



Sustainable Development Goals

Individual Report on SDG 5 - GENDER EQUALITY



Aktau 2023

YU actions for sustainable management of water and sanitation

SUSTAINABLE DEVELOPMENT GOALS

Individual Report

Clean Water and Sanitation (SDG 6)

Water consumption per person

At Yessenov university, some of water conservation measures include, automatic control of urinal flushing, waterless urinals, low flush WC and low flow taps and automatic taps.

volume of water used in the university, per year:

Drinking water - 33673m³,

Technical water - 4296 m³

Water usage and care

Yessenov University has implemented a water conservation program on campus. As it is known, the Mangystau region, in particular Aktau city, uses the Caspian Sea for its water supply. Thus, the water conservation program plays the most important role in the sustainability of the region. In its turn, Yessenov University has always been aware of water scarcity and a careful use of water should be spread all over the city.

1. Data collection. Yessenov University collects data on current water usage, sources and costs in order to understand where and how water is used on its campus.
2. Technology and infrastructure. Yessenov University has implemented water-efficient technologies and infrastructure such as harvesting systems and smart irrigation controllers.
3. Policies. Yessenov University has a policy to encourage water conservation and setting water-saving technologies on campus.

Underground water exploration was carried out at Yessenov University. As a result, groundwater is used by using ground water desalination equipment. These waters are used for the fields of Yessenov University and as technical water.

Appliance	Total Number	Total number water Efficient appliances	Percent age
Toilet	510	130	35-40%

Wastafel	501	350	60%
Etc.
		Average Percentage	45-50%



Yessenov University possesses a number of new infrastructure which requires a big proportion of water for its construction. Thus, the University leadership tends to use water with the economy. Hence, it has its water recycling program on the campus (pic 2.). It has a project to develop a water recycling process. The University is striving to treat water use with minimum waste. Recycled campus water is usually used for irrigation and construction purposes such as avoiding drought on the planned design of a newly built campus area.

All buildings of the university, library and dormitories have water bottles of 19 liters and water heating and cooling devices. All waters are offered free of charge to employees and guests of the university.

Also, Yessenov University is located in the Mangistau region of Kazakhstan. Mangistau region belongs to the desert region. Therefore, water is a big problem for this region, there is very little surplus of drinking water. Therefore, desalinated water from the Caspian Sea is offered to the people. At the same time, a number of projects on the use of underground water are being developed at Yesenov University. One of them identifies the underground water and uses it in the greenhouse of the university. In addition, technical waters are used in the parks of

the university grounds. Depending on the topography and structure of the land, the bitterness and salinity of the soil, plants such as reeds, ruins, and sedges are planted.

The link: <http://ped.yu.edu.kz/ru/laboratoriya/esenov-jilijay-zhylyzhajy/>

Water reuse



A plan for 2020-2025 on water resources management and increasing the efficiency of water use at Yessenov University was created and APPROVED by the decision of the Public Council (protocol No.2 dated 26.01.2020.)

Yessenov University has a system for treated water which is typically sourced from the Caspian sea and it is subjected to various treatment methods to remove impurities and contaminants. Because the University uses the water from the central water supply. The University uses filters for the water coming from taps. It should undergo double-filtering progress before being used for drinking, cooking and even for irrigation.

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In the competition for grant funding for scientific and technical projects in 2022-2024, the project "Development of a solar-thermal desalination plant based on a heat pump" under the leadership of i. o. Professor Yessenov University, PhD Samal Syrlybekov received 66 mln. tg.

The idea of the project is to develop a prototype of a small desalination plant based on a solar distiller with a heat pump for the production of clean water for remote settlements of the Caspian region of Kazakhstan, testing the performance of clean water and drawing up a feasibility study for the use of a heat desalination plant for local conditions.

The link:

<https://yu.edu.kz/ru/yessenov-university-%D2%93ylymi-tehnikalyq-zhobasy-grant-ielendi/>

The educational program "Water resources and water use" is dedicated to the training of highly qualified innovation-oriented specialists in the field of water management and water use and has formed:

- knowledge of ecological principles of water use, management, protection and integrated use of water resources, basics of hydraulics, patterns of river flow formation, water regime of rivers, methods and methods of cleaning;

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- knowledge of the basics of designing water networks and water management systems, rural water supply, irrigation of pastures and irrigation melioration;
 - knowledge of basic operations on technical maintenance and repair of equipment of water management enterprises;
 - execution of reports in the field of ecological water use and reports on the design of water management system and elements of water networks (water collection buildings, networks, pumping stations, water treatment buildings), mastering the choice of water treatment technology;
 - to be able to evaluate the main operating parameters of water management systems;
 - ability to work with basic hydrological instruments, tools and equipment used in lake and river hydrometry;
 - skills to carry out measurements in water bodies, to determine and take samples of physical and chemical indicators of water for the purpose of monitoring water quality in water bodies, to conduct hydrobiological and laboratory analysis with the help of organisms - indicators according to Mayer's method and biotesting method;
 - • skills of practical solution of tasks in the workplace as an executor in enterprises in the field of water management.

The university is researching a project to DEVELOP A METHOD FOR COLLECTING DRINKING WATER FROM ATMOSPHERIC AIR DUE TO REGIONAL HUMIDITY

Pic 1. Water collection system due to temperature difference using polyethylene nets



In the Atrium hall of Yessenov University, the defense of social projects of 1st year students in the discipline “Service learning” was held. The purpose of this discipline is to create experience in serving society through a unique opportunity to work on a socially significant project, the formation of an active life position through the inclusion of students in project activities to solve real social problems in the Mangistau region. More than 600 students of the Basic Faculty took part in defending the project over two days, among them: specialties: Management, Accounting and Auditing, Finance, State and Local Administration, Ecology, Information Systems, Oil and Gas Business,

Mechanical engineering, Transport, transport equipment and technologies, Electric power industry, Construction, Standardization and certification, Organization of transportation, traffic and operation of transport, Tourism. 57 social projects were brought to the attention of the commission. The project commission was headed by acting. Vice-Rector for SD Bostanov A.M., the commission included Makulov K.K. - Dean of the Faculty of Basic Training, Mambetova A.I. - Head of the Department of "Assembly of the People of Kazakhstan", Bisingalieva I.V. - Project Coordinator "Service Learning", Ismurzina G.M. - head of the secretariat of the "Assembly of the People of Kazakhstan" of Mangistau region, Bekmanova R.A. - head of the crisis center for protecting the

rights of victims of violence, Osin K. - director of the NGO "Eco Mangistau" Kulyshev N.Sh. -Chairman of the Public Association "Sports Club of the Disabled "Zhiger" of the Federation of Sports for People with Disabilities, Tashov M.K. - Director of the State Institution "Regional Family-Type Children's Village", Fokin A. - Lawyer of the Crisis Center for the

Protection of the Rights of Victims of Violence. Defense of projects included presentation of projects and answers to questions from the commission; members of the commission asked questions to students and evaluated the projects. The ideas of student projects are of a social nature and are aimed at working with autists, with orphans from a children's village, with victims of domestic violence (Aktau Crisis Center), with people with disabilities, and with young people with disabilities. Several projects address environmental issues. All student projects were allowed to be implemented.

At the end of the defense of the projects, the rector of the university, Berik Bakhytzhonovich Akhmetov, spoke to the students, who emphasized the importance of the "Service learning" project and wished everyone good luck in the students' first project activities.

The link: <https://yu.edu.kz/ru/service-learning-zhobalaryi-or-aldyi/>

Since there are no sufficient groundwater sources in the region, drinking water for Aktau is produced by desalination of seawater at the Mangystau Nuclear Power Plant (MAEK). In the area of the University there is a powerful and reliable drainage pump SP 7 Dirt pumps out up to 15500 l/h of dirty water and is equipped with an integrated pre-filter and a height-adjustable float switch.

There is also a big research project based on water pollution and its possible solutions projected for the future 2030-2050.

Additional link: <http://ped.yu.edu.kz/ru/laboratoriya/esenov-jilijay-zhylyzhajy/>

Project 1. <https://yu.edu.kz/ru/yessenov-university-%D2%93ylimi-tehnikalyq-zhobasy-grant-ielendi/>

Project 2. <https://ysj.yu.edu.kz/wp-content/uploads/2022/12/fitog-%E2%84%962-43-2022-119-127.pdf>