



WATER DIPLOMACY  
PROJECT ERASMUS +  
101082976 - HWCA  
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## **STRENGTHENING HIGHER EDUCATION IN THE WATER SECTOR FOR CLIMATE RESILIENCE AND SECURITY IN CENTRAL ASIA**

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**PROJECT NUMBER: 101082976 - ERASMUS-EDU-2022-CBHE-STRAND-2**

### **SUMMARY OF DISCUSSION ON EVALUATION OF PAST EXPERIENCES AND PRESENT OPPORTUNITIES FOR MOBILITY AMONG CENTRAL ASIAN UNIVERSITIES**

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## **Summary of discussion on evaluation of past experiences and present opportunities for mobility among Central Asian universities**

### **Analysis of past mobility programs**

This summary is based on the each Central Asian's report on the water-related academic and research capacity in Central Asian countries, analyzing the discussions, challenges, and recommendations for improving university-level education, especially focusing on academic mobility, cooperation, and the development of the water sector workforce. The summary draws from discussions during meetings with representatives from all Central Asian countries.

The region's educational systems were heavily shaped by the Soviet-Union centralized system. Before 1990, water engineering and related specialties were trained under unified Soviet curricula, ensuring consistent standards across institutions. Students underwent rigorous technical preparation, covering hydrogeology, hydropower, irrigation, water supply, and economics. There was a robust connection between research, education, and practice, with strong ties to state enterprises and design institutes. There was also a strong technical component, a highly qualified teaching staff, and great attention was given to scientific work, including the approval and defense of dissertation topics. Practical training was accompanied by real field trips to operational sites.

However, after independence, each country followed its own reform path, often fragmenting the academic space. Political and economic transitions, including extensive privatization in Kazakhstan, Kyrgyzstan, Tajikistan and Uzbekistan or strong state control in Turkmenistan, weakened cross-border educational ties. Universities rapidly expanded (often for commercial reasons), diluting academic standards and creating faculty shortages and lower qualification levels.

Formal agreements—such as the 1998 mutual recognition of diplomas between Kazakhstan, Kyrgyzstan, Russia, Belarus, and Tajikistan—provided a framework for mobility, but a unified Central Asian academic space has not fully emerged. Regional mobility remained constrained due to bureaucratic hurdles, curriculum mismatches, and lack of structured programs. Despite historical links, formal academic mobility between Central Asian universities has been limited compared to partnerships with European or other international institutions. Recognizing the need for stronger regional cooperation, many universities are now turning attention to regional networks.

Across Central Asia, 24 universities train water sector specialists, employing over 800 faculty members, about half holding advanced degrees. However, the distribution is uneven: Uzbekistan has the widest specialty

offerings (16 bachelor's programs), while Kazakhstan and Kyrgyzstan are more limited.

Field internships, critical for practical skills, are underfunded or underemphasized, especially in Kazakhstan. Graduate programs (master's, PhDs) exist but often lack continuity with undergraduate studies, breaking the educational chain. To implement PhD programs in the field of water resources management (for example in the Kyrgyz Republic), it is necessary to develop and prepare a set of documents for obtaining a license from the Ministry of Education and Science of the Kyrgyz Republic.

A major problem highlighted is the weak linkage between higher education and employers. Except in Uzbekistan and Kyrgyzstan (where targeted employment contracts exist), graduates often struggle to find jobs aligned with their training. In Kazakhstan, only 22% of water sector graduates secure relevant employment, partly due to low industry engagement and partly due to gaps in curricula.

Despite these challenges, several positive trends and opportunities have been identified:

- Adoption of national qualification frameworks (like Kazakhstan's National Qualification System) aligning educational outputs with labor market needs.
- Development of sectoral qualification frameworks and professional standards for water-related professions.
- Renewed government efforts to strengthen specialized training programs, introduce new bachelor's and master's tracks, and align curricula with modern needs (for example: GIS technologies, smart irrigation, hydropower construction).

### **Name of a partner Central Asia universities (institute)**

#### **Kazakhstan (DKU, KATRU, etc.)**

- Kazakh-German University (DKU) has extensive European collaboration (Erasmus+), but limited past mobility with Central Asian partners. It now seeks to apply its international experience regionally, focusing on sustainable development, innovation, and knowledge exchange.
- Kazakh Agrotechnical Research University (KATRU) has engaged in projects like Erasmus+ NICOPA (precision agriculture) and TEMPUS CIBELES (environmental studies), with active faculty and student exchanges with Kyrgyzstan, Uzbekistan, Turkmenistan, and Tajikistan.

#### **Kyrgyzstan (DA MFA KG, KNAU)**

- The Diplomatic Academy of the Ministry of Foreign Affairs of the Kyrgyz Republic (K.Dikambaev) has established international

partnerships with several institutions worldwide. New Water cooperation and diplomacy program with support of Erasmus+ program, with partners including the University of Hamburg (Germany) and Vilnius University (Lithuania).

- Kyrgyz National Agrarian University (KNAU) emphasizes academic mobility, with 78 faculty members participating in international events, 91 international students enrolled, and 35 students participating in external mobility. Major partnerships include Germany, Russia, and Turkey, with programs like LOGO, DEULA, and Kaizen.

### **Uzbekistan (TIAME-NRU, UWED)**

- Tashkent Institute of Irrigation and Agricultural Mechanization Engineers (TIAME) has built mobility links through Erasmus+ NCoPA, the CASCAD summer school, and partnerships with Kazakhstan and Hungary.
- University of World Economy and Diplomacy (UWED) has organized training courses on water governance and diplomacy, targeting teaching staff and young researchers across the region, and plans to develop joint Master's programs in water diplomacy.

### **Turkmenistan (Magtymguly Turkmen State University)**

- Strong participant in the GEOCLIC project, focusing on geospatial engineering and climate adaptation, with multiple joint courses, updated curricula, and faculty training in Germany and Romania. It also leads regional efforts on water diplomacy education through the HWCA project, developing shared materials and training with partners like Kazakhstan, Kyrgyzstan, and Tajikistan.

### **Tajikistan (Academy of Public Administration, Tajik Agrarian University)**

- The Academy of Public Administration under the President of Tajikistan engages in joint Master's programs (with Eurasian National University, Kazakhstan), summer schools, and training collaborations. Upcoming projects like Blue Peace Central Asia aim to create scholarship and entrepreneurship opportunities in water management, strengthening the regional network of young professionals.

### **List of titles and areas of water-related specialties (Bachelor's degree)**

Наименование специальностей	РК	КР	РТ	РУ
Автоматизация и управление технологических процессов и производств (в водном хозяйстве)				+
Бухгалтерский учет и аудит (в водном хозяйстве)				+
Водное хозяйство и мелиорация			+	+
Водные ресурсы и водопользование	+	+		-

Водоснабжение, водоотведение и охрана водных ресурсов	+	+	+	-
Гидрогеология и инженерная геология	+			-
Гидрология рек и водохранилищ	+		+	+
Гидрология суши	+			-
Гидромелиорация	+			-
Гидротехническое строительство (в водном хозяйстве)	+	+	+	+
Гидроэнергетические объекты в ирригационных системах				+
Инженерные системы водоснабжения		+		+
Инженерные системы сельхоз водоснабжения обводнения и водоотведения	+	+		
Инновационные технологии и их использование в водном хозяйстве				+
Информационные системы в природообустройстве и водопользовании		+		
Комплексное использование и охрана водных ресурсов	+	+	+	
Мелиорация, рекультивация и охрана земель	+	+	+	-
Механизация водохозяйственных и мелиоративных работ				+
Организация и управление водного хозяйства				+
Охрана труда и техника безопасности				+
Применение инновационных техник и технологий в сельском хозяйстве				+
Природообустройство		+		
Строительство и эксплуатация гидроэлектростанций			+	
Технический сервис в сельском и водном хозяйстве				+
Экологическая безопасность в водном хозяйстве				+
Эксплуатация гидротехнических сооружений и насосных станций				+
Энергоснабжение в сельском и водном хозяйстве				+

### **There are also several systemic barriers:**

1. Inconsistent program structures: Lack of harmonization between bachelor's, master's, and PhD programs limits credit transfer and recognition.
2. Outdated infrastructure and lab facilities: Many institutions lack the modern equipment necessary to train students in cutting-edge water technologies.
3. Insufficient faculty training: Faculty shortages and limited international exposure hinder the modernization of teaching approaches.
4. Language barriers: Russian remains dominant in many institutions, but growing demands for English-language programs create tension without sufficient support.

5. Low funding for joint projects: Limited national and donor funding constrains regional research initiatives.

**Across the region, several successful patterns emerge:**

- Regional engagement has historically been project-driven, often under European funding frameworks like Erasmus+, TEMPUS
- Most universities have well-established international mobility (with Europe, Russia, and China), but intra-regional connections are still developing.
- Pilot joint programs (especially Master's and summer schools) have shown strong potential, but they remain limited in scope and sustainability.
- Faculty mobility has been crucial for knowledge transfer, curriculum development, and the introduction of new fields (like water diplomacy, precision agriculture, and geospatial engineering).

**Recommendations for Regional Mobility**

Improving mobility among universities is not only a matter of formal agreements but requires deep structural reforms, curriculum alignment, faculty development, and active regional cooperation. With mounting water security challenges driven by climate change, population growth, and economic development, building a robust, mobile, and highly qualified cadre of water specialists is an urgent regional priority.

To achieve this, Central Asian governments, universities, employers, and international partners must work together to transform past experiences into future strengths, creating an integrated and dynamic academic space that can effectively address the region's pressing water challenges.

Universities in all five countries are increasingly committing to:

1. Joint development of Master's programs (especially in water diplomacy, water management, and environmental sustainability).
2. Mutual recognition of credits and diplomas to facilitate student exchanges.
3. Cross-border research projects, particularly focusing on shared environmental and climate challenges (e.g., glacier retreat, transboundary river management, hydropower development).

4. Faculty training programs and summer schools to disseminate best practices across the region.
5. Strengthening institutional agreements and Memorandums of Understanding to formalize mobility frameworks.

Based on the national CA's reports and discussions, the following recommendations were proposed:

- ☐ Curriculum harmonization. Align programs across Central Asian universities to allow smoother student mobility, credit transfer, and recognition of qualifications.
- ☐ Specialization and center of excellence models. Develop specialized institutions focusing on key areas (e.g., hydropower engineering, water-saving technologies) that can attract regional students.
- ☐ Strengthen university-employer link. Introduce joint industry-academia programs, practical internships, and targeted training contracts to ensure graduates are employment-ready.
- ☐ Expand regional exchange programs. Build on existing bilateral and multilateral agreements to create formal, well-funded regional mobility schemes.
- ☐ Invest in faculty development. Provide international training opportunities for faculty and encourage cross-border research collaborations.
- ☐ Promote english-language programs. While maintaining national languages, develop english-taught tracks to attract international students and link with global networks.

## **Conclusion**

Central Asian universities are poised to enter a new phase of regional integration, leveraging their shared challenges and diverse institutional strengths. By enhancing academic mobility, joint programs, and research collaboration, they can build a resilient, innovation-driven educational space that addresses the region's most pressing issues—especially in water resource management and climate adaptation.

To succeed, universities, governments, and international partners must commit to sustained cooperation, targeted investments, and the creation of formalized, scalable mobility pathways that empower both students and faculty. Examples of ongoing and upcoming opportunities include Erasmus+ project, and bilateral agreements targeting areas such as:

- Water resource management
- Geospatial and environmental engineering
- Water governance and diplomacy
- Climate adaptation and resilience planning