Measure the Reuse of Water

Water Resources in Azerbaijan

For sustainable and effective management of water resources, it is necessary to study the quantitative and qualitative characteristics of water resources, water needs and conditions for its integrated use. This will make it possible to identify the requirements of various sectors of the economy in the quantity and quality of the water they need. Research and develop new methods for compiling water balance sheets and regulating river flow. This will ensure the most complete satisfaction of water needs.

The context of the European Neighborhood and Development Policy, the European Union is implementing the EU Water Initiative "UNECE Convention on the Protection and Use of Transboundary Watercourses and International Lakes" in Eastern Europe, the Caucasus and Central Asia (EECCA) region. It is an international water policy instrument that helps member countries. Initiatives to improve water legislation through the implementation of national policy reforms in this area. At present, there is no national strategy that formally endorses the principles of integrated water resources management. However, as part of the National Dialogue on IWRM Policy Dialogue (implemented with the assistance of UNECE), the Ministry of Environmental Protection has set three main goals that must be achieved by creating a package of policy measures (1):

- Institutional reforms and implementation of the principles of the EU Water Framework Directive (including the preparation of the National Water Law).
- Target setting in accordance with the UNECE Protocol on Water and Health.
- Strengthening transboundary water cooperation with Azerbaijan and joining the UNECE Convention on Transboundary Waters.
- Planning certain institutional reforms signed in 2011.

Currently situation is that modern oil recovery facilities, even properly operated, are practically not able to completely treat incoming wastewater. They can only reduce the amount of oil discharged by a reservoir, but they cannot protect it from pollution. To prevent further pollution of the Caspian Sea and the Kura River, should be done the following issues:

- Interregional agreements to reduce pollution of transboundary waters.
- New oil recovery units in the territory of Azerbaijan on the main canals of a more rational design.
- Separate conditionally clean waters, using the latter for recycling water supply.
- New types of sedimentation facilities at oil gathering stations where heavily contaminated formation waters are mainly discharged.
- Construction of facilities for the post-treatment of oilfield wastewater.
- Reduce wastewater discharges to water bodies (2).

Khazar University Water Reuse Vision

Our university has a policy to maximize water reuse across the university. Wastewater is treated and discharged. The treated wastewater is used for irrigation of green areas on the campus. Mains water is not used for irrigation of these areas and landscape areas. Studies to improve reuse areas by treating wastewater are at the feasibility stage. Our university measures the reuse of water across the university. Studies on measuring the amount of reused water and increasing reuse rate are under the construction works and technical department's management and control.

Khazar University actively promotes conscious water usage on campus and in the wider community. Among our student societies, some groups draw attention to water saving. Also, various activities are organized within the university and open to the public within our faculties' scope of water-saving patients. In one of these events. Khazar University researchers prepared a documentary on water saving and presented it to various university branches. There are reminder visuals to draw attention to water-saving usage in the campus's water usage areas. Apart from incentives and informational practices, there are currently water-efficient devices at many points on the campus.

Water reuse possibilities are included in green universities strategies and different options are under consideration at some universities around the developed countries. Khazar University approved Green University conception including water reuse options in buildings renovation programme. Integrated reviews on possible water reuse systems include sustainable, technological, economic and social approaches. Reused water qualitative and quantitative analysis were carried out by academic researchers from different countries worldwide (3)

The unique advantage of grey-water reuse is the possibility of water collection at the place where the wastewater is generated. If such systems are properly operated and maintained. It is possible to reduce quantities of wastewater related to the environment pollution and that may contribute to the saved water resources (4). Additionally, it is very important to provide proper educational activities that should improve the potential water users' knowledge of which technologies of domestic water reuse are recommended and how a related system should be operated and maintained to ensure sustainable development at Khazar University.

Based on water use analysis it will be compared the most advanced technologies among those used in different countries. There mainly are systems with grey-water obtained from showers reuse and reliable constructed WC flushing systems at green universities dormitories.

With a highest predominance of obtained from grey-water it is the system with water reuse for WC flushing that was indicated as the most effective solution for university students and teachers It was found that the most appropriate was the technology involving the grey-water reuse of used for WC water. The qualitative analysis demonstrated that the application of that technology is in accordance with the principles of sustainable development, due to obtained grey-water quality, sufficient water retention stability and high reliability of acceptable quality.

Resources:

1. Strategic road map for the development of utilities (electricity and heat, water and gas) in the Republic of Azerbaijan. Approved by Decree of the President of the Republic of Azerbaijan dated December 6, 2016 https://monitoring.az/assets/upload/files/cdd6f67c95571149ddd1d0db965cbf0f.pdf
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4. Friedler E. & Hadari M. (2006). Economic feasibility of on-site greywater reuse in multi-storey buildings. Desalination, 190, 221–23