

**UNESCO Almaty Cluster Office for Kazakhstan, Kyrgyzstan, Tajikistan and Uzbekistan  
Center of “Cooperation for sustainable development of Republic of Kazakhstan”**

**Review: The status of water education in Central Asia**

*Executive summary*

Upon the order and with the support of UNESCO Almaty Cluster Office for Kazakhstan, Kyrgyzstan, Tajikistan and Uzbekistan the Center of “Cooperation for sustainable development of Republic of Kazakhstan” has prepared a review of existing practices of teaching water issues in Central Asian region to identify challenges of this area and develop recommendations for improving training in water sector.

The survey involved three countries of Central Asian region: Kazakhstan, Kyrgyzstan and Tajikistan. During the survey 28 questionnaires was sent out to different institutions, and the answers were received from 18 universities. State educational standards, job qualifying requirements, the list of required courses and their content were examined and analyzed as part of this survey.

In order to evaluate the teaching practices the technical equipment of the educational process, the availability of educational resources (tutorials, workshops) were scrutinized, and the methods of teaching, including additional forms of education were assessed as well. While preparing the review the number of interviews with government agencies, research institutes and design organizations were conducted. Developed recommendations to improve education quality in the field of water resources were presented at the sub-regional seminar on “Capacity Building on IWRM in Central Asia”, held under the auspices of the UN Development Programme in Central Asia and the UNESCO Cluster Office for Kazakhstan, Kyrgyzstan, Tajikistan and Uzbekistan in May 2011.

The experts from Central Asian countries noted that the quality of water resources education is very poor; university graduates do not meet the job qualifying requirements of employers. The graduates of higher education institutions lack for basic knowledge on water resources, have no skills and abilities to analyze problems, their engineering training background is very weak, and they don't possess any significant knowledge on Integrated Water Resources Management (IWRM) and interstate water relations. In order to improve the quality of training it is recommended to review existing educational standards and curricula of universities, to allocate additional funds and resources for water professionals training. In addition, it is necessary to develop special programs to support young professionals, to strengthen the systematic work on international cooperation, exchange of scientific and pedagogical staff and students, upgrade qualifications of teaching staff, etc.

The analysis of educational standards has shown that the job qualifying requirements for water specialties not clearly defined, and the range of requirements is very wide. Qualifying requirements do not contain description of general and specific competences, which should be formed by the student during training. It is recommended to review existing qualifications, to bring them in line with international norms, and in collaboration with practitioners of water industry to develop list of general and specific competences.

According to experts' opinion, there is an urgent need to improve the list of special engineering courses and enlarge the undergraduate curriculum with general engineering training courses. Most educational programs available lack for such important courses as international

and national water law, transboundary cooperation, water management and water management economics. It is recommended that these disciplines added in the training list of Bachelors and Masters in water resources management.

The experts recommend that all three countries should be focused on the creation of textbooks, including electronic, in Central Asian languages of respective country, as well as paying more attention to the professional development trainings of teachers who teach students in national languages. Water practitioners should be engaged in the development of these textbooks and in teaching several courses.

The analysis showed that higher education institutions still insufficiently use modern technologies and best practices, and the latest achievements in the field of education during teaching process. It is recommended to expedite the preparation, publication and distribution of manuals and textbooks, using modern teaching methods to assist universities in introducing innovative forms and training techniques.

While developing the curriculum it is recommended to pay more attention on strengthening practical aspects of student training, as well the inclusion of a greater share of practical lessons in the curriculum. This requires the creation of a strong technical base, improvement of laboratory equipment. Ministries of Education are encouraged to pay closer attention to the presence of up-to-date university laboratories prior to accrediting universities.

Due to the fact that currently all countries facing a lot of problems in the field of water resources, it is desirable that during the period of work experience, future professionals to be involved in solving those problems. This requires that internships to be coordinated with the state authorities, and the topic of internships should reflect the real issues of the water sector.

Currently, Central Asian countries are introducing the concept of research universities. A large role in this process is given to participation of student in research projects. It is necessary to expand the topic and direction of such researches, strengthen links with practical use, and reinforce cooperation of universities with industry research institutes.

The experts noted the huge interest of the water management organizations of Central Asia to improve professional development and retraining of their staff. It is recommended to the Ministry of Education and Science and Ministry of Water Resources to establish in-service teachers training system for water sector. This system should include multi-level courses on IWRM for university professors and specialists of the Ministries working in the water sector.

The experts also pointed out the need in training of young teachers, due to the fact that higher-education teaching personnel are getting older and older. It is suggested to organize an intercollegiate, maybe even cross-country Training Centre for university teachers with the engagement of experienced practitioners in order to share experiences.

To address the problems identified more coordination needed between relevant state agencies, as well as better use of capacity of international organizations and materials prepared by international consultants within the IWRM projects.

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