

SUSTAINABILITY REPORT



2024

2025



Oguz han Engineering and technology
university of Turkmenistan

CONTENTS



1. Introduction

2. University Profile

3. **SDG 1** — *No Poverty*

6. **SDG 2** — *Zero Hunger*

8. **SDG 3** — *Good Health and Well-being*

11. **SDG 4** — *Quality Education*

13. **SDG 5** — *Gender Equality*

14. **SDG 6** — *Clean Water and Sanitation*

16. **SDG 7** — *Affordable and Clean Energy*

18. **SDG 8** — *Decent Work and Economic Growth*

19. **SDG 9** — *Industry, Innovation and Infrastructure*

20. **SDG 10** — *Reduced Inequalities*

21. **SDG 11** — *Sustainable Cities and Communities*

23. **SDG 12** — *Responsible Consumption and Production*

25. **SDG 13** — *Climate Action*

27. **SDG 14** — *Life Below Water*

28. **SDG 15** — *Life on Land*

30. **SDG 16** — *Peace, Justice and Strong Institutions*

31. **SDG 17** — *Partnerships for the Goals*

32. Sustainability Team





I. Introduction

Overview of ETUT

Oguzhan Engineering and Technology University of Turkmenistan (ETUT), founded on **July 15, 2016**, has quickly emerged as a leading institution committed to academic excellence, technological innovation, and environmental responsibility. The university was established to advance Turkmenistan's vision of developing highly qualified professionals in science, technology, and innovation who can address regional and global challenges.

ETUT consists of **five specialized faculties**:

1. **Chemical and Nanotechnologies**
2. **Biotechnology and Ecology**
3. **Computer Sciences and Information Technologies**
4. **Cyberphysical Systems**
5. **Economics of Innovations**

Together, these faculties offer **30 undergraduate programs** for over **4,384 students** and a **Master's program** for 200 students, all focused on shaping skilled professionals dedicated to engineering a sustainable future.

Since its founding, ETUT has established itself as a **regional leader in sustainability and innovation**. In **2021**, the university introduced its **Green Engineering Policy (GEP)**, reaffirming its commitment to maintaining a pollution-free, resource-efficient, and environmentally conscious campus. To implement this vision, ETUT developed the Green Campus Program, which includes initiatives in energy efficiency, waste management, water conservation, sustainable transportation, and green infrastructure development (Gedayev Serdar & Orazov Yslam, 2023).

ETUT actively engages with leading global university assessment frameworks, including the **UI GreenMetric World University Ranking**, the **Times Higher Education (THE) World University Rankings**, and the **CDIO (Conceive-Design-Implement-Operate)** initiative. Through participation in these international programs, ETUT demonstrates its dedication to continuous improvement, sustainability integration, and innovation-driven higher education.



**Times
Higher
Education**





II. University Profile

Name: Oguz han Engineering and technology university of Turkmenistan

Established: 2016

Type: Public Higher Education Institution

Location: Ashgabat, Turkmenistan

Academic Focus: Engineering, Technology, and Applied Sciences

VISION

We aspire to empower future generations of engineers and technologists to tackle complex challenges and contribute to building a progressive society through our commitment to interdisciplinary education, cutting-edge research, and sustainable practices.

MISSION

To cultivate a culture of innovation, sustainability, and responsibility by providing a transformative learning environment that fosters interdisciplinary collaboration, research excellence, and ethical leadership.

OBJECTIVES

The main goal of the university is to provide training, research, analysis, consulting, design and economics of innovation in the field of innovative technologies, engineering and technological knowledge and sciences in the country and region, as well as research institutes, scientific production centers and technology parks and to form a leading innovation complex, capable of self-government and financing, integrating integrated systems of education, science, innovation, production and business.

SDG 1 — No Poverty

1 NO POVERTY



1.1 Education & Research

ETUT firmly believes that **access to quality education is one of the most effective ways to combat poverty**. The university ensures that no student is deprived of learning opportunities due to financial hardship.

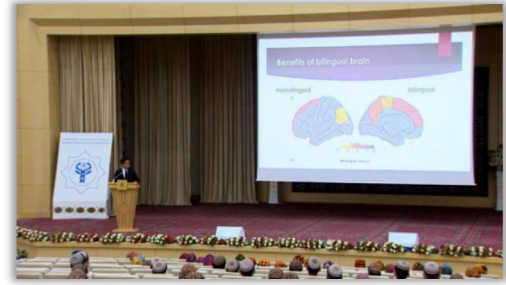
- ◆ **Free On-Campus Housing:** ETUT provides **free accommodation** to all students, including those from low-income families, thereby removing one of the most significant barriers to higher education.
- ◆ **Student Support Facilities:** The campus offers free access to training and mentoring centers, such as the “**Goşmaça we Üznüksiz Bilim**” (**Extra and Continuous**) **Training Center**, where students receive tutoring, skill-building workshops, and personalized mentoring to improve academic performance.



- ◆ **Free Food Access:** A **student food pantry** is available to all students, helping to alleviate food insecurity and ensure equal well-being on campus.
- ◆ **Career and Learning Support:** ETUT provides **career counseling, résumé preparation assistance, and job placement services** without charge. The **Online Library for E-learning** offers access to global resources and databases, ensuring that all students can participate in advanced research and professional preparation.



The university also organizes academic events such as the **Language Teaching Methodology Conference** and **free open lectures** that enhance teaching and learning accessibility for the entire community.



Programs to Improve Teaching and Learning Include:

- Faculty training on innovative teaching and assessment methods.
- Resources for students on study skills, time management, and test strategies.
- Academic tutoring and writing assistance spaces.
- Financial incentives for faculty developing new teaching methods.
- Awards recognizing excellence in teaching.
- Mentorship programs pairing new and experienced faculty.

These initiatives create an inclusive and supportive academic environment, directly contributing to poverty reduction through **empowerment, education, and employability**.

1.2 Operations

ETUT's institutional policies focus on **equal access and social welfare** within its operational framework:

- ◆ **Subsidized campus life:** All educational, digital, and housing services are designed to reduce students' financial burden.
- ◆ **Student-centered infrastructure:** Facilities and buildings are developed to provide every student equal access to modern laboratories, study rooms, learning environments and sport facilities.



◆ **Holistic student support:** The university’s policies ensure that all learners, regardless of background, have access to resources that support both academic and personal growth.

Through these inclusive operational policies, ETUT demonstrates that poverty reduction can be achieved not only through aid but through the **systematic elimination of structural barriers** in higher education.

1.3 Engagement & Outreach

ETUT extends its poverty-reduction initiatives beyond the campus through **entrepreneurship, outreach, and innovation programs**. The university actively supports **student-led startups** that contribute to sustainability, job creation, and local economic growth. These startups reflect ETUT’s strong focus on **technological innovation for social good**, enabling students to transform academic knowledge into **real-world poverty solutions**.

Selected Startups Supporting Economic Empowerment

No.	Startup Name	Description	SDG Relevance
1	Automated Waste Sorting Machine	Develops automated systems for waste separation and recycling, creating local manufacturing and employment opportunities.	SDG 1, 8, 12
2	On-Campus Electronics Repair Shop	Provides affordable repair and recycling services, offering hands-on experience and income for students.	SDG 1, 8, 12
3	Extra and Continuous Education Center	Offers affordable STEM and English courses for students and community members, including those from disadvantaged backgrounds.	SDG 1, 4, 10
4	Small-Scale Mushroom Farming	Promotes income generation and sustainable agriculture through biotechnology innovation.	SDG 1, 2, 8
5	Biodiesel from Cotton Stalks	Produces renewable energy while creating rural employment opportunities.	SDG 1, 7, 8
6	Liquid Fuel from Plastic Waste	Converts waste into usable fuel, promoting local industry and environmental improvement.	SDG 1, 8, 12
7	Clonal Propagation of Plants	Supports local agriculture by developing efficient plant propagation technologies.	SDG 1, 2, 9
8	Smart House Technology	Advances sustainable living through affordable energy-saving systems.	SDG 1, 7, 11



1.4 Quantitative Indicators (2024-2025)

Indicator	Description	Value
Students receiving free housing	Percentage of total students	100%
Students supported by food pantry	Number of beneficiaries	750+
Mentoring and tutoring sessions	Annual number of free support sessions	400+
Career counseling and job placement	Students assisted yearly	300+
Student-led startups	Number of sustainability-focused enterprises	8
Training programs for teaching improvement	Number of faculty/staff trained annually	60+

Related UI GreenMetric Categories:

- ◆ Education & Research
- ◆ Setting and Infrastructure
- ◆ Waste

Through inclusive educational policies, accessible housing and nutrition, and community-centered innovation, **ETUT transforms the principle of “No Poverty” into a practical, measurable commitment.** The university demonstrates that poverty alleviation in higher education can be achieved through a **holistic approach combining support, empowerment, and sustainable entrepreneurship.**



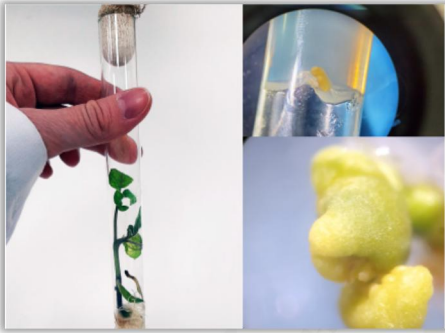
SDG 2 — Zero Hunger

2
ZERO
HUNGER

2.1 Education and Research

ETUT advances sustainable agriculture, food security, and biotechnology through research and practical training. The **Institute of General and Applied Biology** and the **Biotech and Genetics Research Center** conduct studies on:

- ◆ **Clonal propagation of essential crops** such as tomato, pepper, and eggplant to increase yield and resilience.



- ◆ **Mushroom cultivation** using innovative low-waste bioprocesses.



- ◆ **Genetic conservation** of endangered endemic plants.



Students participate in these projects through laboratory courses and internships, gaining hands-on experience in **sustainable farming systems, bioprocess design, and food biotechnology**. Research outcomes support local farmers and contribute to Turkmenistan's agricultural innovation ecosystem.

2.2 Operations and Campus Food Systems

ETUT ensures every student and staff member has **daily access to healthy and sustainable food**. A **campus market** supplies affordable fresh produce sourced from **local organic farms**, including vegan and vegetarian options.



The university's **on-campus greenhouses** and **20 hectares of cultivated land** at Garadamak provide seasonal vegetables and fruits directly to the community.



In addition, ETUT operates an efficient **waste-management system** to minimize food waste and reuse organic matter for composting and research.

This integrated waste-reduction approach reinforces ETUT's **Green Engineering Policy (GEP)** and aligns with UI GreenMetric's **Waste and Setting & Infrastructure indicators**.

Type of Waste	Total (ton)	Reduced (ton)	Reused (ton)	Down-cycled (ton)	Up-cycled (ton)
Organic (total)	24	4	5.5	7	–
Food waste	13	2.5	3	5	–
Leaves etc.	8	1.5	2.5	2	–
Other	3	–	–	–	–

2.3 Engagement and Outreach

ETUT engages students and the wider community in sustainable agriculture and food awareness initiatives:

- ◆ **Workshops** on plant tissue culture, mushroom farming, and biodiversity conservation.
- ◆ **Student volunteering** in greenhouse operations and organic-waste composting.
- ◆ **Community education** sessions promoting local, plant-based diets and food-security awareness.
- ◆ Collaboration with local farms for **training programs on smart irrigation and soil-health management**.

The university's **vivarium** and aquaria support research on animal welfare and biodiversity, contributing to the conservation of genetic resources for food and agriculture.



2.4 Impact Highlights (2024-2025)

Indicator	Description	Value
Greenhouse area for sustainable crops	On-campus cultivation for research and food supply	20 ha
Sustainable food access	% of students and staff with affordable organic food options	100 %
Organic waste reused	Portion of food waste diverted from landfill	~55 %
Student participation in agri-projects	Involvement in sustainable agriculture and waste projects	280+ students

Related UI GreenMetric Categories:

- ◆ **Education & Research**
- ◆ **Waste**
- ◆ **Setting & Infrastructure**
- ◆ **Energy & Climate Change**



SDG 3 — Good Health and Well-Being



3.1 Health Infrastructure and Services

The **Oguz han Engineering and Technology University of Turkmenistan (ETUT)** ensures comprehensive healthcare for its students, academic, and administrative staff through the **Ashgabat Students' Hospital**, the primary health facility serving the university community.



The hospital delivers a wide range of medical services aligned with the **Eight Dimensions of Wellness** — physical, intellectual, emotional, social, spiritual, vocational, environmental, and cultural.

Key services include:

1. **Medical Consultations** – Professional healthcare consultations for students and staff.
2. **Routine Check-ups** – Preventive care programs supporting early diagnosis and lifestyle improvement.
3. **Emergency Care** – 24-hour emergency services and stabilization support.
4. **Vaccinations & Immunizations** – Comprehensive vaccination programs to protect the campus population.
5. **Mental Health Services** – Counseling and psychological support for stress, anxiety, and emotional well-being.
6. **Specialist Referrals** – Patient referrals to specialized healthcare providers when necessary.
7. **Pharmacy Services** – On-site pharmacy offering prescription and over-the-counter medicines.
8. **Health Education & Promotion** – Campaigns on nutrition, hygiene, and disease prevention.



9. **Health Insurance Support** – Assistance with medical insurance and reimbursement procedures.
10. **Health Record Management** – Confidential electronic health records ensuring continuity of care.

The hospital operates under qualified medical staff who prioritize accessible, affordable, and compassionate healthcare for the ETUT community.

3.2 Mental Health and Student Well-being

ETUT acknowledges that mental health is vital for academic and personal success.

The **Ashgabat Students' Hospital** offers **counseling and therapy services** to support students, faculty, and staff experiencing emotional challenges.

The university's academic programs are designed holistically to develop both **technical expertise** and **soft skills**, ensuring a balanced and supportive educational environment.

Workshops, mentorship sessions, and conferences strengthen emotional resilience and community belonging.

3.3 Inclusive Health and Accessibility Infrastructure

To promote inclusivity, ETUT provides modern facilities for **persons with disabilities, special needs, and maternity care**, ensuring equal access and comfort for all members of its community.

Infrastructure and facilities include:

- ◆ **Accessible ramps, elevators, and restrooms** in all main buildings.



- ◆ **Reserved parking** near key academic entrances.



- ◆ **Smart mobility scooters and automated adjustable chairs** for individuals with physical disabilities.



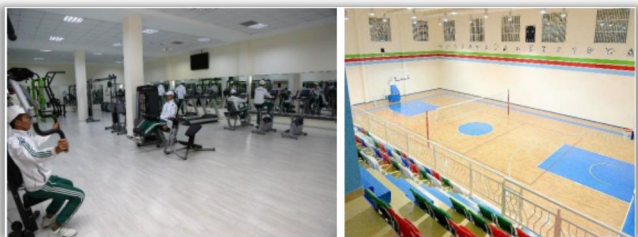
- ◆ **Mother and Child Care Rooms** (5 across campus) — offering private spaces for childcare, breastfeeding, and family rest.



- ◆ **Assistive technologies** in classrooms, including adaptive devices and captioning services. These initiatives promote **equity, accessibility, and universal design principles**, directly supporting **SDG 3 (Good Health and Well-Being)** and **SDG 5 (Gender Equality)**.

3.4 Health Promotion, Sports, and Active Lifestyle

- ◆ ETUT fosters physical health and well-being through access to **modern sports and recreational facilities**. Students and local residents benefit from gymnasiums, open sports fields, and organized physical education programs promoting active lifestyles.



- ◆ Health and wellness workshops on nutrition, hygiene, and mental health awareness are conducted regularly, encouraging a balanced life on campus. The university also runs **student-led health campaigns** supporting universal health awareness, hygiene education, and disease prevention, ensuring equitable access to health services and well-being education for all.

- ◆ **Cybersport Center** – ETUT maintains a dedicated Cybersport Center equipped with modern digital gaming and simulation technology. The center promotes teamwork, strategic thinking, stress relief, and healthy recreation among students. Regular e-sports tournaments and training sessions strengthen digital literacy and emotional well-being, contributing to a balanced and supportive campus lifestyle.



- ◆ **Student Daily-Life Support Facilities**
To ensure student comfort and reduce daily stress, ETUT provides convenient on-campus services within the dormitory complexes, including a **haircut salon, tailor room, and printing & copy center**. These services help students manage personal needs and academic tasks easily without leaving campus, contributing to emotional well-being and a supportive living environment.



Haircut salon



Printing & copy center

- ◆ **On-Campus Student Employment Opportunities**
Many of these services are operated by **ETUT students working part-time**, helping them gain practical experience, develop social and organizational skills, and support financial independence — promoting youth empowerment and community well-being.

- ◆ **Iclub (Intellectual & Relaxation Space)**

ETUT provides a dedicated Iclub space for student relaxation, reading, informal discussions, presentations, and cultural exchange. The club offers access to bestseller books, comfortable seating areas, tea and coffee corners, and video presentation facilities. Iclub promotes emotional well-being, reduces academic stress, and strengthens social interaction and community belonging — supporting a balanced and healthy student lifestyle.



3.5 Impact Highlights (2024-2025)

Indicator	Description	Value / Status
Health infrastructure	Hospital, mental health, pharmacy, and emergency care	Operational
Accessibility facilities	Ramps, elevators, restrooms, and reserved parking	100% accessible
Mother & Child Care Rooms	Family and maternity-friendly facilities	5 rooms
Sports and wellness participation	Students involved in physical education and wellness activities	3,800+
Health promotion programs	Seminars and awareness campaigns annually	25+
Student Support Services	On-campus haircut service, tailor room, and printing facilities in dormitories	Operational
Iclub (Student Well-Being Space)	Relaxation and intellectual community space	Operational

Related UI GreenMetric Categories:

- ◆ **Setting & Infrastructure**
- ◆ **Education & Research**
- ◆ **Waste**
- ◆ **Water**

SDG 4: Quality Education

4 QUALITY EDUCATION

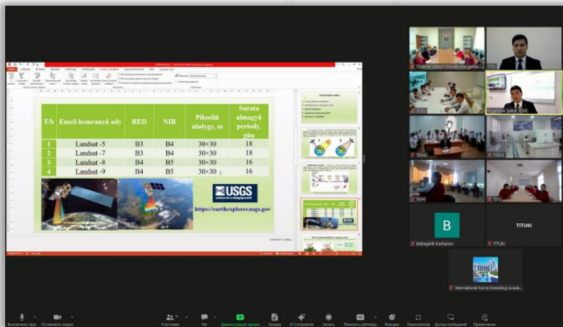


4.1 Free Access to Educational Resources for the Community

Oguz han Engineering and technology University of Turkmenistan (ETUT) is deeply committed to promoting inclusive and equitable quality education for all, in accordance with **Sustainable Development Goal 4 (SDG 4)**. The university provides **free access** to a wide range of educational resources and learning opportunities for individuals not formally enrolled at the university. The **ETUT University Library** maintains an extensive collection of printed and digital materials—books, e-books, journals, and multimedia—covering engineering, technology, and applied sciences. The library is **open to the public** and ensures that knowledge is accessible to all.



ETUT also provides **open-access online learning opportunities**, including video lectures, recorded courses, and digital tutorials in science, technology, and languages. These resources serve high-school graduates, professionals, and lifelong learners.



Through these initiatives, ETUT promotes lifelong learning, reduces educational inequality, and supports the broader community in personal and professional development.

Examples of Educational Access Initiatives:

- ◆ Public access to ETUT's main library and e-library.
- ◆ Free online lectures and tutorials for science and engineering topics.
- ◆ Dedicated website section with open educational resources for community learners.

These initiatives contribute directly to **SDG 4 (Quality Education)** by creating a culture of open learning and knowledge sharing.

4.2 Public and Community Engagement Through Educational and Cultural Events

ETUT actively promotes **community engagement** through a variety of educational, scientific, and cultural activities. These programs strengthen cooperation between the university and the community, while encouraging cultural awareness and creativity.

Examples of Activities:

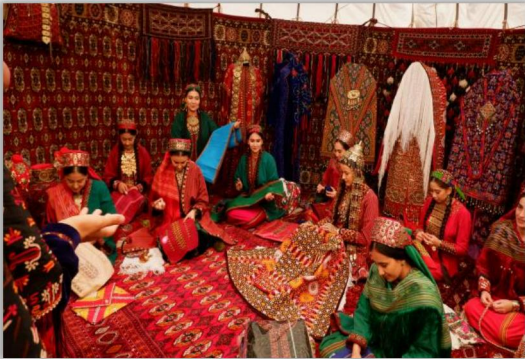
- ◆ **Public Lectures:** Events featuring experts from academia and industry discussing innovations in science and technology.



- ◆ **Community Workshops:** Training in areas such as environmental awareness, digital literacy, and professional development.



- ◆ **Cultural Programs:** Festivals and exhibitions celebrating Turkmen heritage and international diversity.



- ◆ **Innovation and Career Fairs:** Open events connecting students with industry and society.



Through these programs, ETUT ensures that education extends beyond classrooms, fostering engagement, awareness, and sustainable social development.

4.3 Summary of Contribution to SDG 4

Area	Activity	Contribution to SDG 4
Educational Access	Free public library and online resources	Promotes inclusive, lifelong learning
Community Education	Public lectures, workshops	Enhances community knowledge and engagement
Cultural Awareness	Heritage and cultural events	Fosters diversity and inclusion
Skill Development	Career fairs and technical training	Prepares youth and professionals for future employment

Related UI GreenMetric Categories

- ◆ Education & Research
- ◆ Setting & Infrastructure
- ◆ Energy and Climate Change
- ◆ Waste



SDG 5: Gender Equality

5 GENDER EQUALITY



5.1 Education & Leadership

Women's Council at Oguz han Engineering and Technology University of Turkmenistan

The **Women's Council** at Oguz han Engineering and Technology University (ETUT) is a key platform committed to **empowering women** and promoting **equity and respect** across the university. The Council supports the **professional success and personal growth** of women in both academic and administrative roles.



Its mission is to **foster leadership**, encourage **career development**, and strengthen the **network of women professionals and students** at ETUT. By organizing training sessions, mentorship programs, and discussions on women's leadership, the Council ensures that every woman on campus is encouraged to **pursue excellence and confidence** in her chosen field.



5.1 Operations & Facilities

Mother and Child Care Rooms

ETUT provides **Mother and Child Care Rooms** accessible to all staff and students with children. These facilities offer a **safe, private, and comfortable space** for parents—especially mothers—to care for their infants and toddlers.

This initiative promotes **well-being and gender equality** by supporting working and studying parents and ensuring that **family responsibilities do not hinder academic or professional participation**.



5.3 Engagement & Outreach

Through workshops, mentoring, and awareness campaigns, ETUT continues to **encourage women's participation in science, technology, engineering, and management**.



Related UI GreenMetric Categories

- ◆ Education & Research
- ◆ Setting & Infrastructure



SDG 6: Clean water and Sanitation

6 CLEAN WATER AND SANITATION



6.1 Water Recycling & Conservation

Comprehensive Water Recycling Program

Oguz han Engineering and Technology University of Turkmenistan (ETUT) has implemented a **campus-wide water recycling initiative** that integrates rainwater collection, fountain water reuse, and conservation systems. Rainwater collected from gardens, cisterns, and permeable pavements is used for **irrigation, non-potable needs, and groundwater recharge**.



ETUT's **fountain water recycling system** operates as a **closed-loop process** that collects, filters, and sterilizes water using **ultraviolet (UV) technology**, ensuring safe reuse and zero discharge.



6.2 Water Conservation Infrastructure

Rain Gardens and Permeable Pavements

ETUT has constructed **rain gardens** and **permeable pavement systems** that help absorb runoff, **reduce urban flooding**, and **recharge groundwater**.

Cisterns store collected rainwater for irrigation and maintenance, while **downspouts are redirected** to green areas for controlled infiltration.



Water-Efficient Appliances

The university has installed **smart faucets, dual-flush toilets, and low-flow showerheads** across its facilities, significantly cutting water consumption.

6.3 Water Quality & Policy

Monitoring and Pollution Control

ETUT regularly conducts **water sampling and quality assessments** at the **Garagum River** and within the campus network. These measures ensure water quality meets national and WHO standards.

Policy Commitment

The university's **Water Policy** promotes sustainable consumption, recycling, and awareness. Water-efficient fixtures are used in all buildings, and staff and students receive training on **responsible water usage**.

Guideline Standards

- ETUT aligns with the following national regulations:
- ◆ *Water Code of Turkmenistan* – Sustainable use and protection of resources
 - ◆ *Drinking Water Law (2010)* – Safe and high-quality water for all
 - ◆ *TDS 837-2016* – Hygienic standards based on **WHO Guidelines for Drinking-Water Quality**

6.4 Wastewater Treatment & Research

Ecological Biotechnology Center Initiatives

The **Ecological Biotechnology Center** at ETUT develops innovative **biological water purification systems**. Research includes:

- ◆ Wetlands for **phytoremediation** of saline waters
- ◆ **Activated carbon, zeolite, and bioflocculant** filtration
- ◆ **Photobioreactors** for cultivating microalgae to treat wastewater
- ◆ **Research Focus:** Using natural and hybrid technologies to enhance wastewater quality and reduce treatment costs.

6.5 Sewage Management

ETUT cooperates with the **Association for Cleaning and Improvement of Management (ACIM)** in Ashgabat for sewage collection and disposal.

The process includes **primary, secondary, and tertiary treatments**, ensuring that **treated effluent is safely discharged** to surface water or reused for land application.

6.6 International Cooperation

Knowledge Exchange with Japan

In **October 2025**, an ETUT delegation visited **Tohkemy Corporation** (Tokyo, Japan), a global leader in water purification and desalination systems. The visit, organized under a **Memorandum of Understanding**, aimed to:

- Exchange knowledge on **mobile desalination and wastewater systems**
- Strengthen international partnerships
- Develop joint research on **sustainable water technologies**



Outcome: This collaboration advances ETUT's vision of adopting world-class water management practices and contributes to Turkmenistan's national goals for sustainable resource use.

Related UI GreenMetric Categories

- ◆ **Education & Research**
- ◆ **Setting & Infrastructure**
- ◆ **Water**



SDG 7: Affordable and Clean Energy

7.1 Education & Research

Developing Renewable Energy Solutions for a Sustainable Campus

The university's research centers actively work to reduce carbon emissions by exploring renewable energy technologies. Students and staff collaborate on applied research projects that align with SDG 7 objectives.

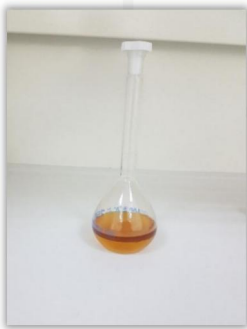
◆ Usage of bioethanol in simple motors

The Green Chemistry Research Center has developed and patented an innovative process for producing **eco-friendly bioethanol** from **cotton stalks**, a local agricultural byproduct. This bioethanol is well-suited for powering small motors, such as lawn mower engines used across the campus.



◆ Liquid fuel from plastic waste

Researchers at the Environmental Biotechnology Research Center have created a method to **convert plastic waste into liquid fuel** that closely resembles diesel and gasoline. This fuel can be used for **campus heating, diesel generators, and transportation vehicles**, reducing reliance on conventional fossil fuels.



◆ Future green hydrogen production

The Nanoelectronics Research Center is preparing to construct a **small-scale solar-powered green hydrogen facility**. Once operational, it will supply part of the campus's energy needs, further lowering dependence on non-renewable sources.

Additional evidence: [Turkmenportal News](#)

7 AFFORDABLE AND CLEAN ENERGY



7.2 Operations

Smart Building Implementation Strategy

ETUT is committed to integrating smart technologies across its buildings to ensure energy efficiency and sustainability. Buildings are equipped with:

- ◆ Energy-efficient HVAC systems
- ◆ Automated lighting with motion sensors



- ◆ Optimized orientation for natural heating and cooling
- ◆ Rainwater harvesting systems
- ◆ Indoor environmental control systems

7.3 Engagement & Outreach

Promoting Clean Energy Culture on Campus

➤ Zero Emission Vehicles (ZEV) Policy

The university offers **on-campus bike rentals** through the Student Services Department. Students and staff can rent one of more than 200 well-maintained bicycles free of charge (with a refundable deposit). This initiative encourages sustainable, zero-emission mobility within and around the campus.



➤ **Green Building Policy**

ETUT incorporates energy-efficient technologies and green construction principles in all building projects. Rainwater collection systems, LED lighting, and motion sensors help minimize energy and water waste.

➤ **Sustainability Startups**

ETUT fosters student innovation by supporting sustainability-related startups, including:

- ✓ Automated waste sorting machine



- ✓ Electronics repair & recycling center



✓ **Mushroom farming from local materials**



- ✓ Biodiesel from cotton stalks
- ✓ Liquid fuel from plastic waste
- ✓ Smart house technologies



These startups promote the local green economy, create new opportunities for students, and support national sustainability goals.

Related UI GreenMetric Categories

- ◆ Education & Research
- ◆ Setting & Infrastructure



SDG 8: Decent Work and Economic Growth

8 DECENT WORK AND ECONOMIC GROWTH



8.1 Education & Research

ETUT offers a wide range of courses and subjects that support technological innovation, economic productivity and skill development — all contributing to SDG 8 targets such as higher productivity through technology and innovation. For example:

- ◆ “Ecology and nature management” connects to SDG 15 and SDG 13, but also supports sustainable economic sectors.
- ◆ “Agriculture biotechnology” connects to SDG 2 and SDG 15 and supports new employment in sustainable agriculture.
- ◆ “Digital infrastructure and cybersecurity”, “Digital economy”, and “Innovation economics” equip students for work in high-value sectors and diversified economy — aligning with SDG 8.2 (Achieve higher levels of economic productivity through diversification, technological upgrading and innovation).

By embedding these subjects and fostering research, ETUT helps generate the workforce and innovation ecosystem needed for decent work and sustainable growth.

8.2 Operations

ETUT supports structured frameworks and partnerships that enhance access to financial services and modern employment contexts. For example:

- ◆ The national banking system in Turkmenistan is undergoing digitalization and expanding services (such as the introduction of contactless payment cards) — which supports SDG target 8.10 (Strengthen the capacity of domestic financial institutions to encourage and expand access to banking, insurance and financial services for all).
- ◆ ETUT’s role as a technological university helps equip graduates with skills for new sectors (digital banking, fintech, cybersecurity) — contributing to decent work in modern sectors.

Student Part-Time Employment within Campus Service Units. ETUT provides on-campus part-time job opportunities, enabling students to gain professional experience and financial independence while studying. Students work in various service facilities such as the **haircut salon, tailor rooms and dormitory printing center**. These roles build practical skills, encourage responsibility, and strengthen youth participation in the local economy — directly supporting SDG 8: Decent Work and Economic Growth.



8.3 Engagement & Outreach

ETUT fosters linkages between education, industry and innovation — an important dimension of SDG 8 (especially for job creation, entrepreneurship and formalization of micro/small enterprises). By preparing students with up-to-date technical and digital skills, the university enables participation in emerging economic sectors, thereby supporting inclusive growth and decent employment opportunities.

Related UI GreenMetric Categories

- ◆ Education & Research
- ◆ Setting & Infrastructure
- ◆ Energy & Climate Change



SDG 9: Industry, Innovation and Infrastructure

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE



9.1 Education & Research

ETUT plays a central role in advancing industrial innovation and technological progress in Turkmenistan.

Research and coursework in **nanotechnology, chemical technology, materials science, and applied chemistry** help drive modernization of national industries and infrastructure.

Key research achievements include:

- ◆ **“Comparison of purity of quartz mineral in Karakum sand deposits using organic solvents”** by *Atamyrat Altyyev* (Department of Applied Chemistry) — exploring cleaner industrial processes for local raw materials.
- ◆ **“Innovative technology of obtaining artificial marble in Turkmenistan”** by *Batyr Atdayev* (Department of Chemical Technologies) — introducing eco-friendly methods for producing construction materials domestically.
- ◆ **“Functionalization of graphene layers and enhanced sensing capabilities”** by *Mukam Ekayev* (Department of Nanotechnologies and Material Science) — developing advanced nanomaterials with applications in sensors and electronics.

These studies demonstrate ETUT’s growing contribution to **industrial innovation and research-driven infrastructure development**.

9.2 Operations

ETUT actively supports Turkmenistan’s digital and urban modernization strategies.

University experts and students participate in projects related to **digital traffic lights, smart parking systems, and urban-planning technologies** that were presented in Ashgabat (source: *Turkmenportal.com* and *Turkmenistan.gov.tm*).

These initiatives apply engineering and IT solutions to improve public infrastructure, mobility, and energy efficiency in cities.

Laboratories across ETUT develop **automation, robotics, and materials-science innovations**, directly serving national industries in construction, chemistry, and manufacturing.

9.3 Engagement & Outreach

ETUT regularly participates in **national technology exhibitions, student innovation contests, and scientific forums** such as the *World Cities Day competition*, which encourages young researchers to design sustainable urban solutions.

Collaborations with local ministries and private sectors connect academic research to real-world industry needs, ensuring that innovation supports both **economic growth and environmental sustainability**.

Related UI GreenMetric Categories

- ◆ **Education & Research**
- ◆ **Setting & Infrastructure**
- ◆ **Energy & Climate Change**



SDG 10: Reduced Inequalities

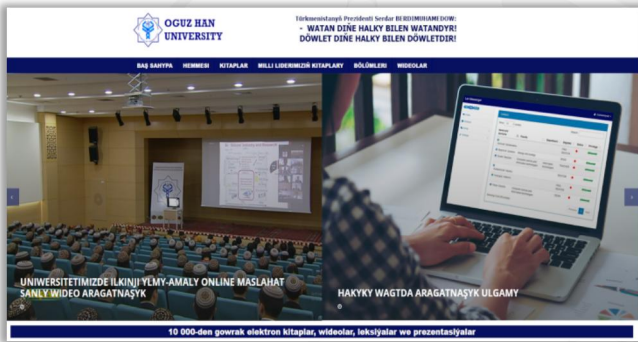


10.1 Education & Research

ETUT ensures **equal access to education** for more than 4,000 students through inclusive programs and digital learning tools. The “**Goşmaça we Üznüksiz Bilim**” (**Extra and Continuous**) **Training Center** provides lifelong learning and skill-building opportunities for people from all backgrounds.



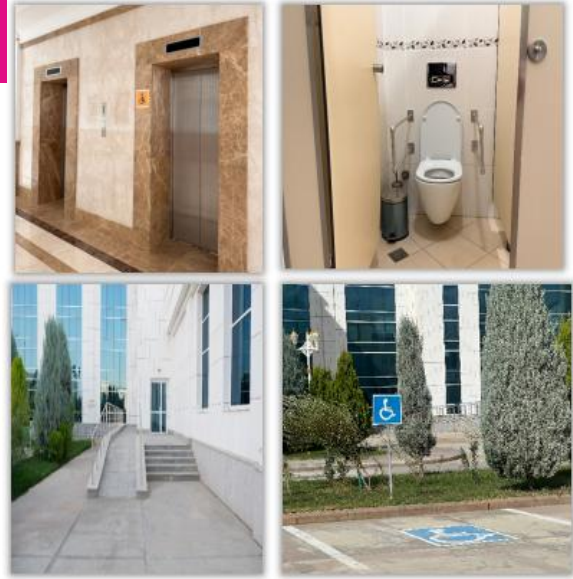
An extensive **online library** supports e-learning and helps students study remotely and equally.



The university offers **scholarships and grants**, and supports students joining **international conferences and internships** by covering travel and living costs. These efforts make education at ETUT more **inclusive, equitable, and accessible for everyone.**

10.2 Operations

ETUT’s campus is designed for **accessibility and inclusion**. Facilities include **ramps, elevators, accessible restrooms, and parking spaces** for people with mobility challenges.



Assistive technologies such as screen readers and captioning tools help students with disabilities. There are **maternity-care and breastfeeding rooms** providing comfort and privacy. Trained staff and supportive policies ensure **equal participation for all.**



10.3 Engagement & Outreach

ETUT promotes inclusion through **international conferences, workshops, and community projects** that unite students from diverse backgrounds. By supporting participation in academic and social activities, the university strengthens equality, cooperation, and awareness of global issues.

Related UI GreenMetric Categories

- ◆ Education & Research
- ◆ Setting & Infrastructure

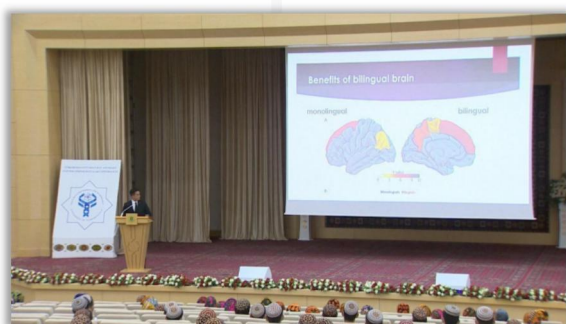
SDG 11: Sustainable Cities and Communities

11 SUSTAINABLE CITIES AND COMMUNITIES



11.1 Education & Research

ETUT supports sustainable urban development through **training programs, conferences, and e-learning resources** that improve teaching and learning quality. The “**Göşmaça we Üznüksiz Bilim**” (Extra and Continuous) Training Center, the **online library**, and the **Language Teaching Methodology Conference** all promote lifelong learning and capacity building. Faculty receive continuous **training on innovative pedagogy**, and students benefit from tutoring, study support, and open access to academic resources.

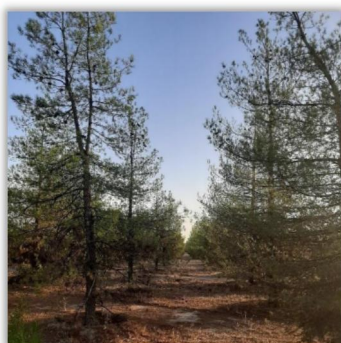


Free lectures and research initiatives encourage awareness about sustainability, inclusivity, and responsible city planning.

11.2 Operations

ETUT’s campus represents a **model of a sustainable, inclusive, and livable environment**:

- ◆ **Green and Forested Campus:** Over **117,000 trees** planted within **250,255 m²** of forest area, supporting the **National Forestry Programme of Turkmenistan (2021–2025)** and helping absorb CO₂ emissions.



- ◆ **Accessible and Affordable Housing:** On-campus **dormitories** are provided free of charge to students and academic staff, including full access to electricity, heating, and water. These facilities reduce inequality and strengthen community wellbeing.



- ◆ **Eco-Friendly Mobility:** The university operates a **bicycle-sharing system** with over **200 bikes** for students and staff. This initiative encourages low-carbon transport and supports the **National Bicycle Policy** of Turkmenistan.



- ◆ **Pedestrian-Friendly Design:** ETUT maintains **safe, well-lit pedestrian paths** connecting all campus buildings. These walkways enhance accessibility, promote walking culture, and reduce vehicle use.



11.3 Engagement & Outreach

ETUT fosters community life and cultural sustainability through **regular cultural, artistic, and social events** — averaging **three or more events monthly**.

Popular activities include:

- ◆ **Language clubs** (English, Japanese) to promote intercultural communication.
- ◆ **Performing arts** via the *Oguzlar Creativity Group* and **arts & crafts workshops**.
- ◆ **Cultural heritage festivals** such as *Nowruz*, *Turkmen Horse Festival*, *Melon Festival*, and the *International Festival of Craftsmen*.
- ◆ The “**Talyp joşguny**” (**Student Enthusiasm**) festival — a national platform for student creativity.



Through these activities, ETUT contributes to the development of **vibrant, inclusive, and sustainable campus communities**, reflecting the goals of **SDG 11**.

Related UI GreenMetric Categories

- ◆ **Education & Research**
- ◆ **Setting & Infrastructure**
- ◆ **Transportation**



SDG 12: Responsible Consumption and Production



12.1 Education & Research

ETUT integrates responsible consumption and waste management concepts into its educational programs and campus operations. Students and staff are encouraged to practice sustainability through **Zero Waste initiatives**, workshops, and conferences such as the *Day of Science* exhibition, which promotes eco-friendly innovation and environmental awareness.



Educational campaigns focus on **3R principles** – **Reduce, Reuse, Recycle**, digital learning materials to minimize paper waste, and training on safe laboratory waste handling.



12.2 Operations

ETUT operates a comprehensive **Zero Waste Program** that reduces waste generation and promotes circular resource use. Key activities include:

- ◆ **Recycling and Reuse:** Clearly labeled bins for different materials are installed across the campus. A centralized repository collects reusable office items and furniture.
- ◆ **Reduction Initiatives:** Double-sided printing, digital submissions, and reusable containers reduce paper and plastic waste.
- ◆ **Repair and Upcycling:** An on-campus repair shop for electronics and furniture helps extend product lifecycles. Regular *Recycled Art Workshops* inspire creative reuse.



- ◆ **Food and Organic Waste Management:** Food-waste composting and awareness programs encourage responsible consumption.

- ◆ **Toxic Waste Treatment:** Hazardous and laboratory waste is handled by the **Communal Services Administration of Ashgabat (CSAA)** using licensed facilities and vehicles to ensure safe collection, transport, treatment, and disposal.



ETUT produced **43.9 tons of inorganic**, **23.2 tons of organic**, and **1.3 tons of toxic waste** last year. A portion of this waste is **reduced, reused, down-cycled, or up-cycled**, highlighting steady progress toward sustainable campus operations.

12.3 Engagement & Outreach

The university regularly conducts **training sessions, exhibitions, and competitions** on recycling and waste reduction. Collaborations with **licensed e-waste recycling firms** ensure safe disposal of electronics, while **student-led repair and upcycling events** promote creative thinking and community participation.



Through these programs, ETUT demonstrates its commitment to SDG 12 by fostering a campus culture of **responsible resource use, circular economy, and sustainable waste management.**



Related UI GreenMetric Categories

- ◆ Education & Research
- ◆ Setting & Infrastructure
- ◆ Waste

SDG 13: Climate Action



13.1 Education & Research

ETUT integrates climate-change awareness and environmental protection into its teaching, research, and outreach activities. The **Green Campus Program**, **Green Chemistry Center**, and **Green Step student organization** focus on promoting sustainable practices, green technologies, and biodiversity protection. Workshops, ecology weeks, and eco-festivals educate students and staff about carbon reduction, waste minimization, and sustainable lifestyles.



ETUT’s carbon footprint in 2023 was **1 103.52 metric tons CO₂**. The university reduces emissions by limiting on-campus vehicles, encouraging **public transport, cycling, and carpooling**, and planting thousands of trees that absorb carbon dioxide.

Greenhouse-Gas Reduction Measures

- ◆ Installation of **LED lighting** and **energy-efficient appliances** across all buildings.



- ◆ **Renewable-energy applications**, including bioethanol use in small engines and future solar-based projects.



- ◆ **Employee ridesharing** and **bicycle programs** to reduce fuel-based travel.



- ◆ **3R programs** to cut single-use plastics and promote reusable containers.

13.2 Operations

Total Carbon Footprint (2023)

Source	Calculation	CO ₂ (tons)
Electricity	$(1\,300\,000 \text{ kWh} \div 1000) \times 0.84$	1 092
Shuttle Buses	$2 \text{ buses} \times 10 \text{ trips} \times 2 \text{ km} \times 240 / 100 \times 0.01$	0.96
Cars	$55 \text{ cars} \times 2 \text{ trips} \times 2 \text{ km} \times 240 / 100 \times 0.02$	10.56
Total CO₂ Emissions		1 103.52 metric tons



- ◆ **Occupancy sensors and energy-management systems** to reduce electricity demand.

13.3 Engagement & Outreach

ETUT organizes impactful community programs that support national and global climate goals:

- ◆ **National Youth Climate Conference (LCOY Turkmenistan 2025)** – In October 2025, ETUT hosted the **National Youth Climate Conference**, officially endorsed by **YOUNGO** (UNFCCC Youth Constituency), gathering over 120 young leaders, SDG Ambassadors, environmental clubs, government representatives, and UN agencies. Participants developed the **Turkmenistan Youth Climate Roadmap**, which will be presented at COY20 and COP30. This initiative strengthens ETUT’s role in youth climate leadership, national sustainability commitments, and SDG 13 Climate Action.



- ◆ **Green Campus Program** – tree-planting, environmental campaigns, waste-to-art exhibitions.
- ◆ **Green Chemistry Research** – development of eco-friendly synthesis methods using renewable feedstocks and green solvents.
- ◆ **Green Step Initiative** – student-led propagation of endangered native plants.

These activities strengthen environmental literacy, inspire youth action, and support Turkmenistan’s **National Strategy on Climate Change (2021–2025)**.

Related UI GreenMetric Categories

- ◆ **Education & Research**
- ◆ **Setting & Infrastructure**
- ◆ **Energy & Climate Change**
- ◆ **Transportation**



SDG 14: Life Below Water



14.1 Education & Research

ETUT promotes awareness of water protection and pollution control through both teaching and research. The university's **Ecological Biotechnology Center** develops innovative biotechnological methods to purify and reuse water using **plants, microorganisms, and algae**.

Research focuses on **phytoremediation of saline water, microalgae cultivation in photobioreactors, and bio-filtration using activated carbon, zeolite, and biological flocculants**.

Students also participate in **water-quality sampling and monitoring** at the **Garagum River**, gaining practical experience in sustainable water management.



14.2 Operations

ETUT implements a comprehensive **Water Policy** to ensure efficient and sustainable water use across campus:

- ◆ Installation of **water-saving fixtures and appliances** in all buildings.
- ◆ **Recycling of fountain water** and optimization of non-potable water for cleaning and landscaping.
- ◆ **Daily delivery of drinking water** by licensed providers ("Arcalyk" and "Hayyat") to guarantee quality and hygiene.
- ◆ Continuous **monitoring and evaluation** of consumption data to identify improvements and report conservation results.

Wastewater from laboratories and dormitories is collected and treated through the city's **Association for Cleaning and Improvement of Management (ACIM)** system, which applies multi-stage purification (primary, secondary, and tertiary treatment) before safe disposal or reuse.



14.3 Governance & Compliance

ETUT's water management follows national legal and technical standards:

- ◆ **Water Code of Turkmenistan** – framework for sustainable resource use.
- ◆ **Drinking Water Law (2010)** – ensures public health and safe water access.
- ◆ **Turkmen State Standard TDS 837-2016** – sets strict physical, chemical, and microbiological quality norms aligned with WHO guidelines.

These frameworks guide the university's continuous improvement in water quality, consumption efficiency, and pollution prevention.

Related UI GreenMetric Categories

- ◆ **Water**
- ◆ **Education & Research**
- ◆ **Waste**

SDG 15: Life on Land

15.1 Education & Research

ETUT promotes biodiversity protection, sustainable agriculture, and land conservation through academic programs and student initiatives.

The university offers courses directly linked to sustainability, including **Ecology and Nature Management**, **Agriculture Biotechnology**, **Natural Conditions and Resources of Turkmenistan**, and **Geoinformatics** — each addressing resource management, reforestation, and environmental protection.

The **Green Step** student organization applies biotechnology for **clonal propagation of endangered plant species**, supporting both research and conservation.



ETUT's **Green Campus Program** and **Green Chemistry Center** reinforce these goals by integrating environmental education, renewable-material research, and campus-wide ecological activities such as tree planting, recycling, and eco-festivals.



15

LIFE ON LAND



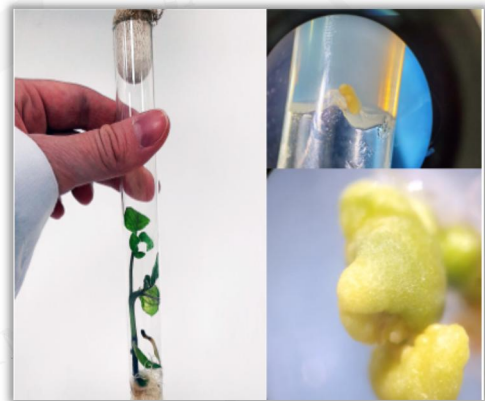
15.2 Operations

ETUT manages and restores ecosystems through various conservation and agricultural projects:

- ◆ A **greenhouse and 20-hectare experimental field** for cultivating crops, medicinal plants, and seedlings.



- ◆ Research on **clonal propagation of crops and endemic plants** (e.g., tomato, pepper, eggplant) at the **Biotech and Genetics Research Center**.



- ◆ **Mushroom cultivation** projects that demonstrate sustainable food production using organic substrates.



An on-campus **vivarium** maintaining breeding lines of laboratory animals and aquariums for aquatic biodiversity studies.



Tree-planting campaigns organized under the **Green Campus Program** contribute to campus greening and carbon sequestration, directly supporting national afforestation goals.

15.3 Engagement & Outreach

ETUT collaborates with the **National Forestry Programme of Turkmenistan (2021–2025)** through educational and research actions that foster a culture of conservation among students and staff.

Public outreach initiatives—such as **Ecology Weeks, environmental-awareness campaigns, and waste-to-art exhibitions**—promote appreciation for biodiversity and responsible resource use.

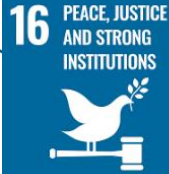
These efforts strengthen the link between scientific innovation, education, and practical ecosystem protection—advancing Turkmenistan’s commitment to **SDG 15: Life on Land**.

Related UI GreenMetric Categories

- ◆ **Setting & Infrastructure**
- ◆ **Energy & Climate Change**
- ◆ **Education & Research**
- ◆ **Waste**



SDG 16: Peace, Justice and Strong Institutions



16.1 Education & Research

ETUT ensures **academic freedom, fairness, and participation** as key institutional values. Both students and faculty have the right to **teach, research, and publish freely**, fostering open dialogue and critical thinking.



The university's inclusion in the **CDIO (World Initiative for Engineering Education Reform)** strengthens its governance and quality-assurance systems, helping to build transparent and accountable educational processes.



Students participate in **curriculum improvement** and joint decision-making with faculty—supporting inclusive, democratic learning environments.

16.2 Operations

The **Student Union** acts as a self-governing organization that promotes equality, welfare, and responsible citizenship. It provides **academic advising, counseling, health programs, and dormitory management**, ensuring that every student receives fair treatment and support.

By encouraging participation, cooperation, and mutual respect, ETUT builds a safe and inclusive campus community where justice and equal opportunity are institutional priorities.



16.3 Engagement & Outreach

ETUT engages internationally through academic networks such as the **CDIO Initiative**, which promotes transparent governance and collaboration among universities worldwide.



Through these partnerships, ETUT shares best practices in ethical education, student rights, and institutional integrity—helping to advance the global goals of **peace, justice, and strong institutions**.

Related UI GreenMetric Categories

- ◆ Setting & Infrastructure
- ◆ Education & Research

SDG 17: Partnerships for the Goals



17.1 Education & Research

ETUT actively integrates the **Sustainable Development Goals (SDGs)** into its curriculum across all faculties and disciplines.

The university offers **over 40 courses** connected to various SDGs, covering fields such as **biotechnology, ecology, geoinformatics, energy engineering, innovation economics, and green technologies.**

This multidisciplinary approach helps prepare students to understand global sustainability challenges and design collaborative solutions that align with the **UN 2030 Agenda.**

The Ministry of Education of Turkmenistan has approved ETUT's five-year academic framework that embeds SDG-based learning outcomes into degree programs. This integration ensures continuous engagement with sustainability principles across all departments.

17.2 Operations

The university maintains strong internal and external partnerships that enhance sustainability implementation and knowledge sharing:

- ◆ The **Green Campus Program** and **Green Step Organization** involve students, faculty, and local authorities in environmental and social initiatives.



- ◆ Collaboration with **national companies** (such as waste and energy services) supports applied sustainability projects on waste reduction, clean energy, and resource management.



- ◆ Partnerships with **international organizations** and **global education frameworks**—including ETUT's membership in the **CDIO Initiative**—enable innovation exchange and strengthen global academic networks.

17.3 Engagement & Outreach

ETUT organizes an average of **45 sustainability-related events per year**, including conferences, workshops, and awareness campaigns focused on SDG implementation, climate action, and green innovation.

These activities promote cross-sector dialogue and build long-term partnerships between academia, government, and industry to accelerate sustainable development in Turkmenistan and the wider region.



Related UI GreenMetric Categories

- ◆ **Setting & Infrastructure**
- ◆ **Energy & Climate Change**
- ◆ **Education & Research**



ETUT's **Sustainability Team** organizes and supports a wide range of events and volunteer activities aimed at promoting environmental awareness and sustainable practices. Annual events such as Sustainability Week and Earth Day draw students and staff to participate in campus-wide initiatives, including eco-workshops, waste reduction drives, and upcycling sessions. This active engagement creates a thriving community of sustainability advocates who contribute to ETUT's green goals.



Aygul Beshimova

A natural leader with a clear vision for a sustainable future, Aygul coordinates ETUT's Setting initiatives. Her strategic mindset and strong sense of responsibility help guide the team's activities, ensuring that every sustainability project is well-organized and impactful. Her leadership inspires others to work towards a greener campus.



Dursun Amandurdyeva

Passionate about clean energy solutions, Dursun plays a vital role in promoting energy efficiency and renewable technologies on campus. Through creative initiatives and technical knowledge, she supports ETUT's transition to sustainable energy systems and encourages others to adopt eco-friendly practices.



Gozel Amankulova

With a strong commitment to environmental protection, Gozel focuses on waste reduction, recycling, and responsible consumption. Her active involvement in awareness campaigns and hands-on activities helps build a cleaner and more sustainable campus environment.



Ayjeren Ilyasova

Dedicated to water conservation, Ayjeren leads initiatives to promote responsible water use and innovative water-saving solutions. Her efforts contribute to preserving this vital resource and raising awareness about its importance for a sustainable future.



Shamuhammet Saparow

A proactive and dynamic team member, Shamuhammet works to improve sustainable mobility on campus. By encouraging green transportation options and supporting eco-friendly commuting solutions, he helps reduce the university's carbon footprint and fosters a culture of climate responsibility.



Chinara Ruslanova

Passionate about sharing knowledge and inspiring others, Chinara promotes sustainability through education. By organizing workshops, presentations, and awareness campaigns, she plays a key role in building a strong culture of environmental responsibility at ETUT.