Solutions to Water and Energy Problems in Central Asia and Establishment of Water University of Central Asia

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Countries of Central Asia
Water and Energy Problems in Central Asia

• Unresolved issue of water distribution of cross-border rivers (Amur Darya and Syr Darya) among Central Asian countries

• Construction of large dams and hydro-electric plants in countries (Kyrgyzstan, Tajikistan) situated at headstreams of trans-border rivers

• Melting of glaciers due to climate change

• Shortage of clean fresh water and desertification of land in countries (Uzbekistan, Kazakhstan, Turkmenistan) situated at lower reaches of cross-border rivers

• The effects of seasonal water distribution of cross-border rivers on ecology, water quality, desertification of land, salinification and waterlogging have not been studied

• Lack of monitoring of glacier conditions, high-altitude lakes, tailing dams

• Shortage in finances allocated for research on water and energy problems
Source of Naryn river of the affluent of Syr Darya
Source of “milky” rivers
Toktogul hydro-electric plant
Kambar-Ata 2 hydro-electric plant
Construction of Rogun hydro-electric plant
The drying up of Aral Sea
The dried-up delta of Amur Darya
Volume of fresh water usage in cubic km/year

Kazakhstan: 40
Kyrgyzstan: 20
Tajikistan: 10
Turkmenistan: 30
Uzbekistan: 90
The process of melting of glaciers

Glaciers in 2000

Glaciers in 2025

Blue color indicates glaciers that will remain; red color indicates glaciers that will disappear
Inylchek glacier
Melting of glaciers
Areas of possible contamination in Kyrgyzstan and in the cross-border countries if tailings leak or collapse

- Locations of toxic waste
- Areas of possible contamination

Kazakhstan

Uzbekistan

Tajikistan

China
Organizational Structure of the Water University of Central Asia in Bishkek, Kyrgyzstan

Department of Scientific Research

Academic Departments

Graduate Programs

Central Asian Institute of Applied Research of Earth, founded in 2004 by the government of Kyrgyzstan and by the Center of Earth Research (Germany)
In order to research previously mentioned water and energy problems and in order to develop scientifically backed recommendations on solutions Kyrgyzstan proposed to establish Water University of Central Asia (Water and Energy Academy of Central Asia in some documents) under Central Asian Institute of Applied Research of Earth, founded in 2004 by the Kyrgyz government and by the Center of Earth Research (Germany).

This initiative was considered and approved in the following documents:
- Joint statement of the presidents of Kazakhstan and Kyrgyzstan (Astana, April 2008).
- Joint statement of Ministries of Foreign Affairs of Kyrgyzstan and France on realization of European Union Water Initiative and proposals of Kyrgyzstan regarding holding a high level meeting on water and energy problem of Central Asia in Bishkek and creation of international water and energy academy in Kyrgyzstan.
- Implementation of activities of Shanghai Cooperation Organization countries. Cooperation in 2008 (the project remained unfulfilled)
Purpose of establishing the Water University of Central Asia:

• Preparation of specialists in the following fields: Hydro-energy, irrigation, water quality management, water resources management, water services management

• Conducting researches on efficient usage of water resources

• Conducting researches on monitoring of glacier conditions, high-altitude lakes and tailing dams

• Scientific expertise of hydro-energy projects

• Conducting researches on preservation of quality of fresh water
Proposed project of organizational structure of the Water University of Central Asia in Bishkek, Kyrgyzstan

Founders of the Independent Water University of Central Asia can be international organizations, institutions, independent organizations and individuals.
Conclusion

In the short-run, water and energy problems in Central Asia:
- worsen each year, which can lead to conflicts between countries
- can lead to ecological disaster if Central Asian countries do not find consensus in water distribution of cross-border rivers, and if tailings are not secured
- melting of glaciers and irrational usage of water resources decrease the quantity and the quality of fresh water in Central Asia
- it is necessary to establish transnational water and energy consortium
- implementation of new technologies in usage of water resources
- preparation of skilled specialists, establishment of scientific centers of research and development of scientific recommendations on solutions to water and energy problems by means of establishment of the Water University of Central Asia