AZTU

UI GreenMetric
World University Rankings

AZERBAIJAN TECHNICAL UNIVERSITY

UI GREENMETRIC REPORT

REPORT ON ENERGY AND CLIMATE CHANGE

2025

Introduction

In 2025, Azerbaijan Technical University (AzTU) significantly strengthened its institutional commitment to energy efficiency, climate action, and green technologies through a combination of academic initiatives, international cooperation, innovation-oriented projects, and sustainability-focused awareness activities. These efforts align with national climate priorities and international sustainability frameworks, including the UN Sustainable Development Goals (SDGs) and global climate action agendas.
AzTU's approach to energy and climate change in 2025 emphasizes the role of technology, digitalization, and innovation in addressing environmental challenges. Through expert meetings, international collaborations, and campus-based initiatives, the university actively promotes climate-resilient solutions, clean energy thinking, and environmentally responsible practices across education, research, and institutional governance.
One of the defining characteristics of AzTU's 2025 climate strategy is its evidence-based implementation, supported by documented activities, public events, and partnerships that contribute directly or indirectly to reducing environmental impact and promoting sustainable energy systems.

In addition, AzTU focused on fostering a culture of sustainability among students and staff by integrating climate education into curricula, organizing workshops and training programs, and encouraging participation in environmentally responsible projects. This holistic approach ensures that sustainability principles are embedded in everyday academic and operational practices, creating a long-term impact on both the university community and the wider society.

References

1) UI GreenMetric
2) National Information Portal on Sustainable Development
3) AzTU Sustainability

Objectives

- Develop skilled energy professionals through bachelor's, master's, and doctoral programs.
- Advance scientific research in renewable and energy-efficient technologies.
- Promote renewable energy applications on campus as demonstration systems.
- Support national and international sustainability and climate commitments.
- Implement smart building and energy-efficient infrastructure solutions.
- Reduce institutional carbon footprint through optimized energy use.
- Foster student and staff engagement in climate and energy initiatives.
- Expand collaboration with industry and international partners.
- Enhance laboratory infrastructure for applied energy research.
- Promote sustainability and climate awareness through education and outreach.

Keywords

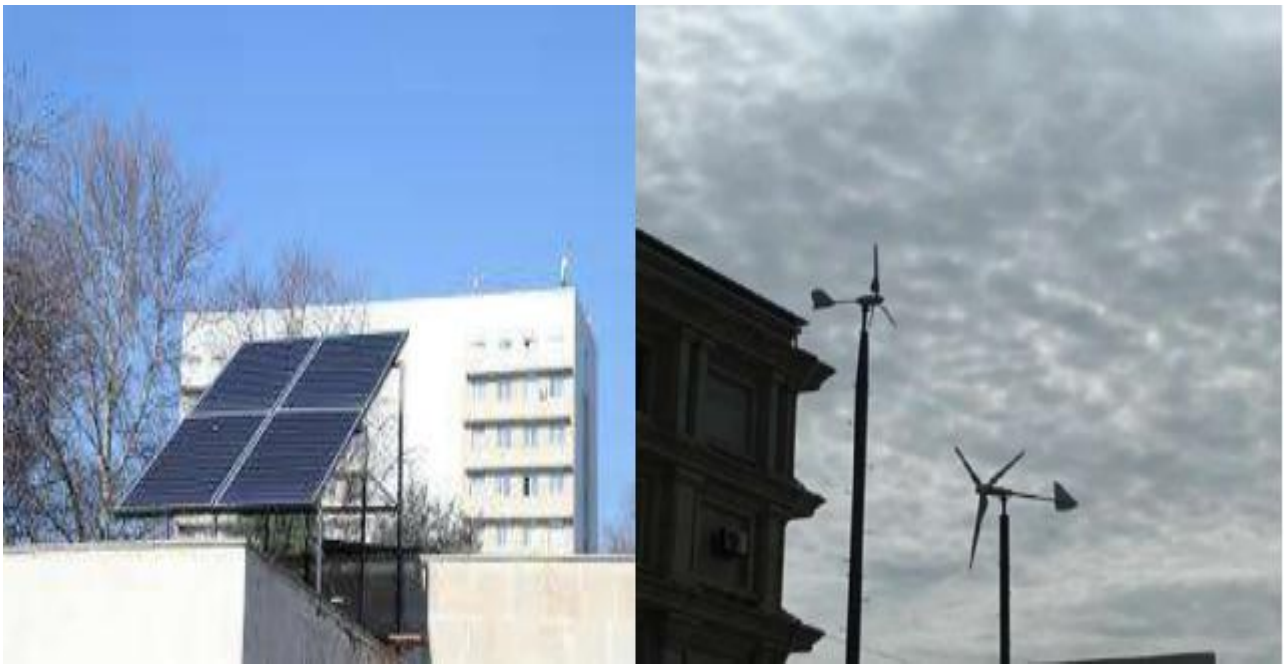
KEYWORDS FOR SETTING AND INFRASTRUCTURE				
Renewable energy	Energy efficiency	Solar panels	Wind generator	Biogas plant
Asynchronous generator	Small hydropower	Reactive power compensation	Smart building	Thermal engineering
Refrigeration equipment	Thermophysical properties	Energy audit	Carbon footprint	Energy quality indicators
Climate resilience	Scientific research	Environmental safety	Digital technologies	COP29
Green energy	Innovations in energy	Energy-saving lamps	Electric scooters	Emission-free heating
Geothermal heating	Heat capacity of air	Pressure sensors	Student projects	Laboratory research
Electric power industry	Thermal power engineering	Air losses	Energy monitoring system	Education in sustainable development

Current Situation

- **Digitalization and Energy Efficiency Integration**

In 2025, AzTU initiated the development of a Digital Transformation Strategy, which plays a critical role in improving energy efficiency and resource optimization across institutional operations. Digital tools and data-driven management systems are recognized as essential instruments for monitoring energy consumption, reducing losses, and supporting informed decision-making related to climate action.

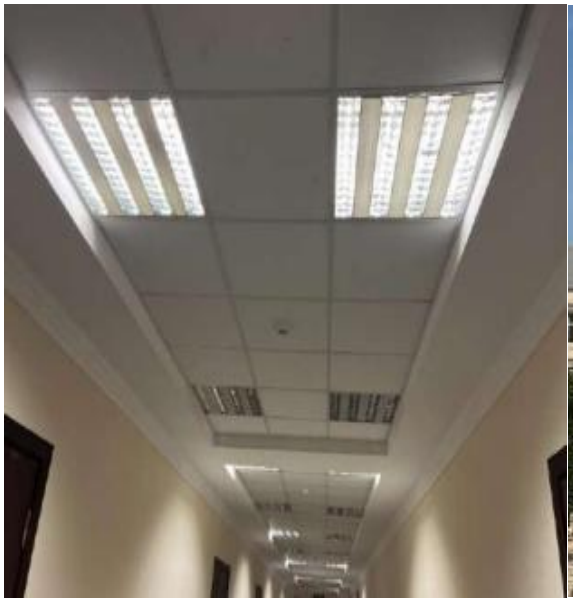
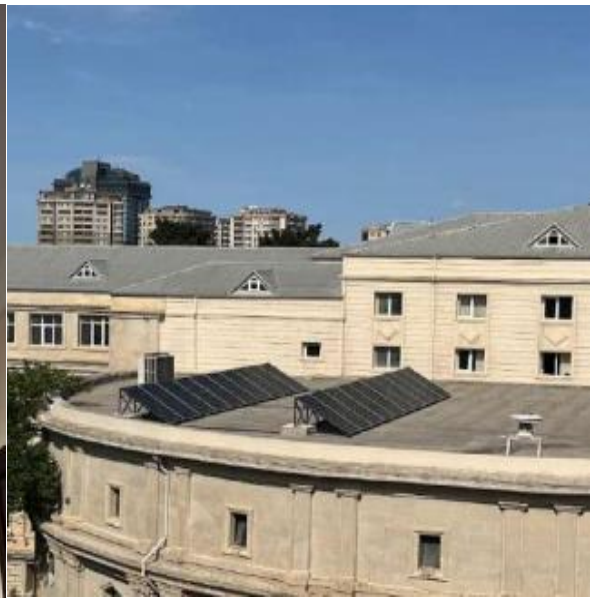
This strategic direction strengthens AzTU's capacity to transition toward smart campus solutions, where digital infrastructure supports energy monitoring, optimized utility usage, and environmentally responsible operational practices. (source)



- **Innovation, Green Technologies, and Climate-Oriented Research**

AzTU expanded its innovation ecosystem in 2025 through the establishment of the **DISC Innovation and Sustainability Lab**, created in cooperation with Dithari Technologies. The lab focuses on sustainability-oriented innovation, circular technologies, and environmentally responsible digital solutions. While not limited to energy systems, the lab contributes indirectly to climate mitigation by promoting efficient resource use, sustainable technology development, and green innovation skills among students and researchers. (source)

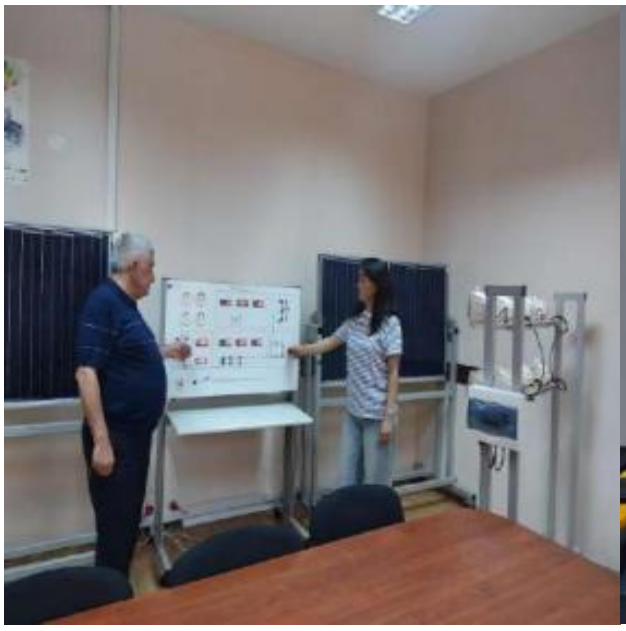
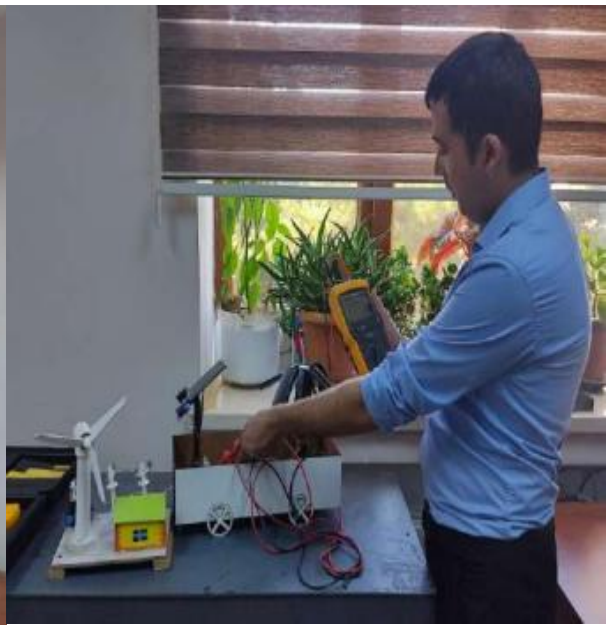
In parallel, AzTU academic staff actively contributed to international scientific platforms focused on engineering, sustainability, and climate-relevant technologies. Participation in international engineering summits and conferences facilitates knowledge exchange on energy systems, climate-resilient infrastructure, and green technological solutions. (source)

- **Artificial Intelligence, Smart Systems, and Climate Solutions**

Recognizing the growing role of **artificial intelligence (AI)** in addressing energy and climate challenges, AzTU organized and hosted academic events focused on the integration of AI and digital technologies into higher education and research. These discussions highlighted how AI-driven solutions can support energy optimization, climate modeling, smart grids, and sustainable infrastructure planning.

By promoting interdisciplinary dialogue between engineering, digital technologies, and sustainability, AzTU strengthens its institutional readiness to adopt **technology-driven climate solutions**. (source)

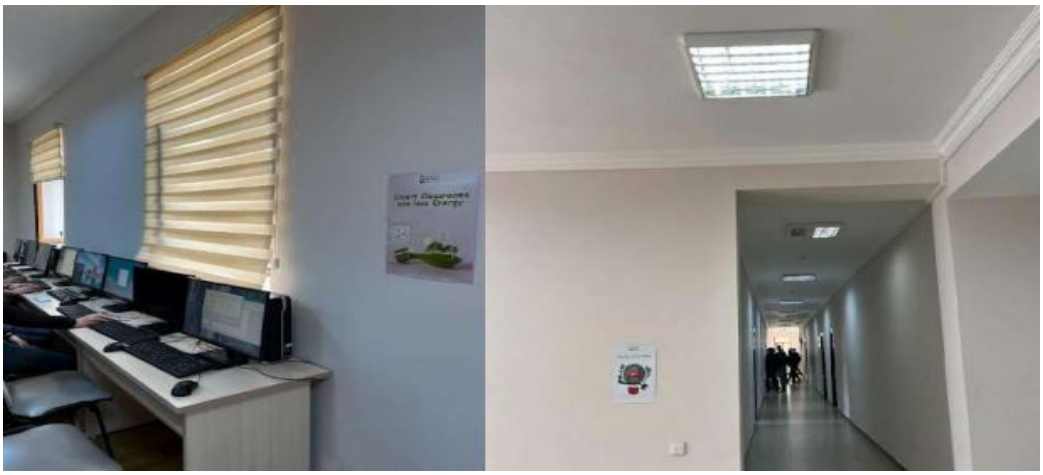



- **Climate Action Awareness and Sustainability Education**

In 2025, AzTU continued to prioritize climate awareness and behavioral change as integral components of its energy and climate strategy. The university hosted sustainability workshops and training sessions addressing environmental challenges such as plastic pollution, sustainable materials, and green production methods.

These activities contribute to climate action by:

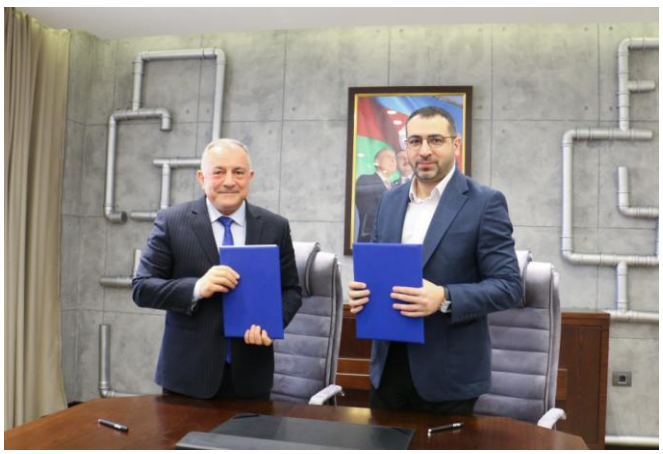
- Increasing environmental literacy
- Promoting sustainable consumption and production patterns
- Encouraging student and staff engagement in climate-friendly practices (source)

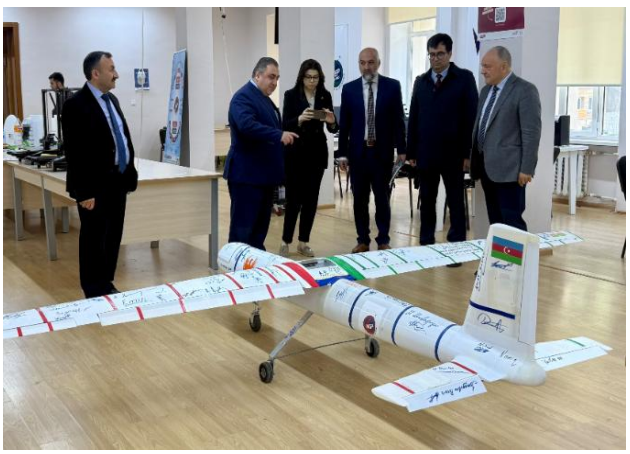


- **International Cooperation Supporting Energy and Climate Goals**

AzTU's international partnerships in 2025 played a significant role in strengthening its energy and climate change agenda. Delegations led by university leadership visited leading universities in Indonesia, Malaysia, Germany, and other countries, facilitating cooperation in engineering education, sustainability research, and climate-relevant technological fields.

These collaborations enhance AzTU's exposure to global best practices in renewable energy systems, climate-resilient infrastructure, and sustainable campus development. (source 1), (source 2)





- Climate Action and Carbon Management

AzTU supports climate action through institutional policies, awareness initiatives, and evidence-based monitoring practices. Carbon emission assessments published for previous years (2023-2024) provide a foundation for understanding emission sources and guiding future mitigation strategies. In 2025, climate action efforts focused on **capacity building, institutional alignment, and technology-driven solutions**, rather than numeric target reporting.
This approach ensures transparency while avoiding unverified assumptions and aligns with UI GreenMetric's acceptance of **qualitative, evidence-based reporting**.

Source	Calculation Formula	Emissions (Metric Tons CO_2)
Electricity	(Electricity usage per year ÷ 1000) × 0.84= 3000 ÷ 1000 × 0.84	2.52
Shuttle Bus	Number of buses × total trips per day × distance (km) × 240 ÷ 100 × 0.01 = 0	0
Cars	Number of cars × 2 × distance (km) × 240 ÷ 100 × 0.02 = 370 × 2 × 5 × 240 ÷100 × 0.02	0.74
Motorcycles	Number of motorcycles × 2 × distance (km) × 240 ÷ 100 × 0.01 = 0	0
Total		**3.26**

Total Carbon Footprint (Azerbaijan Technical University, Baku, Azerbaijan)

Future goals

AzTU's future-oriented energy and climate goals extend beyond 2025 and include:

- Gradual expansion of renewable and clean energy solutions
- Increased use of smart and digital systems for energy management
- Strengthening climate-related research and innovation capacity
- Deepening international cooperation in climate and energy fields
- Expanding sustainability education and awareness initiatives

All future actions are designed to support long-term climate resilience and sustainable development without reliance on unverified numerical projections.

Conclusion

Azerbaijan Technical University's 2025 Energy and Climate Change framework reflects a

balanced, evidence-based, and innovation-driven approach to sustainability. Through digital transformation, green innovation laboratories, AI-focused academic dialogue, sustainability education, and international cooperation, AzTU actively contributes to climate action and clean energy transition.

By grounding its climate initiatives in documented activities and partnerships, AzTU ensures transparency, credibility, and alignment with UI GreenMetric principles — positioning the university as a responsible and forward-looking institution in the field of energy and climate change.

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