2025 / ANNUAL SUSTAINABILITY REPORT

SDG 12 | Responsible consumption and production

Khazar University · Baku, Azerbaijan

REPORTING PERIOD JANUARY–DECEMBER 2025

Institutional Approach

Khazar University promotes responsible consumption and production through sustainability policies, teaching, student innovation and research partnerships. In 2025, the University updated its procurement policy, supported practical learning about waste and manufacturing, and encouraged students to explore recycling, circular design and more sustainable daily choices.

Jan 2025	11 Apr	1 Jul
Sustainable Procurement Policy revised	student learning visit to waste-management facilities	recycled-material eco-design exhibition held

12.1 Research on responsible consumption and production

In 2025, Khazar University-affiliated researchers contributed to **40 scientific publications relevant to SDG 12 (Responsible Consumption and Production)**, comprising 36 research articles, two review articles, one book chapter, and one conference paper, according to the supplied Scopus dataset. Their research addressed circular economy strategies, waste management, sustainable materials, resource recovery, and environmentally responsible production.

Circular economy and waste management

Kou et al. (2025), in *Enhancing Circular Economy Project Outcomes via Molecular Fuzzy-Based Decision Support System*, investigated how advanced decision-making models can improve circular economy investments, particularly through effective waste management and energy efficiency.

Eti et al. (2025) examined sustainable approaches to rare element waste management, proposing strategies for recycling, technological development, and resource recovery under different economic conditions.

Waste reduction and resource recovery

Kartal et al. (2025), including Khazar University-affiliated researcher Shahriyar Mukhtarov, investigated the relationship between waste-related technological innovations and greenhouse gas emissions in China. Their findings highlighted the importance of evaluating whether environmental innovations produce measurable reductions in emissions.

Aryanfar et al. (2025) explored methods of transforming food industry sludge into valuable resources, including biogas, biochar, and compost. The study demonstrated opportunities for recovering energy and materials from industrial waste.

Sustainable packaging and materials

Ebrahimi et al. (2025) developed a food packaging system incorporating potato waste starch and natural compounds to improve food preservation and freshness monitoring.

Darkak et al. (2025) investigated packaging materials produced from sunflower by-products, demonstrating their potential for monitoring food freshness and extending refrigerated food preservation.

Ghodratnama et al. (2025) examined the use of artificial intelligence to predict the strength of recycled aggregate concrete, contributing to research on resource-efficient construction materials.

Research participation and knowledge exchange

Alongside scientific publications, Khazar University promoted responsible production and consumption through practical education and environmental initiatives.

On 11–12 March 2025, researchers participated in the SORG4NOBAL international research meeting, discussing sustainable agriculture and pollution reduction.

On 11 April 2025, Chemical Engineering students visited Temiz Shahar's waste-management facilities, gaining practical knowledge of waste sorting, recycling, and treatment.

The University's EcoSteps initiative promoted awareness of individual carbon footprints, while the "Pearls of the Caspian" exhibition on 1 July demonstrated creative approaches to reusing household waste and recyclable materials.

Together, these publications and activities demonstrate Khazar University's contribution to research and knowledge exchange on resource efficiency, circular economy development, sustainable materials, and responsible production practices.

Selected Research Publications (2025)

1. **Kou, G., et al. (2025).** *Enhancing circular economy project outcomes via molecular fuzzy-based decision support system*. Ain Shams Engineering Journal. DOI
2. **Eti, S., et al. (2025).** *Scenario-driven decision models for rare element waste management by integrating Koch snowflake fuzzy sets and Euclidean expert weighting.* Sustainable Futures. DOI
3. **Kartal, M. T., et al. (2025).** *Investigating the role of waste-related patents in waste-related emissions in China.* International Journal of Sustainable Development & World Ecology. DOI
4. **Aryanfar, Y., et al. (2025).** *Transforming food industrial sludge into sustainable resources.* Business Strategy and the Environment. DOI
5. **Ebrahimi, A., et al. (2025).** *Production of a smart multilayer packaging system based on cellulose acetate nanofibers*. Industrial Crops and Products. DOI
6. **Darkak, M., et al. (2025).** *Development of active double-layer film from sunflower by-products.* Carbohydrate Polymers. DOI

Additionally, Khazar University links scientific learning with environmental protection, waste reduction and responsible use of resources. The Analytical Chemistry Research Group works on environmental monitoring, green analytical methods, heavy-metal removal and ways of reusing industrial and plastic waste. This group was established in 2024 and continued to provide an institutional setting for student research.

In March 2025, Khazar researchers participated in the international SORG4NOBAL project final meeting, discussing climate-resilient sorghum, agroecology and approaches to reducing agricultural pollution. The University also hosted the Fourth International One Health Conference on 28–29 November, where more than 70 researchers presented and discussed links between environmental risks, food safety and human health. These activities support knowledge exchange and applied research across sustainability-related fields.

Courses such as ENV 305 Health, Safety and Environment and THM 302 Sustainable Tourism offered in autumn 2025 introduced students to waste management, pollution prevention and responsible resource use across different sectors.

12.2 Operational measures

Khazar University's Sustainable Procurement Policy, revised in January 2025, guides purchasing decisions using life-cycle costs, environmental impact, ethical standards and supplier responsibilities. The University also maintains policies on sustainably sourced campus food, reducing single-use plastics and hazardous waste management. Its Environmental Policy supports waste sorting, reducing paper consumption and using electronic systems. The published policies describe institutional expectations across campus operations and relevant supplier relationships.

Practical learning strengthened this approach in 2025. Chemical Engineering students visited Temiz Shahar's waste-sorting, industrial park and incineration facilities in Balakhani on 11 April to learn about waste separation, treatment and recycling. A February visit to FAB Group manufacturing facilities introduced production processes, material efficiency and quality control. These visits connected classroom learning with operational practices in industry.



Student projects made sustainability visible through design and technology. At the Pearls of the Caspian exhibition on 1 July, students displayed eco-design and collage works made with recyclable and household waste materials. A Khazar team won third place in the Digital Ecology category at GreenTech II in April.



The student-led EcoSteps carbon-footprint platform, launched in January 2025, helped users understand the environmental impact of everyday choices. The AirVive air-purification concept also won second place at a sustainability hackathon in February.



12.3 Proportion of recycled waste

The University's Environmental Policy sets out commitments to sorting household waste, recovering paper and reducing printing, while its Plastic-Free Campus Policy encourages reusable alternatives and awareness of single-use plastics. The hazardous waste policy outlines safe handling and disposal practices. These documents provide a framework for resource management. Learning activities and recycled-material artwork illustrate students' engagement with the subject, rather than measured university-wide waste diversion.

12.4 Publication of a sustainability report

Khazar University communicates its sustainability work through publicly available reporting. Its 2024 Sustainable Development Goals Summary Report describes activities across the SDGs, while the University's sustainability webpage states that it has published annual sustainability reports since 2020. The present 2025 activity report forms part of this continuing effort to document policy commitments, educational activities and progress towards sustainable development.

Selected Activities in 2025

2025	ACTIVITY
Jan	EcoSteps carbon-footprint platform launched; procurement policy revised
8–9 Feb	AirVive project awarded second place at Clima Tech hackathon
13 Feb	FAB Group manufacturing and resource-efficiency learning visit
11–12 Mar	SORG4NOBAL research meeting on sustainable agriculture
11 Apr	Temiz Shahar waste-management and recycling site visit
17 Apr	GreenTech II Digital Ecology competition award
1 Jul	Pearls of the Caspian: recycled-material eco-design exhibition
Autumn	Health, Safety and Environment and Sustainable Tourism courses
28–29 Nov	Fourth International One Health Conference

2025 Overview

In 2025, Khazar University combined institutional policy updates with waste-management education, student-led environmental innovation, sustainable-design activities and international research dialogue. Existing policies and previous sustainability reports provide the wider institutional context for this work.