bologna Aligned Education Leading to reform in Environmental Studies” (CIBELES) TEMPUS project.

### **Formal situation of the higher education institutions in the countries of the Commonwealth of Independent States**

The expression „countries of the former Soviet Union” is meant to relate to the countries of the Commonwealth of Independent States (CIS; rus. Содружество Независимых Государств). CIS is a regional group, established on 8 December 1991 and uniting the majority of the former republics

of the Soviet Union. The founders of the group were Russia, Ukraine and Belarus that were a moment later joined by Kazakhstan, Kyrgyzstan, Moldova, Turkmenistan, Uzbekistan, Tadjikistan, Armenia and Azerbaijan (on 21 Dec 1991), and finally by Georgia (on 22 Oct 1993). Due to the political situation Georgia formally left the Commonwealth on 12 Aug 2008.

The Commonwealth of Independent States deals with political and economic cooperation (including higher education). Various systems realised in member parties are strictly regulated by means of the state standards (rus. госстандарт). That also applies to regulations related to the organization of higher education, classification of professions, study fields and curricula bases leading to acquisition of specific qualifications. Common Commonwealth standard is obligatory to the member states until they introduce their own regulation in that scope. A majority of member states wanted to be formally independent and designed their own standards but since those were derived from the same root they failed to be purely original. The only exception is Georgia, which has not been a member of CIS since 2008 and adopted a different approach to integrate its system with the European one.

The higher education in CIS countries differs from the European system. Due to the fact, that education in primary and secondary schools does not last 12 but 11 years, study programs leading to bachelor degree (rus. бакалавр) last at least 4 years and during the first stage students study mainly general disciplines. Graduating from bachelor program gives possibility to work in professions requiring complete professional higher education. Some faculties offered 4-year bachelor degree treated as equal to a degree of a „specialist”, attained after completion of 5-year program. However, such system is in many cases under liquidation. Currently most countries agreed (according to or similar to Bologna process), that the system encompasses 4-year bachelor and 2-year master (rus. магистр) programs. Further stages of academic career include the degree of an aspirant (rus. аспирант, similar to PhD), candidate of sciences and doctor of sciences (rus. доктор наук, similar to Polish post-doctoral „habilitation”). There are changes towards adopting "classical" bachelor-master-PhD system observed in some countries.

### **Bachelor study in forestry**

Since study programs at universities are based on ministry standards, in order to understand their assumptions and content it is sufficient to analyse those standards and eventually point out differences between individual countries and the flexible portions of the programs.

Beginning of the first cycle studies in most countries takes place not at the major but specialty level. Since specialties are relatively narrow, there are no specializations isolated in the frame of 1<sup>st</sup> level studies. Specializations are offered only at 2<sup>nd</sup> level study programs that prepare specialists in narrow fields on the basis of the particular bachelor studies. There is a different situation in Georgia, where students start their education in the frame of wide subject and after learning about the specialty choose a specific one during the study program (usually at the second year). There is also a common option of gaining second specialty similar to American minor.

Studies of a similar extent to Polish studies in the field of „forestry” are available within the specialty called in Russian „лесное дело” (only in Kazakhstan it is named „лесные ресурсы и лесоводство”). This specialty is along with other related ones, a part of a major (a group of specialties) referred to as „forestry” („лесное хозяйство”). In some cases, e.g. in Georgia and recently in Kazakhstan, forestry is a specialty within the field of agriculture. Study programs are built on the basis of the standards for a particular specialty within the study field (direction). The standards also strictly determine the learning path, which implies possible choices of specializations at the 2<sup>nd</sup> level studies that can be chosen after particular specialty completed at the 1<sup>st</sup> level. In Georgia there is one general standard for bachelor studies and in some cases there can be found so called „benchmarks” (sample study programs). In such a case it is essential to receive accreditation for programs

and a key role in the study program development is played by the university senate.

The basis for curriculum development for the specialties is the following elements:

- areas of professional activity of graduates determined in accordance with the standard classification of areas (e.g. farm forestry, forest planning, commercial forestry, urban forestry, protective afforestations),
- a potential work place (e.g. forest government agencies, national parks, nature reserves, forest management bureaus, forest nurseries, forest seed plants, urban forestry),
- objects of professional activity (e.g. organization of work related to inventory and conservation of forest resources, the main and minor use of the forest, forest tourist management, establishment and maintenance of forest stands, the production planting material, harvesting and storage of seeds, establishment and maintenance of urban green),
- potential forms of professional activity of graduates (e.g. industrial and technological, organizational and management, project, scientific-research),
- functions that can be fulfilled by graduates (e.g. quality control of harvesting work, recreational forest management, silviculture and forest care, afforestation),
- typical duties of graduates (e.g. inventory of forest resources, creating plans for nurseries, reforestation, tending and thinning, reporting forest crimes, fire protection planning, forest protection against pests and diseases, rational use of forest, forest cultivation, forest renewal, the introduction of protective afforestation),
- required **learning outcomes** in the scope of the knowledge, skills, social skills and attitudes necessary to obtain qualifications.

As it was already stated, in the case of Georgia study programs are created on the basis of the general standards for the particular study level.

In addition to specifying the general boundary conditions, the standards also define (very detailed) list of compulsory and optional disciplines (to be determined by a university) in groups, with the precise number of credits for each group and sometimes also for individual disciplines. Exemplary standards are characterized in details based on the Kazakh case later in this text.

Student workload necessary for obtaining the competence is measured by means of credits, where 1 credit usually corresponds to 36 hours of student work, and results from the detailed transcription of time within each semester, month, week and day, under the assumption that contact hours equal to about 50% of the total workload. In Georgia, 1 credit equals to 25 hours of student work (for comparison: 1 ECTS in European system equals to 25-30 student work hours). Because of the slightly different teaching philosophy, the total number of hours is very large and usually varies between 6 and 9 thousand. A number of credits necessary for obtaining bachelor degree equals approximately 150-200 (assuming 36 hours per credit), and in Georgia - 240 (assuming 25 hour per credit).

Ministry standards classify disciplines into groups. The division usually includes the group of humanistic, economic and social disciplines (HES), general disciplines, basic disciplines from the group of mathematical and life sciences, profiling disciplines and specialized disciplines. Each group consists of obligatory and optional disciplines (decided by the universities). Standards also contain requirements with regard to practices, foreign languages, specialized language, physical education, military service and other subjects. It is worth mentioning that in some cases, despite the detailed description of required learning outcomes, standards regulate in detail the content of disciplines, their duration, and sometimes also the form of assessment and means of the periodic inspection of student's work and progress.

Content and layout of particular disciplines in most cases reminds study plans known from Polish universities offering engineer (bachelor) study in forestry. In some cases, especially in Georgia, there is a trend towards creating blocks of disciplines, which means decreasing the number

of disciplines. Great emphasis is put on both the expertise and general knowledge, especially of natural sciences, as well as on overall good attitude.

Despite the existence of a block of HES disciplines, study programs usually lack of content related to social communication and education (unless they are offered as elective courses). The total number of elective disciplines is also relatively low. It is also worth mentioning, that even though standards in particular countries originated from the same source, there are also significant differences in the content of individual disciplines (courses), ie. disciplines with the same name (title) have different content, especially for such subjects as silviculture, forest protection, forest utilization and forest management.

### **Higher education of forest engineers in CIS countries - Kazakhstan case**

The total land area of the country is 2 724 900 km<sup>2</sup>. According to the official data, in 1991 the total forested area was 10.5 mln ha and increased by 2006 to 12.3 mln ha. This rapid gain in the area of forests is attributed to a massive protective afforestation on marginal and agricultural lands that was included as a part of Republic's state forests. The increase of forested area of the country is the main goal of Kazakh forestry. This is also reflected by the programs of the professional training, including higher education.

Higher education for various specialties in Kazakhstan is regulated by the means of governmental grants. In 2011, according to the government order, educational grants for bachelors degree in agriculture, specialty in forest resources and forestry (Лесные ресурсы и лесоводство) were given to eight institutions of higher education in Kazakhstan (S. Seyfullin Kazakh Agro Technical University, Serikbayev Eastern-Kazakh National Technical University, S. Toraygyrov Pavlodar National University, M. Kozbayev Northern-Kazakh National University, Shakarim Semipalatynsk National University, Sh. Ualikhanov Kokshetayskiy State University, Kazakh National Agrarian University, and Zhangir khan Western-Kazakh Agro Technical University).

As in other countries of the Commonwealth of Independent States (CIS), training of specialists is based on governmental standards that were developed, among others, by scientists and teachers, discussed within methodological committee of the Republic and then approved by the Ministry of Higher Education and Science.

At the end of 1990s and at the beginning of 2000s higher education of forestry engineers was based on the ministry standards No. 450000 for the „agriculture” program, specialty No. 4702 - „forest and park management”. The total duration of the program was 4 years and 6 months and the acquired qualification was an „engineer”.

There were a few groups of disciplines in the frame of the standard: general socio-humanitarian disciplines (history of Kazakhstan, philosophy, politology, etc. - total 1840 hours), general disciplines (higher mathematics, physics, ecology, informatics, chemistry, botany, plant physiology, soil science, engineering geodesy, life safety - total 1330 hours), general professional disciplines (forest meteorology, technical mechanics, dendrology, biometry, mechanization in forestry, fundamentals of accounting, management and marketing, forest protection - total 978 hours), specialized disciplines (silviculture, forest exploitation with fundamentals of wood processing, forest inventory, forest cultures, forest nurseries, forest management planning, economics and business management in forestry - total 1710 hours). Besides, there were total 1152 hours of specialization, covering such disciplines as forest fires, forest microbiology, game management, forest selection and other. The total number of student work hours for the program was 7560.

An important part of the forestry curriculum has always been practical training. After completion of the 2<sup>nd</sup> and the 4<sup>th</sup> semester students took part in a 4-week practical educational training and after the 5<sup>th</sup>, the 6<sup>th</sup> and the 7<sup>th</sup> semester - in technological 9-week practices, after the 8<sup>th</sup> semester - in 11-week internship, and after the 9<sup>th</sup> semester - in a 2-week diploma practice. Graduation took place after

passing state exams on specialized disciplines and after producing and defending the diploma thesis or project.

Since 2004, Kazakh universities have begun the transition to the credit system. The duration of the study program was reduced to 4 years and „forestry” program was moved into a group of forestry-related specialties (standard No. 050807 - Лесохозяйственное дело). According to the new standard, it was necessary to gain 128 credits in 4 years to graduate from the program. One credit in the system translated into 45 student work hours divided into 7 hours of classes, 8 hours of labs, practices and seminars, 15 hours of consultations and 15 hours of self-study. The standard of the specialty was split into 3 blocks: general disciplines (32 credits, including 19 obligatory ones), basic disciplines (64 credits, including 32 obligatory ones) and profiling disciplines (92 credits, including 79 obligatory ones). According to the 2004 standard, the block of basic disciplines consisted of the following courses: mathematics, engineering geodesy, mechanization of forest work, forest botany, dendrology, forest nurseries, forest fires, silviculture, biology of animals, labour protection, forest utilization, forest protection, forest inventory and wood processing. The group of obligatory profiling disciplines included forest cultures, forest management, forest and wood commodity, forest economics, management in forestry and urban greening. Apart from 128 credits from the courses, the total number of credits for the entire program also included 2 credits for practical training, 10 credits for internship and 8 credits for preparation and defence of the diploma work.

There has been yet another ministerial standard for bachelor of all specialties, including „forestry,” issued in 2011. It contains 33 credits of obligatory general disciplines and 69 credits of basic disciplines (including 20 obligatory ones). The remaining disciplines are going to be determined in 2012. The group of professional disciplines contains 27 credits, including 5 obligatory ones. It is worth mentioning that since 2004 the amount of elective courses increased from 45.3 to 51.1%. The total program consists of 149 credits, including 129 credits of theoretical education, 2 credits of special disciplines, 10 credits of practical training and 8 credits for preparation and defence of the diploma work. Each semester contains of 18 credits, which translates into 30 ECTS points.

### **The role of internationalisation in the development of higher education in forestry - Kyrgyzstan case**

Kyrgyzstan, as many other countries of CIS, forces the integration of its higher education system with an international educational space. On 23 August 2011 the government of the Kyrgyz Republic issued the resolution „On establishing a two-tier structure of higher education in the Kyrgyz Republic”. The following steps were taken to implement the Resolution and orders of the Ministry of Education and Science:

- in September 2011, Magna Charta Universitatum was signed in Bologna,
- on 7 November, the Charter of Universities of Shanghai Cooperation Organization was signed in Moscow, with participation of authorities of 62 High Education Institutions of Shanghai Cooperation Organization member-states.

Education and research related to forestry in Kyrgyzstan is carried out by various research institutions, including the Institute of Forest, Institute of Nut Farming and Fruit Cultures and the Institute of Biology and Soil of the National Academy of Sciences, as well as universities with the Department of Silviculture in Kyrgyz National Agrarian University, the Department of Ecology and Forestry of the Jalal-Abad State University, the Department of Ecology and the JUMP Centre of Forest of the Osh Technological University and the Department of Ecology of the Issyk-Kul State University under the Ministry of Education and Sciences of the Kyrgyz Republic.

However, before the collapse of the USSR, the forestry education in Kyrgyzstan was not developed. Many specialists completed their education abroad in such countries as Russia (e.g. in

Moscow State University of Forest, St. Petersburg Forest Academy, Ural State University of Forest, Krasnoyarsk Technological University, Voronej Forest University, etc.), Kazakhstan (Kazakh National Agrarian University) and Uzbekistan (Uzbek Agrarian University).

The Kyrgyz-Swiss Support Program on Forestry (KIRFOR Program, 1995-2009), operating within the bilateral agreement between the governments of Switzerland and the Kyrgyz Republic, made a significant input in the development of the national forest sector and in particular the transfer of advanced technologies. The forest research has been defined as one of the main KIRFOR project components from the very beginning, since everywhere forestry is based on scientifically defined technical norms and recommendations. KIRFOR was paying a lot of attention to the links between science and application with identification of applied research as one priority to support.

One of the leading institutions in forest education is the Department of Silviculture of the Kyrgyz National Agrarian University in Bishkek, which was established in 1999 with the support of the Kyrgyz-Swiss Program. A special education standard for forest engineering as well as a curriculum were developed by specialists and approved by the Ministry of Education and Sciences in 2000, involving a 5-year study program.

After graduation, students find employment in the State Agency of Environmental Protection and Forestry, forest farms and forest territorial services based on their specializations. Later some students will continue their education and enrol into MSc and PhD programs in Kyrgyzstan or foreign universities, thanks to the European support programs. Post-graduate courses for training of academic staff in ecology and natural resources management are organized at the Kyrgyz National Agrarian University, Osh Technological University, Issuk-Kul State University and Jalal-Abad State University. Thanks to this development many graduates start working not only in forestry but also in educational institutions (universities, academy of sciences, etc) and help in their development.

### **Summary**

Despite significant differences in higher education systems between countries of the former Soviet Union and European countries, the situation changes extremely fast. A possibility of serious cooperation exists especially in terms of the existence of joined programs, especially funded by the EU sources. In some cases study programs created within a frame of TEMPUS projects have been granted a special status that makes them different from the official domestic standards. The advantage of the programs in this part of the world is their strong reliance on the qualification framework, which is particularly important in the current situation of higher education in Poland shaped by a new bill on higher education.

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