



KARSHI STATE UNIVERSITY
Sustainable Future Starts Today

Karshi State University
Sustainability Report 2024–2025



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Introduction

Karshi State University (KSU), established in 1945, is one of Uzbekistan's leading higher education institutions, located in the southern city of Karshi. The university plays a pivotal role in advancing education, science, and innovation in the region while actively supporting the national and global sustainability agenda. As part of its strategic development plan, KSU is committed to integrating sustainability into its campus operations, academic programs, and community partnerships — ensuring long-term environmental, social, and economic well-being.

The report covers activities, data, and progress achieved during the 2024–2025 academic year, focusing on the six major categories of the UI GreenMetric framework:

1. Setting and Infrastructure (SI)
2. Energy and Climate Change (EC)
3. Waste (WS)
4. Water (WR)
5. Transportation (TR)
6. Education and Research (ED)

KSU's sustainability activities are coordinated by the Department of International Rankings and Sustainable Development, which operates under the Office of the Vice-Rector for Scientific Affairs and Innovations. A cross-functional Sustainability Council engages representatives from all faculties, student organizations, and administrative units to implement, monitor, and evaluate progress toward the university's sustainability goals.

University Policy

Karshi State University (KSU) is committed to fostering a sustainable and environmentally responsible academic environment. As an institution dedicated to education, research, and community engagement, KSU recognizes its role in promoting environmental sustainability and reducing its ecological footprint. This policy outlines our commitment to sustainable practices, responsible resource management, and continuous improvement in environmental stewardship.

Objectives KSU's Environmental Sustainability Policy aims to:

- Integrate sustainability principles into university operations, teaching, and research.
- Reduce greenhouse gas emissions and energy consumption.
- Promote responsible water and waste management practices.
- Encourage sustainable transportation options.
- Foster a culture of sustainability among students, staff, and faculty.

- Comply with national and international environmental regulations and standards.
- Collaborate with local, national, and international partners on sustainability initiatives.

Energy and Climate Action

- Increase energy efficiency across all university buildings and facilities.
- Transition towards renewable energy sources where feasible.
- Implement energy-saving technologies and smart resource management systems.
- Reduce carbon emissions by promoting energy conservation measures.

Water Conservation and Management

- Minimize water waste through efficient usage and conservation programs.
- Implement drip irrigation and wastewater recycling systems where feasible.
- Encourage responsible water usage through awareness campaigns and training.

Waste Reduction and Recycling

- Establish a robust waste reduction, segregation, and recycling program.
- Reduce single-use plastics and promote sustainable alternatives.
- Encourage responsible waste disposal practices among students and staff.
- Collaborate with local waste management authorities to improve recycling efforts.

Sustainable Transportation

- Encourage the use of public transportation, cycling, and carpooling among staff and students.
- Provide infrastructure for eco-friendly transportation, such as bicycle racks and electric vehicle charging stations.
- Reduce emissions from university-owned vehicles by adopting low-carbon alternatives.

Sustainable Procurement and Consumption

- Prioritize the procurement of environmentally friendly and ethically sourced products.
- Reduce paper consumption through digitalization and responsible printing practices.
- Promote sustainable food and catering services on campus.

Education and Research for Sustainability

- Integrate environmental sustainability into curricula and research initiatives.
- Support faculty and student-led sustainability projects.
- Organize workshops, seminars, and events to raise awareness of environmental issues.

Community Engagement and Partnerships

- Work with local communities and government agencies to advance environmental sustainability goals.
- Participate in global sustainability initiatives and networks.
- Engage students in sustainability-driven community service and outreach programs.

Monitoring and Continuous Improvement

- Establish key performance indicators (KPIs) to track progress on sustainability initiatives.
- Conduct regular environmental impact assessments.
- Review and update this policy periodically to reflect emerging sustainability challenges and opportunities.

Implementation and Responsibility

- The university's Sustainability Committee will oversee the implementation of this policy.
- Faculty, staff, and students are expected to actively participate in sustainability initiatives.
- Collaboration with external partners and experts will be encouraged to enhance sustainability efforts.

Karshi State University is dedicated to making sustainability an integral part of its institutional identity. Through this policy, we reaffirm our commitment to protecting the environment and fostering a more sustainable future for our university community and beyond.

Section 1. Setting and Infrastructure

Number of Campus Sites

Karshi State University's Campuses

- Main Campus – the University's largest site. Area: 285356.83 m² (89.4% of the University's total area);
- Philology Faculty Campus – Area: 24278.17 m² (7.6%);
- 3rd Micro-District Campus – Area: 9472.00 m² (3.0%).
- Total University area: 319107.00 m² (sum of the three campuses, percentages sum to 100%).

Main Campus

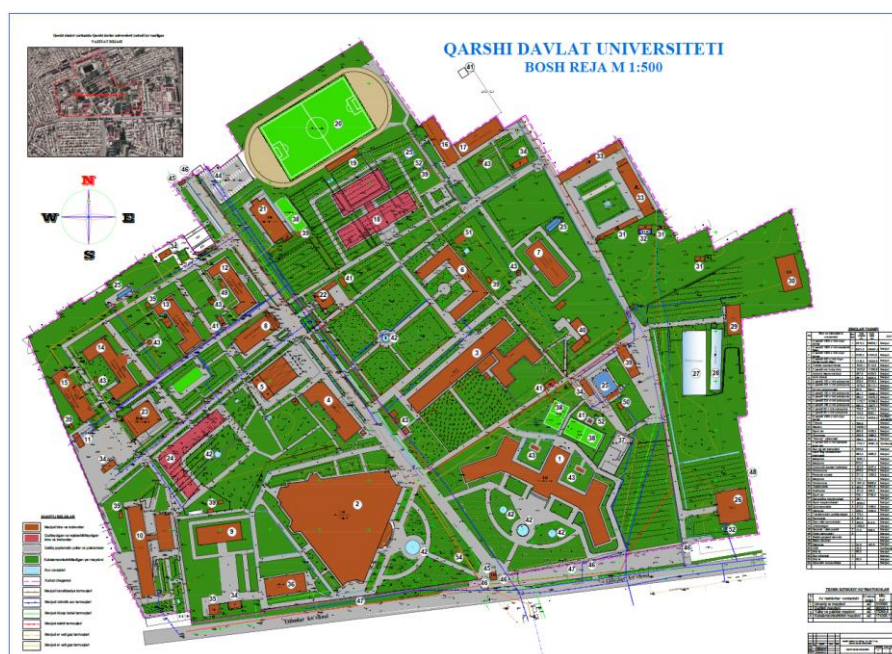
Established in 1945, the Main Campus is recognized nationwide for its extensive grounds, convenient infrastructure, and green spaces. It accommodates 9 academic buildings and 8 dormitories (with 2 additional dormitories and study blocks located at the other campuses), as well as indoor and outdoor sports facilities, two libraries, landscaped areas and many other facilities. It is located approximately 1.5 km from the city center.

Philology Faculty Campus

This campus accommodates Philology Faculty students and includes a study block, a dormitory, a football field, and a gym. It is located about 2.5 km from the Main Campus.

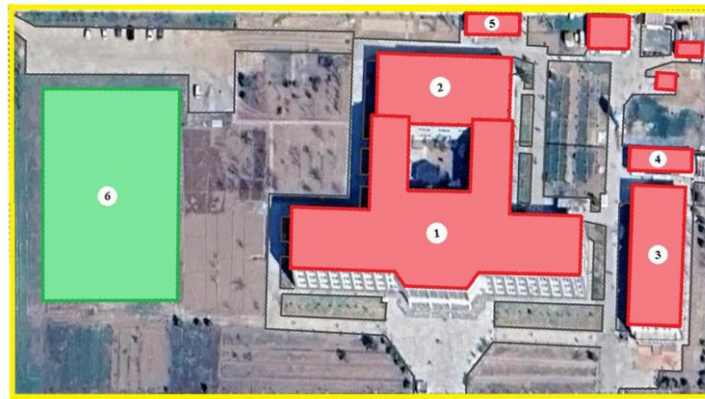
3rd Micro-District Campus

Located in the third micro-district, this campus previously hosted classes for the Roman-German Faculty. After that faculty was dissolved, some groups of the Foreign Languages Faculty continue studying here. The site contains one study block and a small park.



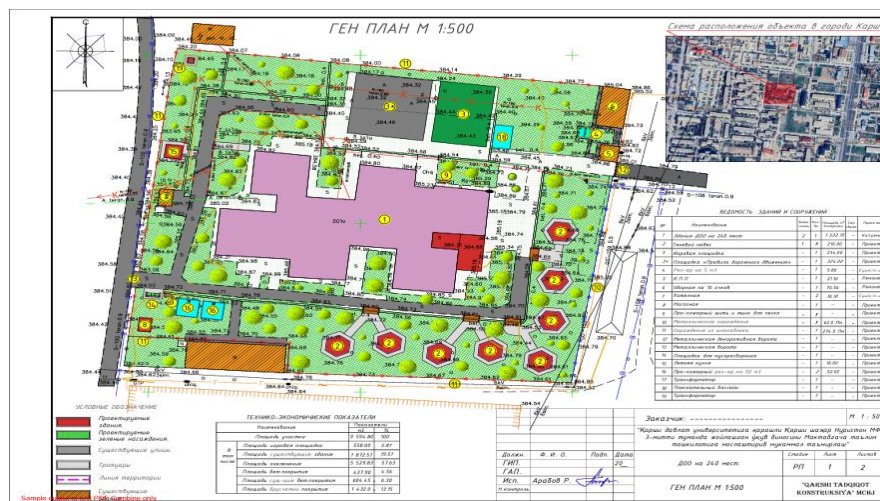
Main Campus Scheme

Qarshi davlat universiteti "Filologiya" fakulteti hududi



№	Binolar nomlanishi
1	O'quv binosi
2	Sport zal
3	Yotoqxon binosi
4	Oshxona binosi
5	Xojatxona
6	Stadion

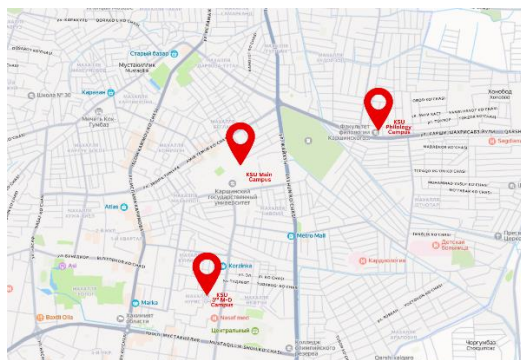
Philology Faculty Campus



3rd Micro-District Campus

Campus Setting

All three Karshi State University campuses are located in an urban area within the city of Karshi, a mid-sized city in southern Uzbekistan. The campuses are situated inside the city limits: The Main Campus is about 1.5 km from the city center, the Philology Faculty Campus is about 5 km, and the 3rd Micro-District Campus is about 1 km from the city center. The city's area is approximately 100 km², with a population of 295579 residents.

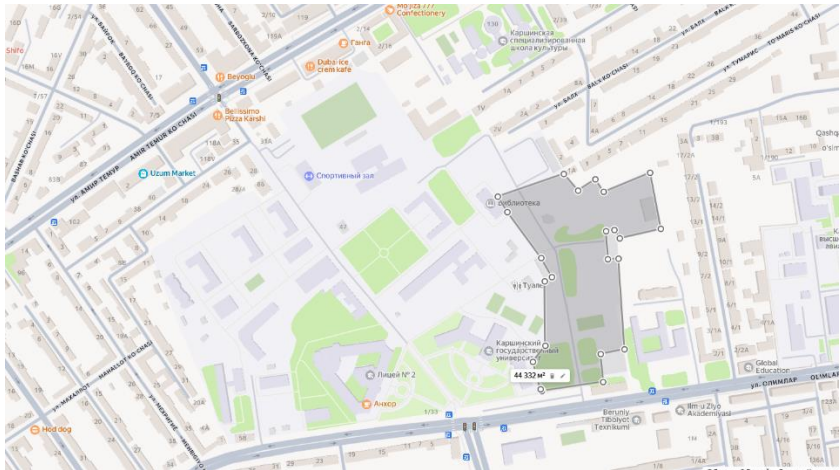


Total campus buildings area

Campus name	Total Building Area
Main Campus	105673.1 m2
Phylology Campus	8096.66 m2
3 rd Micro-District Campus	3128 m2
Total	116897.76 m2

Total area on campus covered in forest vegetation used for research, teaching, and/or community engagement

This is an estimated forest vegetation area within the Karshi State University campus. The total area of 44332 m² is designated for forest vegetation that contributes to research, teaching, and community engagement activities. This area supports the university’s sustainability initiatives, biodiversity conservation, and educational programs related to environmental studies and ecosystem management.



Total area on campus covered in planted vegetation

Total planted vegetation area: 177 328 m2

Total Area: 319 107 m2

Percentage area: 56%





University budget for sustainability effort (in US Dollars)

	2022	2023	2024	Total
Budget Total	\$19466231	\$21598717	\$20532474	\$ 61597422
Sustainability Budget	\$5839869	\$6479615	\$ 6159742	\$ 18479226
				Percentage 30 %

Karshi State University allocates a significant portion of its financial resources to promote sustainability and environmental responsibility across its campus operations and academic initiatives. Over the period 2022–2024, the university’s total institutional budget amounted to \$61597422 USD, from which \$18479226 USD—equivalent to 30%—was dedicated to sustainability-related activities and infrastructure development.

The sustainability budget is distributed across several key areas aligned with the university’s green campus priorities:

Energy efficiency and renewable energy (2.4%) – \$145161.29 USD:

Investments are made in energy-saving systems, lighting upgrades, and renewable energy initiatives to reduce carbon emissions and operational costs.

Waste reduction and recycling (0.1%) – \$4364.19 USD:

Programs promote recycling, waste segregation, and the reduction of single-use materials throughout the university.

Water conservation (1.4%) – \$85139.83 USD:

Funds are allocated to efficient irrigation systems, water-saving fixtures, and awareness campaigns to reduce water consumption.

Sustainable transport (0.6%) – \$34056.37 USD:

This includes the development of pedestrian-friendly paths, bicycle parking, and encouragement of low-emission transportation.

Sustainable procurement (16.2%) – \$996338.46 USD:

The university prioritizes environmentally friendly and locally sourced materials for campus operations and maintenance.

Facility maintenance for sustainability (79.3%) – \$4894681.86 USD:

A major share of the budget supports the maintenance and upgrading of university buildings, ensuring energy efficiency, accessibility, and compliance with green infrastructure standards.

Through these targeted allocations, Karshi State University demonstrates its strong commitment to the United Nations Sustainable Development Goals (SDGs) and the UI GreenMetric sustainability framework. The university continuously evaluates its expenditures to enhance energy performance, environmental protection, and the long-term sustainability of its educational environment.

Campus facilities for disable, special needs and or maternity care

Karshi State University provides inclusive and accessible facilities to support individuals with disabilities, special needs, and maternity care on campus. The university is committed to ensuring equal access to education, mobility, and comfort for all students, staff, and visitors.

1. Disabled parking for disabled people to park their car which located at parking which is 44 on the campus map.
2. Accessible toilets for disabled people are placed in every main building including faculties, dormitories, rectorate, library and etc.
3. Wheelchair ramps are installed at main entrances and along pathways to ensure barrier-free movement between buildings.
4. Corridors and key walking routes are equipped with tactile paving to guide visually impaired individuals safely.
5. Buildings feature Braille signboards on doors and directional signs to assist people with visual impairments in navigating independently.
6. In multi-story buildings like 1, 18 on the campus map, accessibility lifts (wheelchair lifts and platform lifts) are available to ensure mobility between floors.

	
1. Disabled parking (Karshi State University)	2. Accessible toilet (Karshi State University)
	
3. Accessible ramp (Karshi State University)	4. Tactile paving (Karshi State University)
	
5. Braille signboards (Karshi State University)	6. Accessibility lift (Karshi State University)

Security and safety facilities

Karshi State University ensures the safety and security of all students, staff, and visitors through a comprehensive and fully functional security and safety infrastructure. The campus is equipped with CCTV surveillance systems covering academic buildings, dormitories, and outdoor areas to monitor and prevent potential incidents.

An emergency hotline and alarm system are available to provide immediate assistance in case of emergencies, while trained and certified security personnel are stationed throughout the campus to ensure rapid response and support. The university's response time for accidents, crimes, fire

incidents, or natural disasters is less than five minutes, ensuring efficient management of any emergency situation.

In addition, the campus maintains fire safety equipment, including fire extinguishers, hydrants, and alarm systems, regularly inspected and maintained for optimal performance. Regular safety drills and awareness programs are conducted to prepare the university community for emergency situations and to promote a culture of safety and responsibility across the campus.



	
1. CCTV and Security Staff (Karshi State University)	2. Fire safety facilities (Karshi State University)

Health infrastructure facilities for students, academics and administrative staffs' wellbeing

Karshi State University is committed to safeguarding the health and well-being of its students, academics, and administrative staff by maintaining accessible medical care and first-aid facilities (medical treatment rooms) across the university. Each medical room is designed to provide immediate healthcare assistance. In addition, Medical Faculty staff and students play an active role in supporting the university community by offering first-aid services and professional consultations when required. Mental-health and psychological support are also available to help students and staff manage stress and maintain overall well-being.

Beyond on-campus medical rooms, the university collaborates with local healthcare providers to ensure that students and staff can access comprehensive medical services, including preventive care and specialized treatment. Health-awareness programs, vaccination campaigns, and regular medical check-ups are organized to promote a healthy lifestyle within the academic community.

1. Medical room at the Medical faculty study block
2. Medical room at the Physics and Mathematics faculties study block
3. Medical treatment room at the Foreign Language faculty study block
4. University psychologist's office (free consultations, seminars, and workshops available)
5. Karshi State University medical center

	
1. Medical room in the Medical Faculty study block	2. Medical room in the Physics and Mathematics Faculties study block
	
3. Medical treatment room in the Foreign Language Faculty study block	4. University psychologist's office (free consultations, seminars, and workshops available)
	
5. Karshi State University medical center	

Conservation: plant, animal, and wildlife, genetic resources for food and agriculture secured in either medium or long-term conservation facilities

Karshi State University has implemented several conservation-oriented initiatives that integrate Information and Communication Technology (ICT) to ensure the sustainable management of plant, animal, and agricultural genetic resources. These programs contribute to biodiversity preservation, sustainable food production, and the enhancement of academic and research activities.

Key conservation initiatives include:

- **Main Campus Greenhouse:** Located on the university's main campus, this facility focuses on the conservation and cultivation of **tomatoes and cucumbers** under controlled environmental conditions. ICT-based systems monitor temperature, humidity, and irrigation to ensure optimal plant growth. The greenhouse also serves as a **practicum site for students**, enabling hands-on learning in sustainable horticultural practices.
- **Mushroom Greenhouse:** Managed by university staff, this specialized greenhouse conserves and cultivates **over 10 varieties of edible mushrooms** and an equivalent number of **medicinal mushrooms**. Smart monitoring systems regulate light, humidity, and temperature to maintain ideal growth conditions. The project supports both scientific research and food sustainability goals, while fostering innovation in biotechnology and sustainable agriculture.
- **Innovative Potato Field Conservation:** A research-based field project where ICT-enabled soil and crop monitoring systems are used to enhance the sustainability and genetic diversity of potato cultivation.
- **Rabbits and Rats Conservation:** Located within the university's Biological Research Center, this facility is dedicated to the controlled conservation and breeding of small mammals for educational and scientific research. The unit currently maintains 26 rabbits and 32 rats, ensuring genetic diversity and ethical care in compliance with laboratory animal welfare standards. ICT-based monitoring systems regulate temperature, humidity, and light exposure, while automated feeding and health-tracking software support efficient animal care management. The facility serves as a practicum and research site for students in biology, veterinary medicine, and biotechnology, enabling hands-on training in animal behavior studies, nutrition experiments, and biomedical research.

These initiatives reflect Karshi State University's commitment to integrating ICT in conservation-related infrastructure, combining environmental stewardship, technological innovation, and practical education.



Green House (Karshi State University)



Mushroom green house (Karshi State University)



Innovative potato field conservation (Karshi State University)



Rabbits and Rats conservation for research purposes

Setting and Infrastructure through the utilization of Information and Communication Technology

Karshi State University actively integrates Information and Communication Technology (ICT) in the planning, implementation, monitoring, and evaluation of all campus setting and infrastructure programs to enhance educational quality, operational efficiency, and sustainability.

All lecture and classroom facilities are equipped with modern ICT-based tools such as telesets, smart TVs, projectors, and computers, allowing for multimedia presentations, online resources, and hybrid teaching environments. The university makes extensive use of Zoom video conferencing and other digital platforms for academic meetings, lectures, and international collaborations, ensuring global connectivity and accessibility.

To strengthen campus security and operational monitoring, Face ID cameras are installed in strategic locations across the university, providing automated attendance tracking, secure access control, and real-time surveillance.

For language and translation training, specialized rooms are equipped with voice amplifiers and digital recorders, enabling clear communication, simultaneous interpretation, and accurate performance evaluation.

Currently, the university utilizes:

- 1305 computers,
- 128 video projectors,
- 2 LED screens (6×4 m) and 7 LED screens (3×2 m),
- 44 interactive panels,
- 10 info kiosks,
- 103 smart televisions,
- 152 Wi-Fi routers,
- 4 E-MINBAR systems,
- 157 classrooms equipped with IP surveillance cameras,
- 16 computer laboratories,
- 140 computers installed in the Information Resource Centre, and
- 96 computers provided in the Student Dormitory.

All ICT systems are interconnected through the university's internal digital management network, which supports administrative planning, infrastructure monitoring, and performance evaluation. Regular assessments and updates are conducted to ensure that ICT tools remain effective, energy-efficient, and aligned with the university's sustainability and smart campus goals.

Through the integration of advanced ICT solutions, Karshi State University demonstrates its commitment to innovation, transparency, and continuous improvement in managing campus infrastructure and academic environments.

Energy and Climate Change

Energy Efficient Appliances Usage

Systematic work is being carried out at Karshi State University to ensure the efficient use of electricity. Large-scale technical modernization has been implemented in university buildings to increase energy efficiency and reduce electricity consumption. In recent years, lighting, cooling, and office equipment in all major buildings have been fully replaced with energy-efficient models. These measures are aimed at reducing the university's electricity consumption, decreasing its carbon footprint, and practically implementing the “green campus” concept.

LED lighting system: 100% of the university buildings are fully equipped with LED lamps. Old fluorescent and halogen lights have been gradually replaced. As a result, up to 100,000 kWh of electricity is saved annually.

Thermal insulation: All new educational and administrative buildings constructed in the past 4–5 years are equipped with thermal insulation. This has reduced energy consumption by 20–25% during winter and summer seasons.

Energy-efficient equipment: All electrical appliances and laboratory instruments purchased by the university belong to the A+ or A++ energy efficiency class. Energy efficiency is the main criterion in the selection of computers, printers, servers, refrigerators, and air conditioning systems.

The number of renewable energy sources (solar panels) has reached **2790 units**. The campus hosts a “**Laboratory for the Use of Alternative Energy Sources**”, where the **daily amount of energy produced, energy consumed, and energy saved** are continuously monitored using **modern tracking technologies**.

As a result, annual electricity consumption has decreased by 15–18%. More than 90% of campus buildings are equipped with energy-saving technologies. Thanks to LED systems and energy-efficient equipment, CO₂ emissions are being significantly reduced each year.

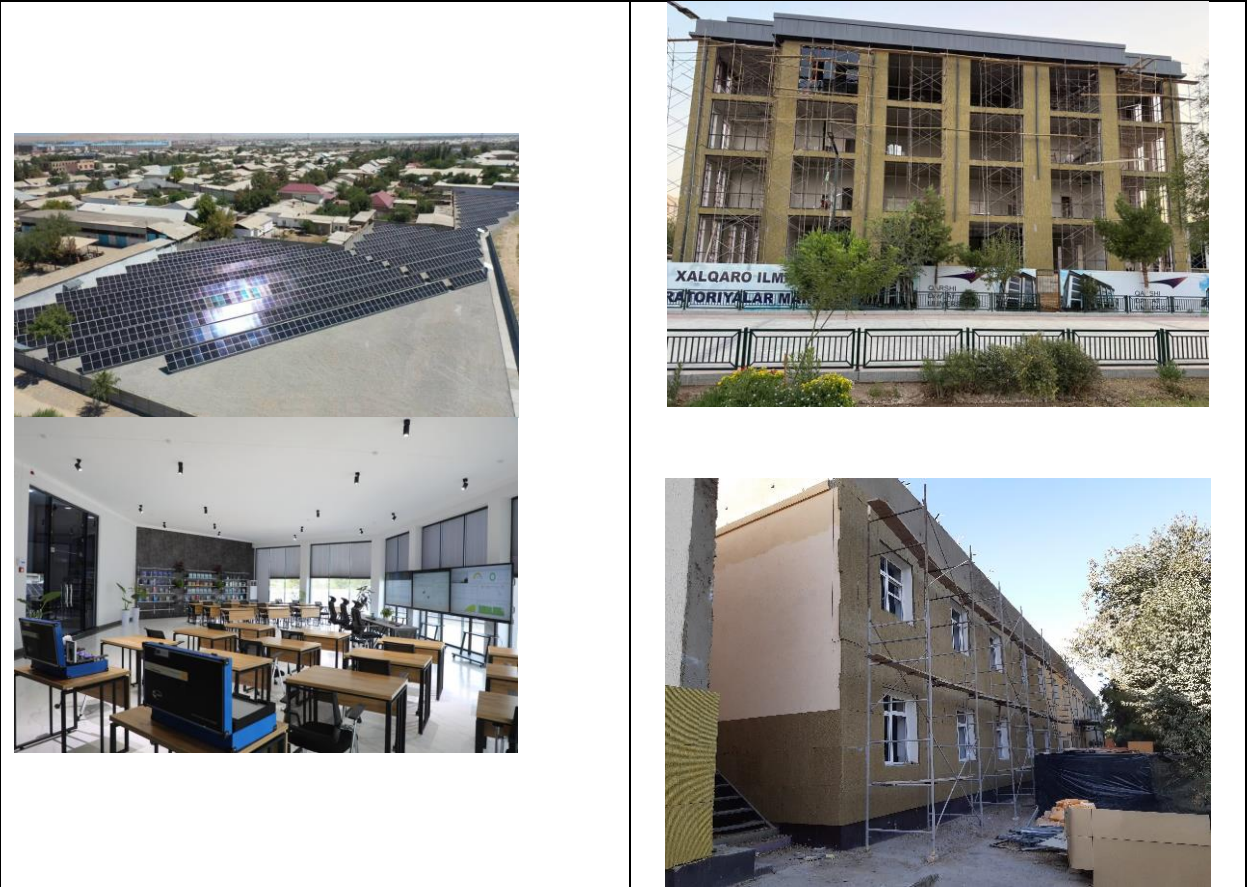
Appliance	Total Number	Total Number of Energy-Efficient Appliances	Percentage (%)
LED Lamp	11 445	11 445	100%
Computer	1 305	1 000	77%
Air Conditioner	383	268	70%

Refrigerator / Freezer	65	45	69%
Laboratory Equipment	220	160	73%
Average Percentage	—	—	78.6%

$$\text{Average Percentage} = \frac{100 + 77 + 70 + 69 + 77}{5} \% = 78,6\%$$



Example of Energy Efficient Appliances Usage: Use of LED lighting and lamps with light detection (Karshi State University)



		
Example of Energy Efficient Appliances Usage: Solar absorption system and thermal insulated buildings (Karshi State University)		

Smart Building Implementation

No.	Name	Place	automation		safety				energy		water		Indoor environment				lighting				Building Area (m ²)
			B1	B2	S1	S2	S3	S4	E1	E2	A1	A2	I1	I2	I3	I4	L1	L2	L3	L4	
	Karshi State University; Rectorate	Karshi, Kashkadarya				x	x	x		x				x		x			x		11251
	Karshi State University; Foreign languages faculty	Karshi, Kashkadarya				x	x	x		x				x		x			x		59508
	Total																				70759

Total Building Area: 116898 m²

$$\frac{70759m^2}{116898m^2} \times 100\% = 60\%$$

Electricity Usage per Year (in Kilowatt hour)

In recent years, the electricity consumption of Karshi State University has been steadily optimized. The university meets its energy needs through both electricity purchased from the regional grid and solar energy generated on its own premises. Electricity usage at Karshi State University is monitored monthly through a dedicated energy control system.

Between the beginning of 2024 and September 2025, the university recorded the following energy consumption data:

Indicator	2024 (kWh)	2025 (kWh)	Description
Electricity generated by solar panels	1611420	1441378	Generated through 17 buildings and a small 510 kW solar power station located on campus
Electricity used for internal needs	927542	765306	Portion of the solar-generated energy directed for internal consumption

Indicator	2024 (kWh)	2025 (kWh)	Description
Electricity purchased from the grid	1531042	1009849	Amount of electricity obtained from regional power networks
Electricity sold to the grid	683878	676072	Surplus energy generated by solar panels and exported to the grid
Total electricity consumed	2458583	1775155	Sum of electricity obtained from the grid and self-generated sources

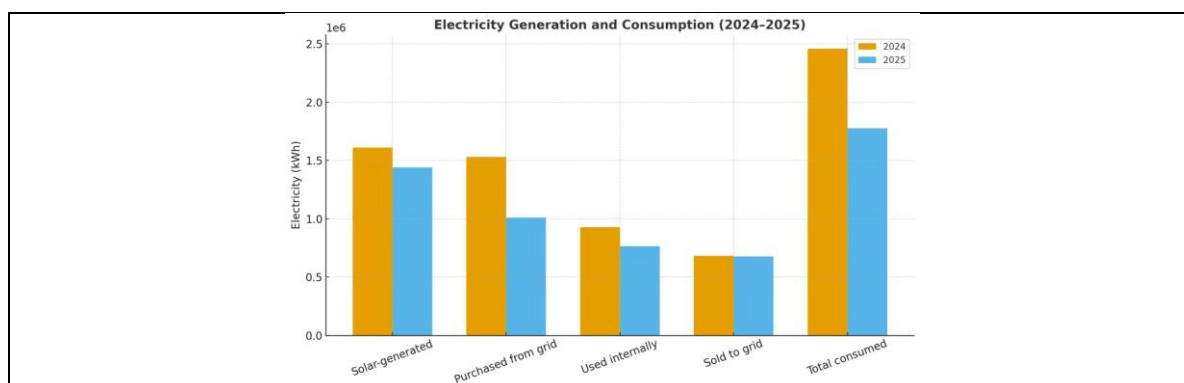
Total electricity consumption during the last 12 months: **3375993 kWh**. As of 2025, the total electricity consumption of Karshi State University amounted to **1775155 kWh**, which represents a **27.8% decrease** compared to **2458583 kWh** in 2024. This reduction is explained by several key factors:

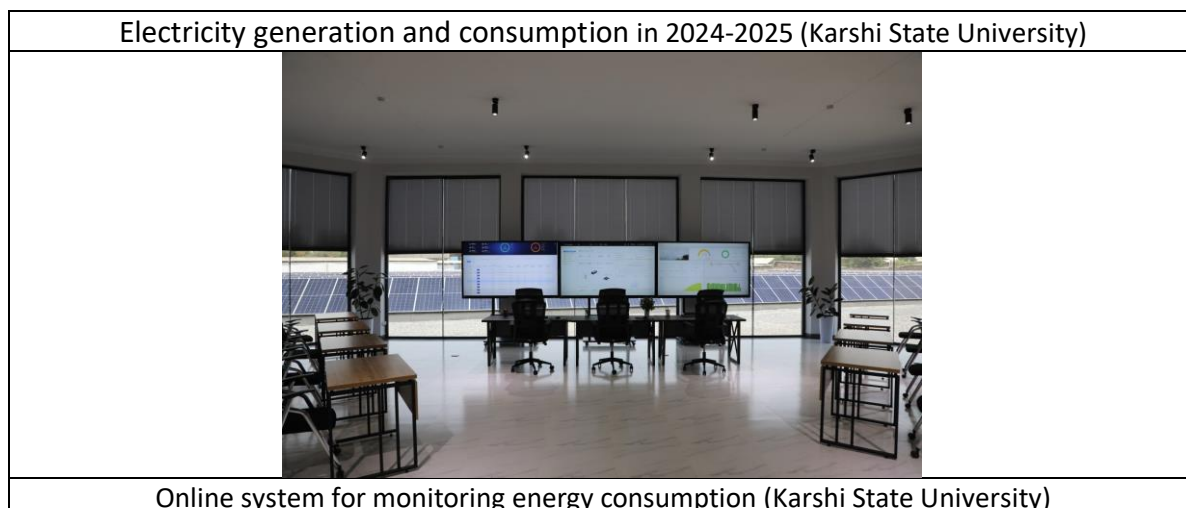
- Implementation of **LED lighting systems** and **thermal insulation** in new academic buildings;
- Use of **A+ energy efficiency class** equipment in some laboratories and offices;
- Launch of a **real-time online energy monitoring system** for continuous supervision.

Electricity at the university is primarily used for the following purposes:

- Lighting of academic buildings and laboratories;
- Powering air conditioning and heating systems;
- Operation of computers, servers, and IT infrastructure;
- Household equipment in dormitories, cafeterias, and administrative offices.

As of 2025, Karshi State University covers a significant portion of its total electricity consumption through **solar energy generated by its own panels**. This, on the one hand, has reduced dependence on the regional electricity grid, and on the other hand, has **enhanced the university's overall energy efficiency**.





Renewable energy production

Year	Renewable Energy	Production (in kWh)
2024/2025	Solar panel	1832706
	Total	1832706

$$1835706 / 3375993 \text{ (Electricity usage)} = 54.3 \%$$

The share of clean energy generated by solar panels in the total electricity consumption is as follows:

$$\text{Percentage (share)} = \frac{\text{(Electricity generated)}}{\text{(Total electricity consumption)}} \cdot 100 = \frac{1832706 \text{ kWh}}{3375993 \text{ kWh}} \cdot 100 = 54.3\%$$



Greenhouse gas emission reduction program

Located in the Kashkadarya region, Karshi State University is implementing a comprehensive greenhouse gas (GHG) reduction program based on a sustainable transport system, energy efficiency, and renewable energy sources across its campus.

Within the framework of this program, the following initiatives have been carried out:

- On April 3, 2025, the University Council officially established the “Sustainability Committee”, which coordinates the “Green Campus” activities and promotes environmental awareness.
- A 544-meter-long pedestrian and bicycle path connecting the university’s two main gates has been created and renovated. In addition, safe and comfortable conditions for walking and cycling have been fully established throughout the campus.
- Motor vehicle entry to the campus area has been completely prohibited (except for emergency situations). The university’s parking area of approximately 1200 m² has been entirely closed. Previously, vehicle movements and idling in this area generated about 1.2 tons of CO₂ emissions per year, equivalent to the annual CO₂ absorption capacity of about 50 mature trees. Closing the parking area has therefore contributed to the reduction of that amount of CO₂ emissions.
- All university buildings have been equipped with energy-efficient LED lighting systems. Moreover, 90% of the buildings are insulated, which helps reduce the energy required for heating and cooling.
- All newly purchased electrical appliances and laboratory equipment are now energy-efficient models, in accordance with the university’s “Green Procurement Policy.”
- Solar panels have been installed on 17 university buildings, and a small solar power plant with a capacity of 510 kW has been built on campus. The total capacity of all solar systems amounts to 1545 kW, generating clean electricity and reducing dependence on the power grid.
- 177328 m² (55.6%) of the campus area is covered with greenery, while 38472 m² (12%) consists of permeable surfaces that absorb water and improve natural drainage. These areas help regulate air temperature, reduce heat accumulation, and naturally support CO₂ absorption.

These measures make a significant contribution to reducing the university’s overall carbon footprint and fostering an ecological and sustainable culture. These initiatives form part of the university’s long-term strategy to achieve carbon neutrality by 2030.

	
1. Pedestrian and bicycle path (Karshi State University)	2. Renewable energy (Karshi State University)
	
3. Greenery and permeable surfaces (Karshi State University)	

Total Carbon Footprint

Over the past 12 months (from October 2024 to September 2025), Karshi State University calculated its total energy consumption and the amount of clean energy produced to determine its greenhouse gas (CO₂) emissions. The calculations were based on electricity consumption, renewable energy (solar panels), and the use of natural gas (for all university needs).

1. Electricity Consumption Data:

Emission factor for electricity: 0.4 kg CO₂/kWh.

(This coefficient of 0.4 kg CO₂/kWh is based on Uzbekistan’s national energy system, as the country’s electricity is mainly produced from natural gas.)

Calculations:

Electricity purchased from the grid (12 months): 1543287 kWh

$$\text{CO}_2 \text{ (electricity)} = \frac{1,543,287 \text{ kWh}}{1000} \times 0.4 = 617.31 \text{ tons of CO}_2$$

The electricity generated by the university’s solar panels has zero emissions, and any surplus energy is exported to the grid. The CO₂ offset includes both the solar energy fed into the grid and that used directly on campus, as both replace electricity that would otherwise be drawn from the grid.

Solar electricity generated (12 months): 1832706 kWh

$$\text{CO}_2 \text{ (offset)} = \frac{1,832,706 \text{ kWh}}{1000} \times 0.4 = 733.1 \text{ tons of CO}_2$$

2. Natural Gas Consumption Data:

Natural gas consumption covers all campus use, including heating systems, kitchens, and student dormitories.

Emission factor for natural gas: 1.9 kg CO₂/m³

Calculations:

Natural gas consumption (12 months): 581173 m³

$$\text{CO}_2 \text{ (gas)} = \frac{601,000 \text{ m}^3}{1000} \times 1.9 = 1141.9 \text{ tons of CO}_2$$

3. Summary Table (Gross, Offset, Net Results):

Indicator	Amount (tons of CO ₂)	Explanation
Gross (electricity from the grid)	617.31	Emissions from electricity consumed from the grid
Offset (solar panels)	−733.08	Emission reductions due to clean energy generation from solar panels
Emissions from natural gas	1141.9	CO ₂ emissions resulting from natural gas use
Net (final)	1759.21	University’s net (final) carbon footprint

The net carbon footprint of Karshi State University for the past 12 months is approximately 1759.21 tons of CO₂ equivalent.

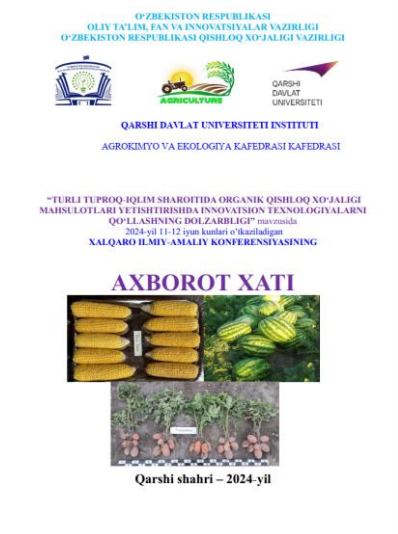
Number of innovative program(s) in energy and climate change

A self-operating automatic cleaning mechanism is being developed to continuously remove dust, debris, and other contaminants accumulated on the surface of solar panels. This project aims to increase the efficiency of solar panels and protect them from fire hazards by creating an automated cleaning and rapid-response system that uses drones to detect and extinguish fires around solar installations.

<https://v0-solar-panel-monitoring-chi.vercel.app/>



Impactful university program(s) on climate change

No	Programs	Scope (international / regional / national / local / etc)	Total Participants	Photo
1	GEE – 2025: 1st International Conference on Green Energy and Economics	International	200 participants 20 foreign scholars	
2	The relevance of using innovative technologies in the cultivation of organic agricultural products in different soil and climate conditions	International	150 participants 10 foreign scholars	

	Current issues and prospects for studying the animal world	International	150 participants 10 foreign scholars	
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Karshi State University actively uses Information and Communication Technology (ICT) to plan, implement, monitor, and evaluate all programs related to energy efficiency and climate change. The university operates an online energy monitoring system that continuously tracks electricity generation from 2790 solar panels, overall campus energy consumption, and the amount of energy exported to the national grid.

This digital system provides real-time data on energy use and supports informed decision-making for improving energy efficiency and reducing carbon emissions.

ICT tools are also applied during the planning and implementation stages of projects, such as:

- Designing energy-efficient lighting systems (LED installations);
- Tracking energy-saving measures through internal electronic reports;
- Managing building retrofits with energy-saving materials and A+ class devices.

All collected digital data (daily, monthly, and annual) are stored and analysed through spreadsheets and online dashboards.

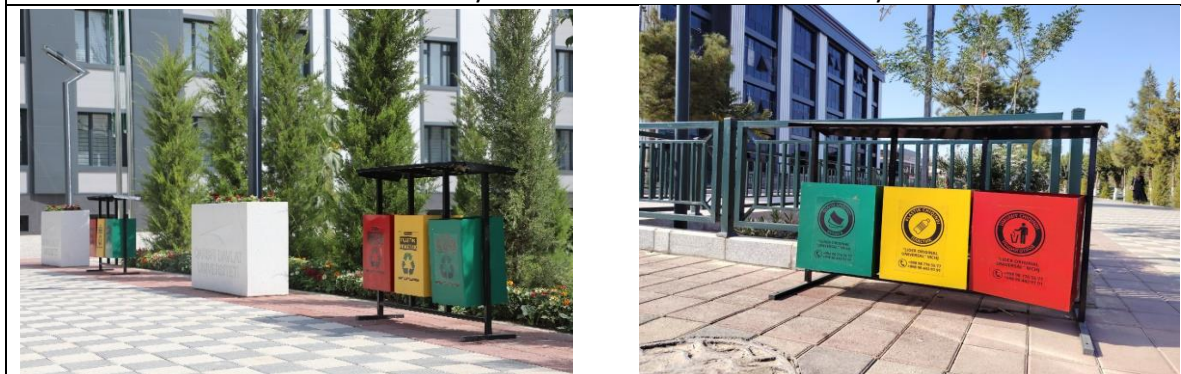
Waste

3R (Reduce, Reuse and Recycle) Program for University Waste

In recent years, Karshi State University has gradually implemented the “3R: Reduce, Reuse, Recycle” program within the framework of the “Green Campus” concept. Through this program, a system of waste reduction, reuse and recycling has been established on the campus. Separate waste containers have been installed in front of each faculty building (included in this file), which are separately allocated for plastic, paper, and organic waste. During the “Eco Week,” in cooperation with Kashkadarya Regional Ecology Department, events and fests, trainings and agitation campaigns are held among students and university staff on the correct separation of waste. In addition, the university has established permanent cooperation with Eco Trans to transfer waste to recycling enterprises.



Advocacy Posters at Karshi State University



Bins for separate waste collection recycling



Environmental events, including sustainability study seminars and trash collection and sorting events inside and outside the university campus held by the “Yosh Ekopatrul” volunteers

Total volume of paper and plastic produced

Type of waste	amount (ton)		
	Produced		reduced
	Last year	This Year	
Plastic	45.3	29.2	16.1
Paper	73.3	47.4	25.9

In 2025, Karshi State University (KSU) produced a total of 76.6 tons of paper and plastic waste, including 47.4 tons of paper and 29.2 tons of plastic. This marks a reduction compared to the previous year, demonstrating the university’s ongoing improvements in waste management.

KSU ensures waste segregation at the source by providing separate bins for paper, plastic, and other waste across all academic and administrative buildings. The collected materials are then transferred to the central waste collection area, where they are weighed, documented, and sent for recycling.

The university collaborates with Eco Trans, a licensed centralized waste collection organization in Uzbekistan, to ensure the proper recycling and disposal of paper and plastic waste. Karshi State University’s efforts to reduce paper consumption include digitalization of administrative processes, electronic communication, and encouraging double-sided printing.

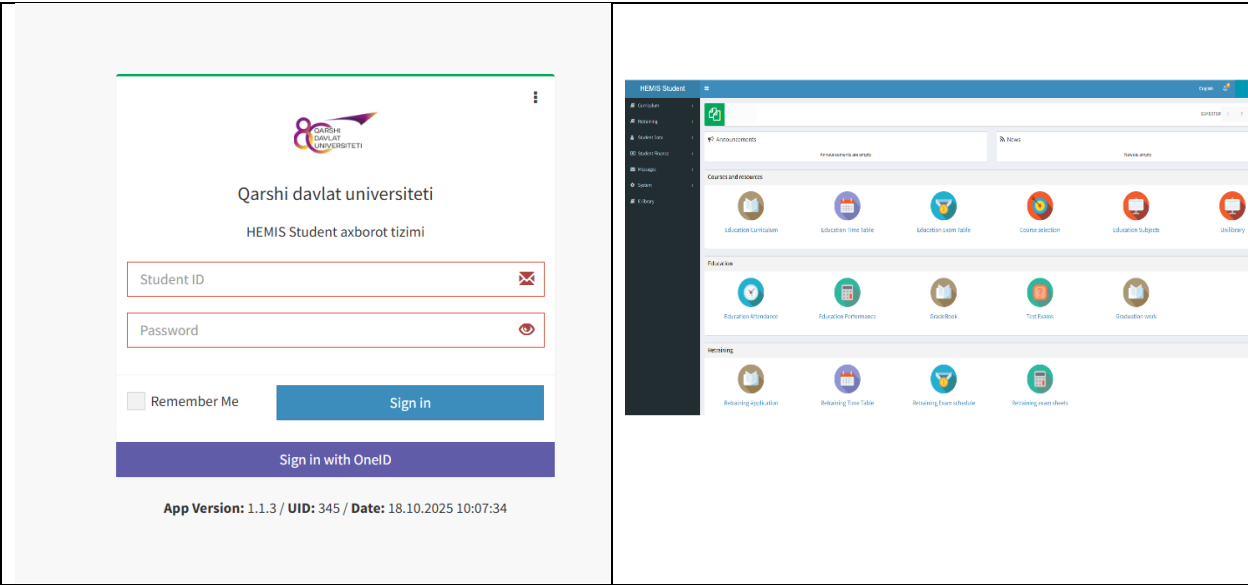
Additionally, the university’s volunteer group “Yosh Ekopatrul”, consisting of environmentally active students, regularly participates in clean-up campaigns both on campus and throughout Karshi city. This initiative fosters environmental awareness and strengthens youth responsibility for protecting the environment.

Program to Reduce the Use of Paper and Plastic on Campus

In recent years, the university has significantly reduced its use of paper by digitizing its administrative and educational processes. Class schedules, orders, reports, and student gradebooks are now maintained electronically in the HEMIS system. Teachers and students also use the Google Classroom and Moodle platforms. In an effort to reduce plastic use, the university’s

cafeterias have replaced single-use plastic containers with reusable ceramic or metal tableware. In student dormitories, instead of plastic water bottles, clean drinking water is provided through a filtration system.

The Program also includes events promoting environmental sustainability. Under the Plastic and Paper Reduce Program, seminars such as “Save Nature”, “Ecological Culture - Sustainable Future”, “Green Uzbekistan”, as well as the “Eco Week” festival, have been held on the university’s campus. The university hosted an international scientific and practical conference on “Environmental Education and Sustainable Development”, which was attended by more than 100 scientists and students.



HEMIS system



Reusable tableware at the two canteens at Karshi State University

Total volume organic waste produced

Type of waste	amount (ton)					
	Produced		reduced	Treated		
	Last year	This Year		reused	down-cycled	up-cycled
organic	352.7	227.6	125.1			
- food waste	317.4	209.3	108.1		18.7	
- leaf	35.3	18.3	17			18

Compared to 2024, when the total amount of organic waste was 352.7 tons, Karshi State University (KSU) reduced it to 227.6 tons in 2025, achieving a reduction of 125.1 tons. This significant decrease highlights the university's progress in sustainable waste management and environmental responsibility.

Organic waste at KSU mainly includes food waste (209.3 tons) generated from campus cafeterias and dormitories, and leaf waste (18.3 tons) collected from green areas. The university operates a segregated collection and treatment system, ensuring that organic materials are properly sorted, processed, and reused.

Organic waste is handled in cooperation with Eco Trans, a licensed centralized waste collection organization in Uzbekistan, ensuring that disposal and recycling meet environmental standards. In addition, KSU's volunteer student group "Yosh Ekopatrul" actively participates in campus and city clean-up initiatives and supports composting activities, helping raise ecological awareness and encouraging sustainable habits among students.

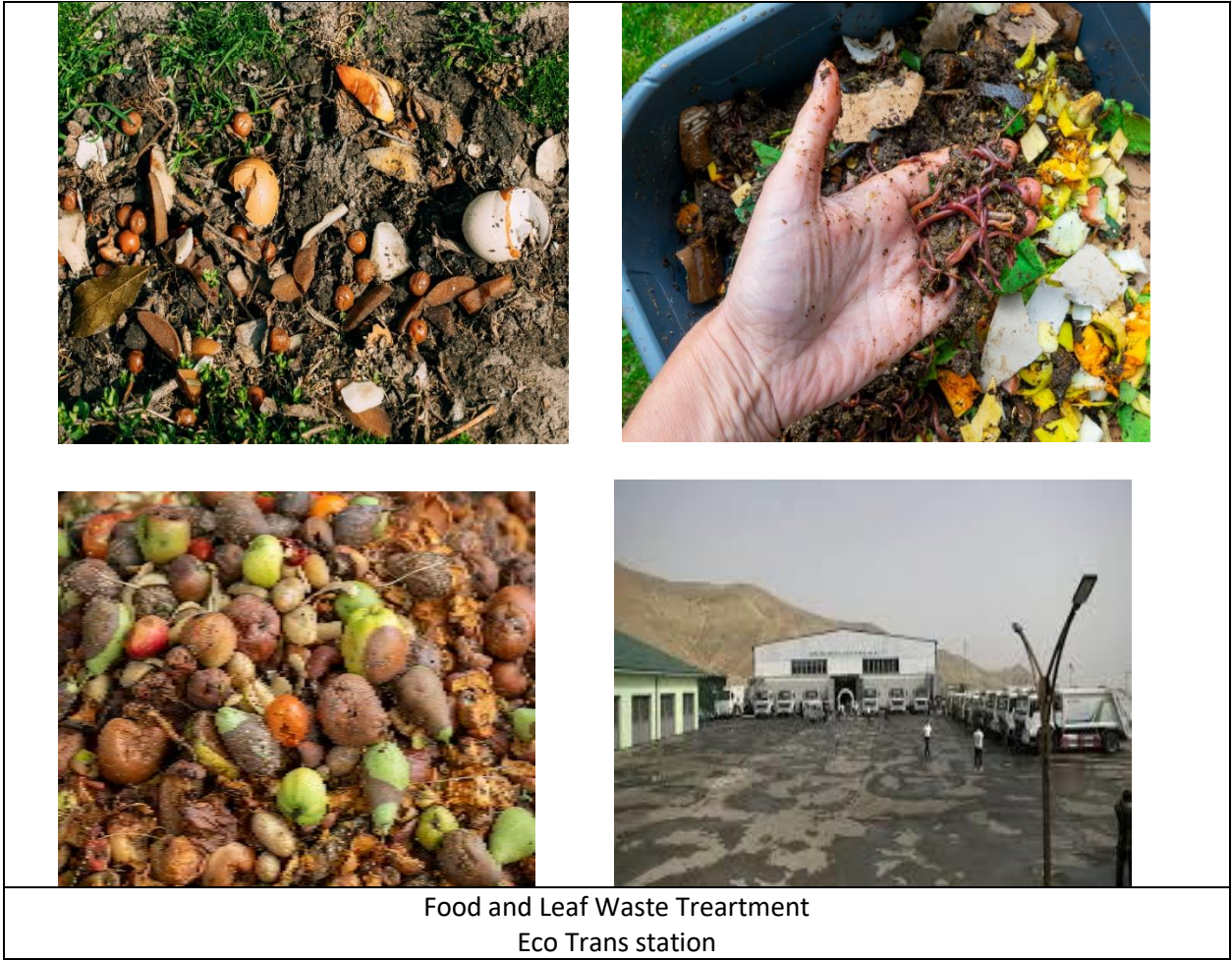
Organic Waste Treatment

The main sources of organic waste at KSU are cafeterias and dormitories (209.3 tons of food waste) and green zones (18.3 tons of leaf waste). The university ensures a proper reuse cycle for organic waste, including its separated collection, appropriate storage, processing, and reuse.

18.7 tons of food waste underwent a down-cycle and were reused as animal feed. The recycling process included granulation, reducing landfill disposal, and promoting circular resource use.

18 tons of leaf waste were up-cycled into nutrient-rich biomass fertilizer by adding California red worms, which is then used to improve soil quality in the university's green areas.

The remaining waste is handled in cooperation with Eco Trans, a licensed centralized waste collection organization in Uzbekistan.



Food and Leaf Waste Treatment
Eco Trans station

Total volume inorganic waste produced

Type of waste	amount (ton)					
	Produced		reduced	Treated		
	Last year	This Year		reused	down-cycled	up-cycled
inorganic non-toxic	381	245.7	135.3			
Construction materials like metals	262.4	169.1	93.3			52.7
Paper	73.3	47.4	25.9			
Plastic	45.3	29.2	16.1			

Compared to 2024, when the total amount of inorganic non-toxic waste was 381 tons, Karshi State University (KSU) successfully reduced it to 245.7 tons in 2025, achieving a reduction of 135.3 tons. This reduction reflects the university’s effective strategies for reusing and recycling construction and packaging materials.

The majority of inorganic waste at KSU consists of construction materials such as metals (169.1 tons), paper (47.4 tons), and plastic (29.2 tons). The university maintains a segregated collection system to ensure that recyclable and reusable materials are properly sorted before being sent for treatment.

Of the total amount, 52.7 tons of construction materials were up-cycled, primarily through the reuse of metal and building materials in campus repair and maintenance projects. Paper and plastic waste are also collected separately and transferred to Eco Trans, a licensed centralized waste collection organization in Uzbekistan, for proper recycling and disposal.

All activities related to inorganic waste management are coordinated by the Department of Maintenance and Environmental Management, which monitors waste collection, reduction, and recycling processes.

In addition, the student environmental team “Yosh Ekopatrul” supports campus-wide awareness campaigns promoting reuse, recycling, and responsible waste management practices.

Inorganic Waste Treatment

Karshi State University has been undergoing significant reconstruction works during the last three years. New buildings, such as the Foreign Languages Faculty study building and the International Scientific Laboratories Center, have been constructed at the main campus in recent years. Therefore, the majority of inorganic waste at KSU is construction materials. Its amount is

- metals (169.1 tons),
- paper (47.4 tons),
- and plastic (29.2 tons).

KSU performs segregated collection to ensure that recyclable and reusable materials are properly sorted before being sent for treatment. 52.7 tons of construction materials were up-cycled, primarily through the reuse of metal and building materials in campus repair and maintenance projects. It should be noted that all activities related to inorganic waste management are coordinated by the Department of Maintenance and Environmental Management, which monitors waste collection, reduction, and recycling processes.



Total volume toxic waste produced

Type of waste	amount (ton)					
	Produced		reduced	Treated		
	Last year	This Year		reused	down-cycled	up-cycled
toxic	1.7	1.1	0.6			

In 2025, Karshi State University (KSU) produced a total of 1.1 tons of toxic waste, compared to 1.7 tons in 2024, achieving a reduction of 0.6 tons. This decrease demonstrates the university’s strengthened control measures and responsible handling of hazardous materials.

Toxic waste at KSU primarily originates from laboratory activities, medical training units, and maintenance facilities. The university enforces strict segregation, labeling, and temporary storage procedures to ensure that hazardous waste is safely managed and does not contaminate the environment.

All toxic waste is collected and treated in cooperation with Eco Trans, a licensed centralized waste collection and disposal organization in Uzbekistan, which ensures that hazardous materials are processed in compliance with national environmental and safety regulations.

The Department of Maintenance and Environmental Management oversees all aspects of toxic waste management, including safe collection, internal transport, and external disposal. Regular inspections and staff training sessions are conducted to maintain proper handling and reduce the overall generation of hazardous waste.

Sewage Disposal

At Karshi State University (KSU), sewage disposal is managed in close cooperation with the “Qashqadaryo viloyat suv oqova” organization, which oversees wastewater collection and treatment across the region. All university buildings are fully connected to the regional main sewer system, ensuring that wastewater generated on campus is properly channeled and treated according to environmental and public health standards.

Each year, approximately 60000 cubic meters of wastewater are discharged from the university into the regional sewer network. The sewage system includes underground pipelines that are regularly maintained to prevent leakage, contamination, or blockages.

KSU’s commitment to responsible sewage management ensures compliance with national sanitary and environmental regulations.



Waste Management through the utilization of Information and Communication Technology

At Karshi State University (KSU), waste management activities are planned, monitored, and evaluated using Information and Communication Technology (ICT) tools. The university uses digital records and data analysis systems to assess waste generation and plan reduction strategies based on the 3R (Reduce, Reuse, Recycle) concept. Waste collection and recycling data from various categories are tracked and reported through internal digital platforms. Cooperation with Eco Trans, a licensed waste collection organization, includes digital monitoring of disposal processes. The ICT Department and the Department of Maintenance and Environmental Management jointly analyse data and prepare annual reports to evaluate progress and improve sustainability performance.



Water

Water Conservation Program Implementation

Karshi State University (KSU) has implemented an extensive Water Conservation Program to ensure the efficient and sustainable use of water resources across its campus. The university operates a total of 23 water reservoirs, including 7 with a capacity of 1000 m³ and 16 with capacities ranging from 300 to 600 m³.

KSU utilizes water from 15 artesian wells, where the groundwater is purified using the modern “ASMOS” water treatment technology. This process converts artesian water into safe drinking water, which is then stored in reservoirs and distributed throughout university facilities.

For the irrigation of green areas, the university uses non-drinking technical water to reduce the consumption of potable water. Additionally, rainwater collected through roof drainage systems is reused for watering green spaces, further supporting the university’s sustainable water management strategy.

KSU also conducts regular maintenance and monitoring to prevent leakage and ensure efficient water use. Awareness campaigns are organized among students and staff to promote a culture of water conservation.



Water tank (Karshi State University)



In Ground Water Tank (Karshi State University)

Water Recycling Program Implementation

Karshi State University has implemented a comprehensive water recycling and purification system across its campuses to ensure sustainable water consumption. The university operates 15 artesian wells that provide water to all the campuses, including academic buildings, dormitories, laboratories, and administrative facilities.

In 2023, a new “Asmos” Water Recycling and Purification Station was installed within the university campus territory. This advanced system purifies artesian water, making it suitable for both drinking and domestic use (toilets, cleaning, and general campus supply). The Asmos technology includes multi-stage filtration, ensuring compliance with sanitary and environmental safety standards.

The station recycles and processes 300 m³ of water per hour, supplying purified water for drinking purposes while simultaneously reusing treated water for non-potable needs such as sanitation and irrigation. This has significantly reduced the university’s dependence on external water sources and it promotes circular water use within the campus.

The Asmos program reflects the university’s strong commitment to SDG 6 (Clean Water and Sanitation) and its integration into sustainable campus infrastructure.



Water Efficient Appliances Usage

Karshi State University (KSU) actively implements various water efficiency measures across its campus to minimize water consumption and promote sustainable resource management.

For irrigation, the university uses modern sprinkler systems and drip irrigation technologies in green areas. These systems ensure that water is applied directly to plant roots or evenly distributed

across lawns, which significantly reduces water wastage and enhances efficiency, especially during the dry season.

Within university buildings, water-saving devices are installed in restrooms and washrooms. These include low-flow taps, dual-flush toilets that help reduce unnecessary water flow. Regular monitoring and maintenance of these appliances further ensure optimal performance and minimal leakage.

	
Example of Water Efficient Appliances Usage (Karshi State University)	
	
Example of Water Efficient Appliances Usage (Karshi State University)	

Consumption of treated water

Karshi State University ensures the extensive consumption of treated and purified water across all its campuses as part of its Water Conservation and Recycling Programs. The university’s ASMOS Water Recycling and Purification System, installed in 2023, serves as the main source of treated potable and non-potable water.

Water from the 15 artesian wells is purified through multi-stage filtration using ASMOS technology. The purified water is supplied to academic buildings, laboratories, administrative offices, dormitories, and campus cafeterias, ensuring that students and staff consume safe, high-quality drinking water every day.

In addition to drinking purposes, the treated water is also distributed for domestic use, including restrooms, cleaning systems, and campus facilities. The total processing capacity of the ASMOS station is 300 m³ per hour, covering the university’s internal water needs.

Furthermore, KSU uses non-drinking treated water for irrigation of green areas and technical maintenance, reducing dependence on fresh water and external suppliers. Twenty-three water

reservoirs with capacities ranging from 300 to 1000 m³ ensure stable storage and distribution throughout the year.

This integrated approach demonstrates KSU’s strong commitment to sustainable water management, aligning with SDG 6 (Clean Water and Sanitation).

	
Water purification and recycling station	Water tank
	
Automatic watering of green zones	

Water pollution control in campus area

Karshi State University (KSU) ensures strict control over water quality and pollution prevention across its campus. Although the university does not have any natural water bodies such as lakes or rivers, it operates a comprehensive closed water management system consisting of 23 reservoirs. All reservoirs are top-closed, which prevents contamination from external sources such as dust, debris, or rainwater runoff.

The university’s main water supply comes from 15 artesian wells, where water is purified using the advanced “ASMOS” technology. This system converts groundwater into clean, drinkable water while meeting sanitary and ecological standards. The entire ASMOS purification process and water storage system are monitored and maintained by four qualified specialists, who regularly test and control water quality to prevent any form of pollution or bacterial contamination.

In addition, wastewater from campus facilities is safely channeled through the municipal sewage system, ensuring no direct discharge into the environment. Regular inspections, maintenance, and technical monitoring guarantee the continuous quality and safety of water distributed across campus.

Water Management through the utilization of Information and Communication Technology

Karshi State University applies Information and Communication Technology (ICT) to manage, monitor, and evaluate all stages of its water management system. The processes of extracting water from artesian wells, purification, quality control, and tracking water supply and consumption are automated and digitally supervised by the ASMOS Water Purification and Recycling Station Laboratory, located on the university campus.

All 15 artesian wells and 23 water reservoirs are equipped with digital sensors that transmit real-time data on water levels, pressure, and pump performance to the ASMOS control system. The water quality parameters are automatically tested, recorded, and stored in a centralized digital database.

Across the campus, smart water meters are installed in academic buildings, dormitories, laboratories, and administrative offices. These meters automatically collect and transmit data on water consumption to the ASMOS system, where the information is analyzed to detect irregularities, identify leaks, and improve efficiency.

The integration of ICT tools enables the university to optimize water usage, prevent waste, and ensure the efficient operation of the ASMOS system, which processes up to 300 m³ of water per hour.



Smart water meters



ASMOS Water Purification and Recycling Station

Transportation

The total number of vehicles

No.	Vehicle	Total Number
1	Car managed by the university	4
2	Cars entering the university	16
3	Motorcycles entering the university	7
	Total	25

$$5.4 = 25 / 24219 (\text{population}) = 0.001$$

Karshi State University covers a total campus area of 319107 m², where private cars and motorcycles are not allowed to enter or operate within the territory. Only university-owned and managed vehicles are permitted for official and operational purposes. Currently, the university operates 4 cars and 7 electric motorcycles that are used by administrative and technical units for daily activities.

The campus promotes sustainable and eco-friendly mobility by limiting motorized transport and encouraging the use of bicycles, which can freely cross through the university territory. No private or commercial shuttle services operate on campus, maintaining a clean, safe, and low-emission environment consistent with the university's sustainability policy.

Shuttle Services

Karshi State University provides sustainable and efficient shuttle services to support both internal campus mobility and long-distance university activities.

The university operates a 36-seat bus, primarily used for the university football team's travel to games, as well as for student academic and cultural trips to long-distance destinations. Within the campus territory, which covers 319107 m², the university operates two 10-seat electric golf shuttles for daily internal transportation. These shuttles are used by staff, visitors, and students to move between administrative buildings, faculties, and service areas.

Private vehicles are not allowed to circulate within the campus; therefore, these shuttle services provide an essential, eco-friendly mobility solution, contributing to reduced emissions, improved accessibility, and a sustainable transportation environment in line with the university's green policy.



Example of Shuttle Services (Karshi State University)



Example of Shuttle Services (Karshi State University)

Zero Emission Vehicles (ZEV) availability on campus

Karshi State University promotes sustainable, low-emission transportation within its 319107 m² campus by fully prohibiting the entry of private diesel and gasoline vehicles. Only university-owned and electric-powered vehicles are allowed for operational and administrative purposes.

The university currently operates 7 electric motorcycles used by technical units for daily maintenance and service tasks, and two 10-seat electric golf shuttles that provide internal mobility for staff, visitors, and students between main administrative and academic buildings.

Bicycles are also widely used by students and staff as the main zero-emission mode of individual transport. Dedicated bicycle paths connect the key campus facilities, supporting KSU's zero-emission and pedestrian-friendly mobility policy.

Additionally, the university plans to expand its electric transport infrastructure by introducing a smart e-scooter sharing system through a partnership with a local technology company. The project, currently in the planning stage (2025), will provide 20 electric scooters for students and staff via a mobile app-based rental system.

These combined initiatives significantly reduce CO₂ emissions, promote sustainable mobility, and strengthen the university's environmental commitment to a green and pollution-free campus.



Ratio of Parking Area to Total Campus Area

Total main campus area: 319107 m²

Total parking area = 5180m²

Ratio = 1.62

Karshi State University's main campus occupies a total area of 319107 m², and the designated parking area covers 5000 m², resulting in a parking area ratio of approximately 1.62% of the total campus area. Also, there is a small 180 m² parking area within the campus for administrative staff, while maintaining the sustainable and pedestrian-friendly emphasis.

The campus territory is fully enclosed by walls, and no parking spaces are provided inside the campus grounds to maintain a pedestrian-friendly and environmentally sustainable environment. Instead, a parking area is located near the main entrance, where staff, students, and visitors can park their vehicles on a daily basis.

This parking policy supports the university's commitment to reducing traffic congestion, minimizing carbon emissions, and promoting eco-friendly mobility practices within the campus.



Example of Ratio of Parking Area to Total Campus Area (Karshi State University)

Program to limit or decrease the parking area on campus

In line with Karshi State University's commitment to environmental sustainability and carbon reduction, the university has completely prohibited motor vehicle entry into the campus area, except for emergency situations. As part of this policy, the previously existing parking area of approximately 1200 m² within the campus territory has been entirely closed.

Prior to this change, vehicle movements and idling in the parking area generated an estimated 1.2 tons of CO₂ emissions per year, which is equivalent to the annual CO₂ absorption capacity of around 50 mature trees. The elimination of this parking space has therefore contributed significantly to reducing the university's carbon footprint and improving air quality within the campus.

This initiative also supports the university's broader strategy to promote pedestrian and bicycle-friendly mobility, enhance green campus spaces, and minimize noise and air pollution, creating a more sustainable and healthy learning environment.



Eliminating car parking zone within the campus (Karshi State University)

Number of Transportation Initiatives to Decrease Private Vehicles on Campus

Karshi State University has implemented several sustainable transportation initiatives aimed at reducing the use of private motor vehicles and promoting environmentally friendly mobility within its 319107 m² campus area.

Motor vehicle entry into the campus is completely prohibited, except for emergency vehicles, and the internal parking areas have been closed. To provide sustainable alternatives, the university has developed a designated bicycle path that allows safe and convenient cycling across the campus. Bicycles are the primary mode of individual transportation within the campus, supporting the university's commitment to a zero-emission transport environment.

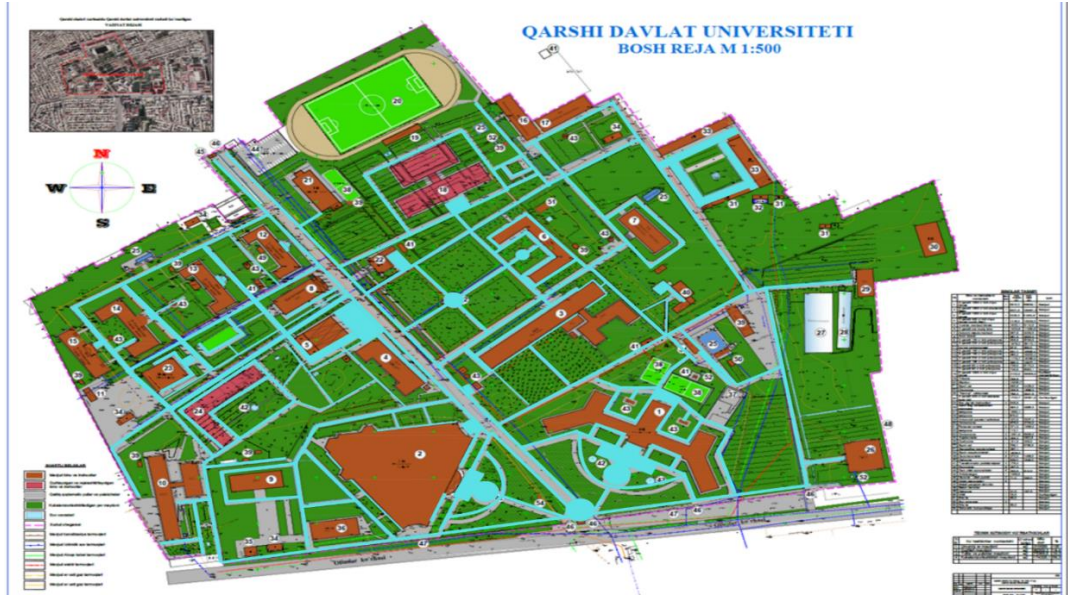
In addition, the university operates two 10-seat electric golf shuttles for daily staff and visitor transport and 7 electric motorcycles for technical operations. These measures have significantly

reduced CO₂ emissions, minimized noise pollution, and enhanced the overall sustainability of campus mobility.

	
Designated part of a roadway marked for bicycles (Karshi State University)	Designated part of a roadway marked for bicycles (Karshi State University)

Pedestrian Path Policy on Campus

Karshi State University (KSU) has adopted a comprehensive Pedestrian Path Policy to ensure safety, accessibility, and sustainability across its 319107 m² campus area. The entire campus is designed as a walkable zone, where students, staff, and visitors move primarily on foot, by bicycle, or e-scooter. Dedicated pedestrian lanes and bicycle paths connect all key facilities, including academic buildings, dormitories, laboratories, libraries, etc. The university territory is closed to private diesel and gasoline vehicles, which makes the campus territory a safe and pollution-free area for pedestrians and cyclists. Only emergency and service vehicles are granted access when necessary. The total length of sidewalks on the main KSU campus is around **8000 meters**.



Transportation through the utilization of Information and Communication Technology

Karshi State University (KSU) is integrating Information and Communication Technology (ICT) into its sustainable transportation development strategy. The university's campus, which is closed to private diesel and gasoline vehicles, promotes walking, cycling, and the use of electric mobility solutions as the main modes of transportation.

As part of its ongoing efforts to expand low-emission transport options, KSU plans to sign a partnership agreement with a local technology company to introduce a smart e-scooter sharing system on campus. Under this project, 20 electric scooters will be made available to students and staff for short-distance travel within the campus through a mobile application-based rental platform.

The project is currently in the planning phase (2025) and will be implemented in cooperation with the KSU Information Technology Center, Sustainability Committee, and the partner company upon final agreement.



Examples of e-scooters



Example

Education and Research

Number of Courses/Subjects Related to Sustainability Offered

Total number of courses with sustainability embedded for courses running: **169**

Karshi State University demonstrates a strong institutional commitment to integrating environmental awareness and sustainability principles across its academic programs. The university offers a total of 169 courses that incorporate topics related to sustainability, environmental protection, renewable energy, biotechnology, and social responsibility.

These courses span multiple faculties — including Engineering and Technology, Chemistry, Geography and Earth Sciences, Physics, Economics, Medicine and Health, and Pedagogy — ensuring that sustainability concepts are embedded in both scientific and socio-economic disciplines.

In the Engineering and Technology fields, subjects such as Alternative Energy and Nature Protection, Energy Efficient Technologies, Industrial Ecology and Safety of Life Activities, Bioengineering, Ecobiotechnology, and Heat Engineering and Hydropower provide students with practical knowledge on renewable energy systems, environmental engineering, and sustainable industrial development.

Within Chemistry and Biology, key sustainability-oriented courses such as Chemical Ecology and Environmental Protection, Biochemistry of Agricultural Products, and Agrochemical Services in Agriculture emphasize eco-friendly production, waste reduction, and the application of green chemistry principles.

The Geography and Earth Sciences department includes a wide range of environmentally focused courses like Applied Ecology, Geoecology and Landscape Ecology, Environmental Impact Assessment, Hydroecology and Geoecology, and Geoinformation Technologies in Ecology, enabling students to analyze and manage natural systems responsibly.

Courses in Economics and Management, such as Green Economy, Energy Management, and Organization and Management of Greenhouse Economy, link sustainable development with business innovation and economic planning.

In Medicine and Health Sciences, subjects such as Ecological Physiology, Fundamentals of Health Preservation, and Health and Life Safety promote understanding of the interconnection between human health and environmental well-being.

Additionally, Pedagogy and Education programs include courses like Methods of Teaching Ecological Sciences and Developmental Psychology, contributing to the preparation of educators who can promote sustainability awareness among future generations.

Through these 169 sustainability-related courses, Karshi State University aligns its academic offerings with the UN Sustainable Development Goals (SDGs) — particularly SDG 4 (Quality

Education), SDG 7 (Affordable and Clean Energy), SDG 13 (Climate Action), and SDG 15 (Life on Land) — ensuring that students gain the knowledge and skills needed to contribute effectively to sustainable development at local, national, and global levels.

Total Number of Courses/Subjects Offered

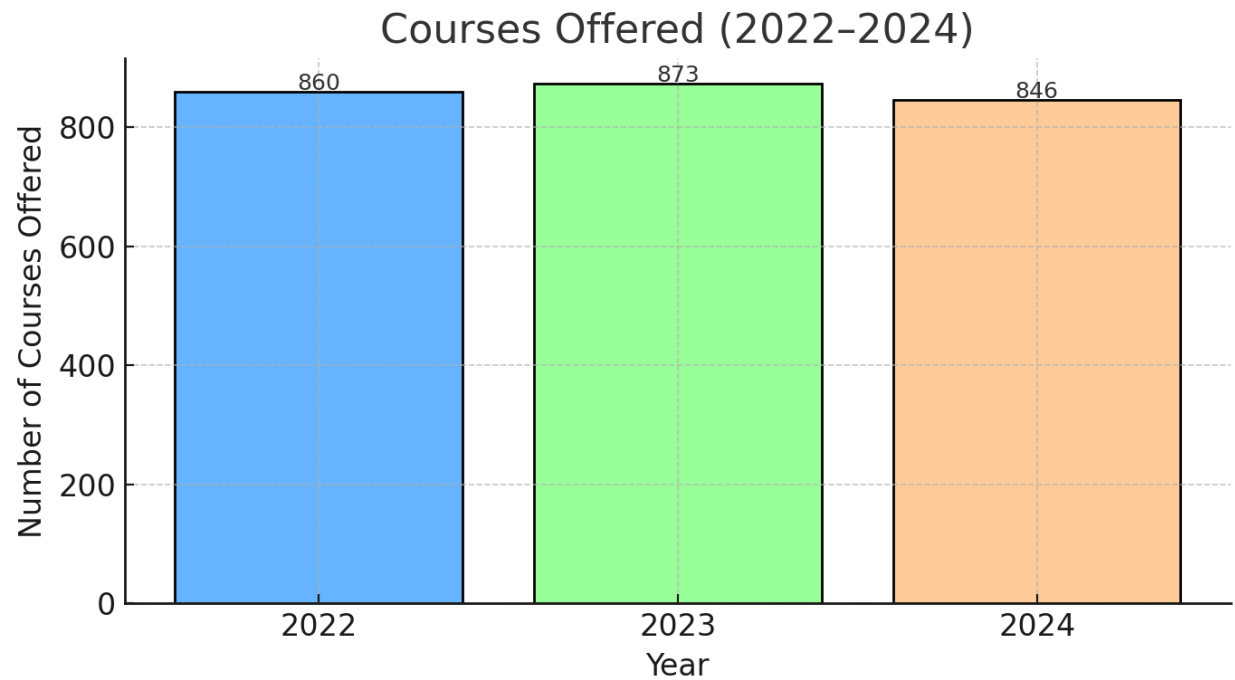
Karshi State University consistently maintains a wide and diverse academic portfolio, ensuring comprehensive educational opportunities across all faculties and disciplines.

During the last three academic years, the total number of courses and subjects offered at the university demonstrates a stable and balanced curriculum structure:

- 2022: 860 courses offered
- 2023: 873 courses offered
- 2024: 846 courses offered

The data reflect a steady level of academic activity, with a slight increase in 2023 followed by a minor adjustment in 2024 due to curriculum optimization and alignment with new educational standards. The courses span a variety of fields, including humanities, natural sciences, engineering, technology, and social sciences — supporting interdisciplinary education and integration of sustainability principles in multiple programs.

Karshi State University continues to update its curriculum to meet national higher education requirements and international academic quality benchmarks, ensuring that students receive relevant and globally competitive knowledge.



Total number of study program related to sustainability offered

No	Faculty	Study programs
1	Pedagogy	Primary Education
		Special Pedagogy: Speech Therapy (Logopedics)
		Preschool Education
		Psychology
2	Mathematics and Computer Sciences	Mathematics
		Software Engineering
		Information Systems and Technologies
		Artificial Intelligence
		Mechanics and Mathematical Modeling
3	Economics	Economics
		Finance and Financial Technologies
		Banking
		Accounting
		Marketing
4	Physics	Tourism and Hospitality
		Physics
		Electronics and Instrumentation
		Power Engineering
		Light Industry Engineering
5	Chemistry and Biology	Renewable Energy Sources
		Chemistry
		Biology
		Microbiology
		Biotechnology
6	Medicine	General Medicine
		Pediatrics
7	Geography and Agronomy	Plant Protection and Quarantine
		Geography
		Agrochemistry and Soil Science
		Ecology and Environmental Protection
		Soil Science

Total Research Funds Dedicated to Sustainability Research

Karshi State University (KSU) continues to allocate significant funding for sustainability-related research projects aimed at supporting environmental protection, energy efficiency, and sustainable food production.

Key sustainability-focused research projects conducted in recent years include:

1. “Development of a cultivation technology for edible and medicinal mushrooms distributed in the Kashkadarya region under artificial nutrient conditions.”

Project number: AJI-21111990

Project leader: Sherqulova Jamila.

Implementation period: 2023–2024

Fund amount: 981 920 000 UZS

Focus: Sustainable agriculture, food security, and biodiversity preservation.

2. “Development of nanostructured thin-film technology based on silicide metal and semiconductor compounds for use in energy-saving technologies.”

Project number: ALM-202310062527

Project leader: Normuradov Muradulla

Implementation period: 2024–2025

Fund amount: 191 200 000 UZS

Focus: Clean energy and energy efficiency technologies.

3. “Synthesis and study of nanoscale structures based on silicon and silicon oxide.”

Project number: AJI-8624042681

Project leader: Allayarova Gulmira Kholmuratovna

Implementation period: 2023-2025

Fund amount: 640 880 000 UZS

Focus: Nanotechnology applications in sustainable materials science.

These projects contribute to the achievement of the UN Sustainable Development Goals (SDG 2, SDG 7, SDG 9, SDG 12) by addressing issues of sustainable food production, renewable energy, and advanced material efficiency.

Total sustainability-related research funding (last 3 years):

2023 — 535 001 000 UZS (\$44583)

2024 — 664 370 000 UZS (\$53200)

2025 — 614 629 000 UZS (\$51219)

Average annual sustainability research funding (2023–2025):

≈ 604,666,667 UZS (\$50 385,75)



Total Research Funds (in US Dollars)

Karshi State University (KSU) annually supports both fundamental and applied research projects across various scientific fields, including mathematics, physics, chemistry, and biological sciences.

The total university research portfolio for the 2023–2025 period includes both sustainability-focused and fundamental innovation-oriented projects such as:

- “Development of a cultivation technology for edible and medicinal mushrooms distributed in the Kashkadarya region under artificial nutrient conditions” - 981 920 000 UZS
- “Development of nanostructured thin-film technology based on silicide metal and semiconductor compounds for use in energy-saving technologies” - 191 200 000 UZS
- “Synthesis and study of nanoscale structures based on silicon and silicon oxide” - 640 880 000 UZS
- “Cubic stochastic operators: dynamics and applications” — 1 287 275 800 UZS
- “Study of branching processes with Markov chains” — 1 410 730 000 UZS

Total sustainability-related research funding (last 3 years):

2023 — 1 403 660 563 UZS (\$116 972)

2024 — 1 578 764 237 UZS (\$126 301)

2025 — 1 529 581 000 UZS (\$127 465)

Average annual sustainability research funding (2023–2025):

≈ 1 504 001 933 UZS (\$125 333.5)

Number of lecturers and researchers on campus

Faculty	Lecturers and reserchers
Philology	56
Physics	33
Geography and agronomy	51
Economics	45
Chemistry and biology	78
Mathematics and computer science	69
Pedagogy	85
Arts	35
Sport	37
History	82
Medicine	109
Foreign Languages	132
TOTAL:	812

Karshi State University employs a strong and diverse team of 812 lecturers and researchers across its faculties, ensuring high-quality education, innovative research, and active engagement in sustainable development initiatives.

Academic staff at the university include professors, associate professors, senior lecturers, and researchers who are actively involved in both teaching and research activities aligned with national and international standards. Their combined expertise supports the university's mission to integrate sustainability into education, science, and innovation.

The distribution of lecturers and researchers across faculties reflects a balanced and multidisciplinary academic environment:

- Philology – 56 academic staff engaged in linguistics, communication, and cultural studies.
- Physics – 33 staff specializing in energy systems, renewable energy, and applied physics.
- Geography and Agronomy – 51 experts contributing to environmental studies, agriculture, and sustainable land management.
- Economics – 45 lecturers advancing research in green economy, sustainable finance, and business management.
- Chemistry and Biology – 78 researchers leading scientific work in biotechnology, ecology, and chemical sustainability.
- Mathematics and Computer Science – 69 academic staff focusing on data analysis, AI, and mathematical modeling for sustainable solutions.
- Pedagogy – 85 educators dedicated to sustainability education and teacher training.
- Arts – 35 faculty members promoting creative and cultural sustainability.
- Sport – 37 professionals advancing health, physical education, and sustainable well-being.
- History – 82 scholars preserving cultural heritage and studying historical aspects of sustainability.
- Medicine – 109 lecturers and researchers improving public health and sustainable medical practices.
- Foreign Languages – 132 lecturers supporting international collaboration, sustainability communication, and global competence.

In total, 812 lecturers and researchers contribute to Karshi State University's academic and scientific excellence. Many of them are involved in research projects, international collaborations, and publications focused on environmental protection, sustainable energy, and social innovation — supporting the university's strategic objectives and alignment with the UN Sustainable Development Goals (SDGs), particularly SDG 4 (Quality Education), SDG 9 (Industry, Innovation and Infrastructure), and SDG 13 (Climate Action).

Number of scholarly publications on sustainability

A total scholarly publication in Google Scholars in 2024 is 745 publications

A total scholarly publication in Scopus data base is 267 publications

Karshi State University actively promotes research and publication in sustainability-related fields, encouraging faculty members and researchers to contribute to global discussions on environmental, social, and economic sustainability. The university prioritizes interdisciplinary research that addresses current sustainability challenges in Uzbekistan and beyond.

In the academic year 2024, a total of 745 scholarly publications were indexed in Google Scholar, and 267 publications were listed in the Scopus database, reflecting the university's strong engagement in research activities.

These publications cover a wide range of sustainability-related topics, including:

- Renewable and clean energy technologies
- Environmental protection and pollution reduction
- Sustainable agriculture and water resource management
- Climate change adaptation and mitigation strategies
- Green economy and sustainable business development
- Education for sustainable development and social responsibility
- Ecological linguistics and communication of sustainability issues

Karshi State University continuously encourages academic staff to publish in high-impact journals, participate in international research networks, and apply for sustainability-focused grants. The university's growing research output supports the achievement of several UN Sustainable Development Goals (SDGs), particularly SDG 4 (Quality Education), SDG 7 (Affordable and Clean Energy), SDG 13 (Climate Action), and SDG 15 (Life on Land).

Through its active scholarly output, Karshi State University strengthens its reputation as a leading institution fostering sustainable research, innovation, and education in the region.

Total scholarly publication in one-year period/ Total lecturers and researchers in one-year period
= 1012/812
= 1.2

Number of Events Related to Sustainability

Between 2023 and 2025, Karshi State University (KSU) has actively organized and participated in numerous events and educational programs related to sustainability, environmental protection, and ecological awareness.

University students have taken part in community service initiatives such as "Clean City," "Ecological Awareness," "Green Space," and "Nature Conservation is a Human Duty."

Over this period, more than 15 environmental improvement campaigns were conducted across different districts of Karshi and the Kashkadarya region. The Departments of Geography and Agronomy, Chemistry and Biology, and Ecology have led waste collection drives, environmental seminars, and large-scale tree-planting actions as part of the “Green Space” national project.

In addition, KSU launched the “Eko-Innovation – 2025” competition, dedicated to developing innovative solutions to environmental challenges. The competition focuses on three directions:

1. Environmental protection, waste recycling, and climate change mitigation;
2. Renewable and energy-saving technologies;
3. Innovative ecological devices and sustainable materials.

Undergraduate, graduate, and doctoral students aged 18–35 participate individually or in teams, with winners receiving monetary awards of 6,000,000 / 4,000,000 / 2,000,000 UZS.

Throughout 2024–2025, the university organized and supported over 30 sustainability-related events, including:

- The international Scientific Dialogue on Soil Science with Professor B.S. Panwar (India), focusing on soil pollution, risk assessment, and phytoremediation methods;
- The participation of KSU biology student Husnora Bozorova in the “Green Future” youth camp with her eco-startup “Eco-Protection”;
- The “Eco-Tourism Zakovat” intellectual quiz for students of Ecology and Environmental Protection;
- The “Ecology Experts” quiz, dedicated to the Year of Environmental Protection and Green Economy;
- Environmental awareness events for World Wildlife Day (3 March), Zero Waste Day (30 March), Bird Day (1 April), and Earth Day (22 April);
- The “Ziyolilar Bog‘i” (“Scholars’ Garden”) tree-planting campaign within the national “Green Space” initiative, resulting in the planting of over 1,000 trees in Muborak district;
- Regional meetings of the “Young Ecologists” Movement and the Youth Tourism Ambassadors Council, focusing on ecological responsibility and sustainable lifestyles.

A structured system for encouraging and rewarding students’ environmental and social engagement has been established through the University’s Youth Affairs Department.

These activities complement KSU’s broader sustainability efforts, including:

- The “3R: Reduce, Reuse, Recycle” program in partnership with Eco Trans;
- The “Eco Week” campaign and thematic seminars such as “Save Nature,” “Ecological Culture – Sustainable Future,” and “Green Uzbekistan”;

- The Greenhouse Gas Reduction Program promoting renewable energy, green areas, and sustainable mobility on campus.

Through these initiatives, Karshi State University continues to strengthen environmental consciousness and practical engagement among students and staff, contributing directly to the UN Sustainable Development Goals (SDG 4, 7, 9, 11, 12, 13, and 15).

Total number of sustainability/environment-related middle- and large-scale events:

- 2023: 25
- 2024: 24
- 2025 (as of September): 17

Average per year (2023-2025): ≈ 22 events including conferences, campaigns, workshops, competitions, and training sessions.

Number of activities organized by student organizations related to sustainability

Karshi State University (KSU) actively supports student-led initiatives that promote sustainability, environmental protection, and ecological awareness.

Through the efforts of the KSU Youth Union and student volunteer teams such as “Young Eco-Patrol” (Yosh Ekopatrol), multiple sustainability-oriented events are held each academic year in cooperation with the faculties and the Department for Youth Affairs.

Between 2024 and 2025, 10 major sustainability-related activities were organized directly by student organizations, covering environmental cleanups, eco-intellectual games, and innovative youth projects.

Key examples include:

- World Cleanup Day - “Make Space for Life” Plogging Action 2024: Students cleaned sections of the highway as part of a national environmental campaign.
- “A Day Without Waste” 2025 Plogging Event: Youth Union volunteers and “Young Eco-Patrol” members organized a cleanup of the sections of A-380 international highway in Karshi city to raise ecological awareness.
- “Eco Zakovat” Intellectual Game (April 15, 2025): A quiz competition that improved students’ knowledge of ecology and sustainable development.
- “Eco-Tourism Zakovat” Intellectual Game (February 12, 2025): Teams of students competed in sustainability-themed discussions and problem-solving challenges.
- Student Startup “Eco-Protection” (September 10–14, 2025): A project presented by a KSU student at the “Green Future” youth camp, focusing on environmental innovation and sustainable practices.

These activities were fully initiated and implemented by students under the coordination of the KSU Youth Union and supported by faculty mentors. The events strengthened students' environmental leadership skills and their contribution to the UN Sustainable Development Goals (SDG 4, 11, 12, 13, and 15).

Total Number of Student-Led Sustainability Activities (per year):

- 2023: 8
- 2024: 6
- 2025: 4 (as of October 2025)

Average (2023–2025): 6 activities per year

Number of cultural activities on campus

The Department of Spiritual and Educational Activities Organization, supervised by the First Vice-Rector for Youth Issues and Spiritual-Educational Affairs Oybek Kuziev, is responsible for the spiritual and cultural life of university students and employees. The specialists of the department, in collaboration with the tutors of study groups, student activists of the KSU Youth Union, Eco-Patrol volunteers, professors and other university employees, held more than 100 cultural and educational events at Karshi State University in the 2024-2025 academic year, including concerts, competitions, public discussions, theater performances, exhibitions and other events in university dormitories, faculties, the Memorial Museum of the Memorial Museum of Repression Victims, which is under the responsibility of Karshi State University, and on the university campus. Some of the events include "Student Spring", "Language - the Mirror of the Nation", "Book Reading Week", "National Values Festival", "Spiritual Night", and "Theater Week", among others.





Examples of **cultural activities** at Karshi State University

Total number of graduates with green jobs

Academic Year	Faculty	Total Graduates	Graduates with Green Jobs
2024/2025	Faculty of Economics	195	25
	Faculty of Philology	615	38
	Faculty of Pedagogy	1664	120
	Faculty of History	732	22
	Faculty of Foreign Languages	443	28
	Faculty of Geography and Agronomy	183	100
	Faculty of Art Studies	276	20
	Faculty of Mathematics and Computer Science	584	38
	Faculty of Physics	131	16
	Faculty of Chemistry and Biology	568	130
	Faculty of Sports	596	12
	Faculty of Joint Education	65	8
	TOTAL:	6052	557

Availability of unit(s) or office(s) that coordinate sustainability on campus

In accordance with the resolution of the Academic Council of Karshi State University (Meeting No. 5, April 3, 2025), the university officially established the Sustainability Committee (“Barqarorlik qo‘mitasi”) as a permanent coordinating body responsible for promoting and

monitoring sustainability policies, activities, and performance indicators across all university units.

This decision was based on the directive of the Ministry of Higher Education, Science, and Innovation of the Republic of Uzbekistan (Decree No. 4/1, December 27, 2024), which requires higher education institutions to enhance infrastructure efficiency, energy conservation, water management, waste handling, and the formation of a “green” culture on campus.

The Sustainability Committee operates under the direct supervision of the Rector and reports annually to the Academic Council. Its main tasks include:

- Coordinating all university initiatives related to sustainable development and SDG implementation;
- Preparing annual sustainability reports (including for UI GreenMetric World University Ranking);
- Monitoring energy, water, and waste indicators through cooperation with the respective departments;
- Organizing awareness campaigns, student engagement activities, and sustainability-related research projects;
- Ensuring transparent data management and international collaboration on sustainability.

Committee Structure:

- Chairperson: Dilmurod Nabiyeu - Rector of Karshi State University
- Executive Directors:
 - Ilhom Bekpulatov - Vice Rector for Research and Innovation
 - Abdulhamid Kholmurodov - Vice Rector for Academic Affairs
 - Oybek Kuziyev - First Vice Rector for Youth and Spiritual-Educational Affairs
 - Khurshed Djurayev - Vice Rector for Finance and Economics
- Executive Secretary: Farrukh Aminov – International Rankings Specialist

Other members include heads of departments and offices responsible for international relations, finance, HR, academic registry, environmental activities, gender and inclusion, anti-corruption, student leadership, communications, incubation center, and the deans of key faculties (Geography and Agronomy, Chemistry and Biology, Medicine, Engineering, Psychology, etc.).