



REPORT
on sustainable development for 2025



Karaganda



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Introduction

In its activities, Abylkas Saginov Karaganda Technical University NJSC adheres to the principles of sustainable development, recognizing its impact on the economic, environmental, and social spheres. The University strives to structure its work in such a way that ensures long-term stability, uses resources rationally, and contributes to improving the quality of life for society.

At the core of its development strategy there is responsibility to all the stakeholders: the staff, students, partners, and society. The University strives to strengthen trust, to increase process transparency, and to implement present-day management approaches based on the ESG principles.

The University sustainable development goal is to ensure business continuity, to mitigate potential risks, and to attract investment through integration of environmental, social, and governance (ESG) standards into its daily operations. Implementing these principles contributes to the achievement of the UN Sustainable Development Goals (SDGs) and forms conditions for responsible growth.

The University balances its economic interests, social mission, and environmental sustainability, thereby enhancing the long-term value of its activities and investor confidence.

The University sustainable development system encompasses three areas: the economic, the environmental, and the social ones.

The economic area is focused on improving the process efficiency, the rational use of resources, developing innovation, investing in modern technologies, and increasing labor productivity, thereby strengthening the University financial stability.

The environmental area aims to reduce the environmental impact, to implement energy- and resource-saving technologies, to improve environmental management, to use rationally natural resources, and to develop waste recycling systems.

The social area reflects the University commitment to providing safe working conditions, caring for employee health, ensuring a decent level of compensation, supporting professional development, implementing social and educational initiatives, and participating in charitable and volunteer projects.

The continuous monitoring of performance in each area allows the University to promptly identify risks, to take measures to mitigate them, and to prevent potential negative consequences for stakeholders.

1. Positioning and partnership (Economic component)

The Government of the Republic of Kazakhstan, acting through the State Property and Privatization Committee of the Ministry of Finance, acts as the founder of the Company. The Sole Shareholder and industry-specific authorized body is the Ministry of Science and Higher Education of the Republic of Kazakhstan (EK MSHE) that owns and operates 100% of the shares.

Abylkas Saginov Karaganda Technical University NJSC leases 14 land plots with the total area of 17.13 hectares.

In 2025, the University revenue increased compared to 2024 and reached 12,467,451.47 thousand tenge, confirming a steady positive trend in financial growth.

Analysis of the competitive positions and ranking



In 2025, Abylkas Saginov Karaganda Technical University NJSC once again participated in the UI GreenMetric World University Ranking 2025. It evaluates the University commitment to developing green infrastructure, sustainable development principles, and environmental protection. According to the ranking, the University ranked 1278th globally and 18th among higher education institutions in Kazakhstan demonstrating a significant improvement in performance compared to the previous year.

The University systematically analyzes its competitiveness at the national and international levels. Performance assessment includes monitoring graduate demand, student and faculty satisfaction, and enrollment trends.

According to the **QS World University Rankings (QS WUR)** for 2025, the university ranks **851+**, and **251** in the **regional QS Asia University Rankings**.



The University traditionally occupies a leading position in national institutional rankings and educational program rankings conducted by Kazakhstani accreditation agencies. According to the 2025 Atameken National Chamber of Entrepreneurs (NCE) ranking, **23** of 29 educational programs entered the **top 10**. All the **50** programs across three levels of study received top rankings in the Independent Agency for Accreditation and Rating (IAAR) rankings.

Research activities and innovation

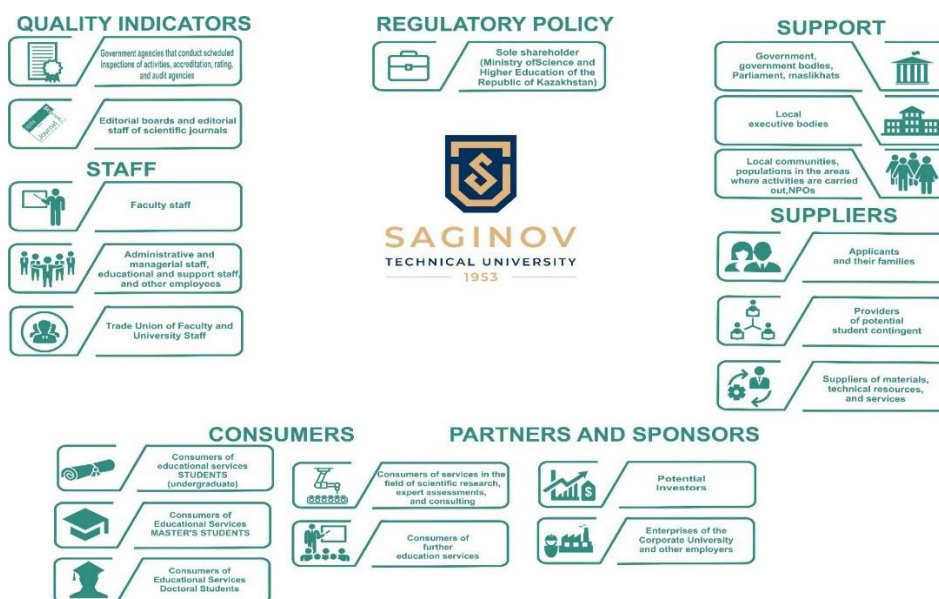
The University consistently develops its research potential, relying on a cluster approach. The focus is on fundamental and applied research, as well as implementation of innovative solutions.

The information of the progress and results of research is published on the University official website. It presents the key research areas, innovative projects, and achievements of the faculty and students. In addition, seminars, research competitions for master and doctoral students, student conferences, and project consultations are regularly held.

Interaction with stakeholders

The University adheres to the principles of responsible and rational stakeholder engagement, viewing this as a crucial element of sustainable development.

To systematize engagement, a **Stakeholder Map** has been developed in accordance with paragraphs 173–174 of Section 19 of the Corporate Governance Code. This tool ensures effective communication management and maintains a balance of interests.



The University key stakeholders include:

- The Ministry of Higher Education of the Republic of Kazakhstan: a strategic shareholder shaping public policy in higher education and science;
- Enterprises and employers: partners in the implementation of practice-oriented programs and joint research;
- Employees and staff: the key human resource determining the quality of the educational process;
- Bachelor students, master students, doctoral students, and applicants: the primary target audience for educational services;
- Trade unions: ensure social stability and protection of labor rights;



- Government agencies, investors, local communities, SPAs, and suppliers: partners in the implementation of social and innovative projects.

International standards

When identifying and engaging with stakeholders, the University follows international standards:

AA1000 (Stakeholder Engagement Standard 2011),

ISO 26000 (Guidelines for Social Responsibility),

and the GRI (Global Reporting Initiative) principles. These standards view stakeholder engagement as the key element of sustainable development.

Results of implementing sustainable development principles

Implementation of sustainable development principles is aimed at achieving the following results:

1. Attracting investment: sustainable development increases the University investment appeal.
2. Improving management effectiveness: integrating environmental and social aspects into management decisions minimizes risks and expands planning horizons.
3. Strengthening reputation: developing sustainable practices creates a positive image and trust among partners.
4. Increasing stakeholder loyalty: providing comfortable working and development conditions increases employee and student engagement.
5. Improving efficiency: implementing modern technologies and innovations contributes to the University competitiveness.

Information transparency

To ensure transparency and accessibility of information, a separate section dealing with sustainable development has been organized on the University official website. It contains information of ongoing projects, partnership initiatives, and performance indicators in the economic, social, and environmental spheres.



Abylkas Saginov Karaganda Technical University



Center for Sustainable Development



About the Center

Abylkas Saginov Karaganda Technical University actively supports the UN Agenda for Sustainable Development and strives to contribute to solving current global challenges. The University develops the culture of sustainable development in the educational environment and annually expands its efforts to achieve the Sustainable Development Goals through education, research, community initiatives, social responsibility and industrial activities. Particular attention is paid to issues of improving health and well-being, ensuring accessible and high-quality education, promoting gender equality and reducing inequality, developing an environmentally sustainable campus, rational consumption of resources, water management and sustainable development of local communities. In addition, the University contributes to the country's economic growth by supporting innovation and professional development of its employees.

- The Center was organized to promote the ideas of the Sustainable Development Goals and to implement them in practice at Abylkas Saginov Karaganda Technical University.

- › Anti-corruption compliance ser
- › Council on Ethics
- › Public reception KTU
- › Risk management and Internal control
- › Virtual Tour
- › Virtual Museum
- › Library recommends
- › Wireless network
- › Instructions for the use of File server by the employees of KST
- › Partner sites
- › Adding content to the University website
- › Anti-Corruption
- › The line of trust

2. Environmental sustainability

Due to the nature of its activities, the University does not have a significant direct impact on the environment. Its main resources consumed are electricity, heat, and water.

Non-profit Joint-stock Company Abylkas Saginov Karaganda Technical University consistently implements the policy of rational use of natural resources, striving to reduce excess consumption and to minimize negative environmental impacts. To achieve these goals, the University implements energy-efficient technologies, takes measures to reduce water consumption, and reduces paper consumption through the active implementation of an electronic document management system.

One of its development areas is implementation of the "green office" concept, an important component of which is conducting information and educational campaigns aimed at raising the level of environmental awareness and awareness among the staff and students.

The University also implements measures to improve and to green the campus, placing particular emphasis on creating a comfortable and accessible environment for all the categories of students and staff, including individuals with disabilities and special needs.

As part of its sustainable development policy, the University actively implements measures aimed at combating climate change and promoting environmental responsibility. The University conducts **research** in the areas of climate change, energy efficiency, and sustainable environmental management, and implements **educational programs** aimed at developing students' environmental awareness.

An annual tree planting campaign brings together students, faculty, and employees to increase greenery and improve the quality of the urban environment.



In addition, the University organizes **conferences, roundtables, and dialogue platforms** with regional businesses to discuss climate change, the transition to a low-carbon economy, and implementation of sustainable technologies. These

initiatives foster the culture of environmental responsibility and strengthen the University contribution to achieving the Sustainable Development Goals (SDGs), particularly Goal 13 "Climate Action".

On October 6, 2025, the University representatives participated in an offline session of the international program "**Education and Adaptation to Climate Change**" held at the Karaganda Ecological Museum. Participants presented ideas for developing sustainable urban infrastructure, preserving biodiversity, and using alternative energy sources. The session included an interactive discussion of climate risks and adaptation strategies.

Campus ecosystem

In 2025, the University continued to successfully develop and improve its infrastructure aimed at enhancing the quality of the educational process and improving student living and leisure conditions. All the projects initiated in 2024 have been fully implemented and are actively operating.

Today, the University successfully operates:

- The Youth Center of the Zhas Orda Association, which has become a platform for developing student initiatives and leadership skills.
- The Meyirim Youth Health Center, where students receive consultations and support on health and well-being.
- A television studio, providing media content creation and developing students' creative potential.
- A modern sports center and gym, providing all the conditions for physical education and sports.

The **STU BANK IDEA** platform aimed at collecting and implementing ideas from students, faculty, and employees to improve the educational environment and university services, continues to operate. All the proposals are reviewed by the University Management Board, and the best ones are successfully implemented. Thanks to these initiatives, the University has become even more comfortable, safe, and focused on student development.





The University implemented the **Print Box** project, a joint initiative of students and young scientists. The project allows students to easily print necessary materials at any time, saving time and streamlining the learning process. The Print Box terminals are installed in academic buildings and in the student dormitory.

In 2025, special attention was also paid to creating an accessible environment for people with disabilities. The University has implemented a series of measures aimed at ensuring equal opportunities for all the categories of students and staff.

Currently, the total number of accessible facilities includes the following:

- 8 parking spaces for disabled people;
- 6 accessible restrooms;
- 5 accessible elevators.



In 2025, the "Green Alley" environmental campaign was held at Abylkas Saginov Karaganda Technical University. The campaign aimed at greening Kazakhstan cities and creating a comfortable environment. As part of the initiative, 100 trees were planted on the University grounds. The campaign became a symbol of the University's respectful attitude toward nature and its contribution to improving the region environmental situation.



The University has installed containers for collecting used batteries as part of the "Taza Kazakhstan" campaign, supporting environmental initiatives and reducing the negative impact on the environment.

Work is ongoing to develop the University infrastructure and to improve living conditions in the dormitories. Refrigerators and appliances have been installed, kitchens on each floor are equipped with microwaves, stoves, and ovens, and automatic washing machines and dryers have been installed.

Equipment is being updated in the university's upholstered and cabinet furniture production workshops, plastic window manufacturing workshops, and blind manufacturing workshops. A printing and duplicating workshop is also in operation for the production of printed materials, as well as a workshop for sewing curtains and bed linen.



Major renovations were completed at all the academic buildings, including renovations to the façades, utility systems, and classrooms, as well as modernization of student dormitories.



Implementation of these comprehensive measures aimed at increasing the comfort and accessibility of the educational environment, significantly improved student learning and living conditions, and ensured accessibility of infrastructure for all categories of students.



3. Social sustainability

3.1 Responsible practices

The University social sustainability entails responsible labor and business practices.

Responsible labor practices involve treating employees as a core asset and a primary resource that directly impacts the university's performance.

The University structures its employment relations based on the principles of legality and respect for universally recognized labor rights. As part of its commitment to responsible employment, the University continuously supports its staff by implementing incentive systems such as a differentiated pay structure for academic staff and a comprehensive development program that rewards department heads and deans for achieving strategic targets. The staff trade union also plays an active role, regularly providing vouchers for health resorts and tickets to cultural events, as well as distributing gifts to all the employees for New Year, March 8th, and May 7th. Events are also held to celebrate the University Staff Day.

In its operations, the University adheres to the principle of equal opportunity and prohibits discrimination against employees regarding hiring, remuneration, access to training, promotion, or dismissal based on gender, race, language, religious or political beliefs, citizenship, national or social origin, or disability. The University implements and consistently upholds the policy against discrimination targeting girls and women across all the educational, research, and administrative activities, ensuring that women hold at **least 30%** of leadership positions within its structural units.

The University takes measures to ensure proper organization of employee work in the workplace and strives to create safe working conditions that comply with the requirements of the legislation of the Republic of Kazakhstan in this area.

Responsible business practices include such an important component as zero tolerance for corruption, which is one of the principles of sustainable development.

Corruption destroys the value the University creates for the Sole Shareholder, investors, the other stakeholders, and society as a whole.

Non-profit Joint-stock Company Abylkas Saginov Karaganda Technical University declares zero tolerance for corruption in any form.

Officials and employees involved in corruption cases are subject to dismissal and prosecution in accordance with the law. Internal control systems in the Company must include measures aimed at preventing and detecting corruption offenses. The Company develops a dialogue with stakeholders to raise their awareness in the fight against corruption.

3.2 Social and educational work

Karaganda Technical University has built an effective system for professional development, personal development, and the development of students' creative potential. Social and educational work is aimed at preventing crime, fostering

integrity and a healthy lifestyle, organizing dormitory living and leisure activities, and developing student self-government, volunteerism, and debate movements.

To strengthen patriotic education and to enhance student spiritual, moral, cultural, and aesthetic development, dormitory student councils and the Zhas Orda Youth Association together with the Department of Youth Policy conduct sports and cultural events, roundtables, trainings, lectures, and competitions.

To foster students' values of honor and integrity, the University administration together with the Aqniyet charitable organization of the Zhas Orda Youth Association at Abylkas Saginov KTU, held the annual charity event "Road to School" from July 25 to August 30, 2025. As part of the campaign, assistance was provided to children from large families: they were given backpacks, school supplies, as well as bows and ties.



To stimulate academic, research, and social engagement among students, Abylkas Saginov Karaganda Technical University offers a number of incentives. Each year, according to the results of each term, students are awarded scholarships established by the President of the Republic of Kazakhstan based on a quota allocated by the Ministry of Science and Higher Education.

The Abylkas Saginov Scholarship has been established. Fifty scholarships are available for the 2024-2025 academic year. Applications for scholarships are accepted at the end of each month via this link. The scholarship is awarded by the order of Chairman of the Board, Rector of Abylkas Saginov KTU based on the decision of the Abylkas Saginov Scholarship Commission. The Commission meets monthly to review applicants' monthly work reports. The scholarship is awarded throughout the academic year from September to June based on applicants' monthly performance.

In accordance with the resolution of the International Scientific and Practical Online Conference "Alimkhan Yermekov and the Formation of Kazakh Statehood" held on April 16, 2021, the Alimkhan Yermekov Scholarship was established for the University students for active socio-political activities, achievements in the natural

sciences and humanities, and excellent academic performance. The scholarship is awarded each term.

In June 2025, in honor of the World Environment Day, various environmental, cultural, and educational events were held around the world. As part of this initiative, the Department of Mine Aerology and Occupational Safety (MAOS) at Abylkas Saginov Karaganda Technical University organized a themed event with students from the College of Innovative Technologies. The event fostered students' environmental awareness, their interest in sustainable development, and respect for nature.

The University annually hosts the "STU Talents" talent competition for first-year students, the "STU Vibe" sports and fitness quest marathon, the "Ziyatker" intellectual game, the "Az-Nauryz" national traditions and sports competition, the "Zhas Wave 2025" autumn student retreat, the "STU Sultany Men Suluy" beauty and talent contest, ceremonial assemblies and concerts, sports competitions in various sports, roundtables, seminars, meetings with successful professionals and alumni, excursions, debate tournaments, and more. These events promote the intellectual, cultural, professional, and physical development of students, advocate for their interests in the University governance, and foster Kazakhstan patriotism and respect for cultural traditions.

It is worth noting that the Aqniyet youth charity organization of the Jas Orda Youth Association, together with activists from the Sports Center, held a charity football tournament between faculties. During the campaign, the students demonstrated their best qualities: friendliness, unity, and active citizenship. All the proceeds were donated to Nesipbek Smagulov's mother for his treatment (he has the Down syndrome).



3.3 Projects and cases

The University has implemented mechanisms to monitor and prevent academic integrity, including:

- an anti-plagiarism system, mandatory for all academic papers;



- a Research Ethics Committee that oversees the integrity of academic research and publications;
- an Anti-Corruption Compliance Service that monitors corruption risks and prevents academic misconduct.

An important aspect of the University strategy is the development of the academic culture based on the principles of honesty, openness, and professionalism. This policy includes the following:

- educational courses on academic integrity, included in all curricula;
- conducting anti-corruption seminars, mentoring hours, training sessions, and roundtables aimed at raising awareness among students, faculty, and employees;
- the Ethics Council that reviews academic misconduct and corruption risks.

According to a survey, students are satisfied with the level of quality control in their educational programs. The University conducts annual satisfaction monitoring, analyzing feedback from students, faculty, and employees. The reliability of the sociological survey results is confirmed by the Internal Audit Service.

The University has developed its own unique, comprehensive approach to risk management, covering both the institutional and operational levels. The data is collected through the internal audit, stakeholder surveys, and monitoring regulatory changes.

A risk identification mechanism, including registration, PESTEL analysis, risk mapping, and an automated system, enables to anticipate threats, to minimize their impact, and to improve resilience. All the risks are reflected in the annually updated Risk Register, which is part of the Company Risk Portfolio.

The uniqueness of the Risk Portfolio is ensured by the in-depth study of the University micro- and macroenvironment. For example, stakeholder groups across areas of collaboration were engaged in the analysis of macroenvironment factors as part of the PESTEL analysis.

The Risk Register is compiled in the Automated Risk Management System (hereinafter referred to as ARMS) based on the data provided by risk owners and an environmental analysis using a multi-factor SWOT analysis, which enables risk identification through analyzing the potential environment for their occurrence.





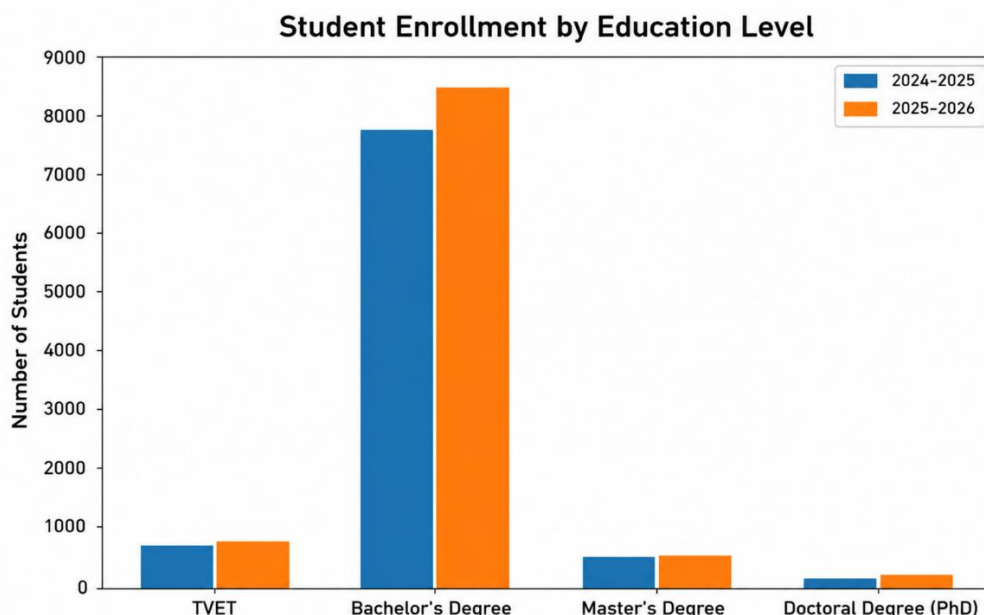
4. Education and research

At Abylkas Saginov KTU, education is conducted using a three-tier training system: bachelor's, master's, and doctoral (PhD) programs, all in the state and Russian languages, and offered full-time. The University is licensed to conduct educational activities.

Currently, specialists are trained in relevant educational programs, including 16 military specialties for reserve officers and sergeants. The University comprises six faculties, 26 departments, and the College of Innovative Technologies. There is also a Military department that provides training in military specialties.

In the 2025–2026 academic year, the University offered 123 educational programs, including 49 bachelor's, 40 master's, 18 doctoral, and 16 military specialties. The University continues to strengthen its position as the leading technical university in the country, providing qualified personnel training in line with the modern demands of the labor market and scientific and technological development. One of the most important indicators of the University competitiveness is external assessment by international rating agencies, confirming the quality of the University educational, scientific, and innovative activities.

In the 2024-2025 academic year, the total student population was 9,849, and in the 2025-2026 academic year, this number increased to 9,962. The student population by level of study also shows positive dynamics. The number of students in bachelor's programs increased from 7,714 to 8,531. The number of master's students was 513 in the 2024-2025 academic year and 515 in the 2025-2026 academic year. The number of doctoral students increased from 141 to 168.



In the current 2025-2026 academic year, the University faculty is 750 people, including 615 full-time lecturers, which accounts for 80% of the total faculty. The University faculty includes 30 full-time doctors of science, among them 34 with the

academic title of professor (Higher Attestation Commission), 154 candidates of science, among them 120 with the academic title of associate professor (Higher Attestation Commission) and associate professor, 106 PhDs, and 252 master's degree holders.

The degree-granting rate at the University is 46.9%. Admission to the University is based on state educational grants and contractual agreements.

In its internal quality assurance program, special attention is paid to the formulation of learning outcomes based on the descriptors of the National Qualifications Framework. Degrees are awarded based on academic credits and the achievement of stated outcomes, which aligns with international quality standards and the principles of student-centered learning.

Based on the analysis of vacancies in various sectors, the University identified priority areas for graduate employment. Systematic work in this area has contributed to a steady increase in the employment rate, which reached 92% in 2025 (according to the State Corporation "Government for Citizens").

4.1 International cooperation

Abylkas Saginov Karaganda Technical University is actively developing international cooperation, striving to integrate into the global educational and scientific community.

As of 2025, the number of active international agreements stands at 146, with 24 partner countries.

In early April 2025, an official visit by a delegation from the Department of Business and Trade of the British Embassy in Kazakhstan to Abylkas Saginov Karaganda Technical University took place. The delegation included Department Director Beth McKendrick, Trade Counselor Zarina Abzhapparova, and Trade Assistant Asyltas Kaltenova. The main goal of the visit was to become familiar with the University's key areas of activity, research and development in renewable energy and green technologies, as well as completed projects with potential for international collaboration and commercialization. During the visit, the British delegation visited the Center for ESG, Creativity, and Innovation, where they were briefed on the University's key activities in the field of sustainable development. The delegation was shown the University's key achievements in science and green technologies.



On May 22, 2025, an international delegation led by Mafalda Duarte, Executive Director of the Green Climate Fund, paid an official visit to Abylkas Saginov Karaganda Technical University. The delegation included representatives of the EBRD, the Ministry of Ecology and Natural Resources of the Republic of Kazakhstan, the Akimat of the Karaganda Region, and international experts. The purpose of the visit was to discuss cooperation in sustainable development, climate initiatives, and the implementation of green technologies.

The University served as a platform for dialogue on scientific and technical potential in the field of ecology and green transformation. The delegation was presented with an exhibition of scientific and innovative projects, including developments in green energy, energy efficiency, and waste management.



In 2025, a KTU delegation conducted a working visit to Minsk to expand partnerships with the industrial sector and innovation ecosystem of the Republic of Belarus.

During the visit, a meeting was held at the Minsk Tractor Plant, one of the country leading machine-tool manufacturers, where KTU students annually complete their internships and work placements.

Under international cooperation agreements and memorandums, the University participates in research and educational projects, implements academic mobility, and organizes research internships for master's and doctoral students. Partnerships have been established with leading universities in **Germany, Austria, Poland, Lithuania, the Czech Republic, Slovakia, Malaysia, China, South Korea, Uzbekistan, Kyrgyzstan, Pakistan, Ukraine, Russia, Belarus, and Turkey.**

Foreign students and integration. One of the University international priorities is increasing the number of international students.

In 2025, the University enrolled 118 international students from the following countries: Germany, Belarus, Ukraine, Russia, Afghanistan, Azerbaijan, Kyrgyzstan, Uzbekistan, Mongolia, and China.

The largest number of students came from **Uzbekistan and Russia.**

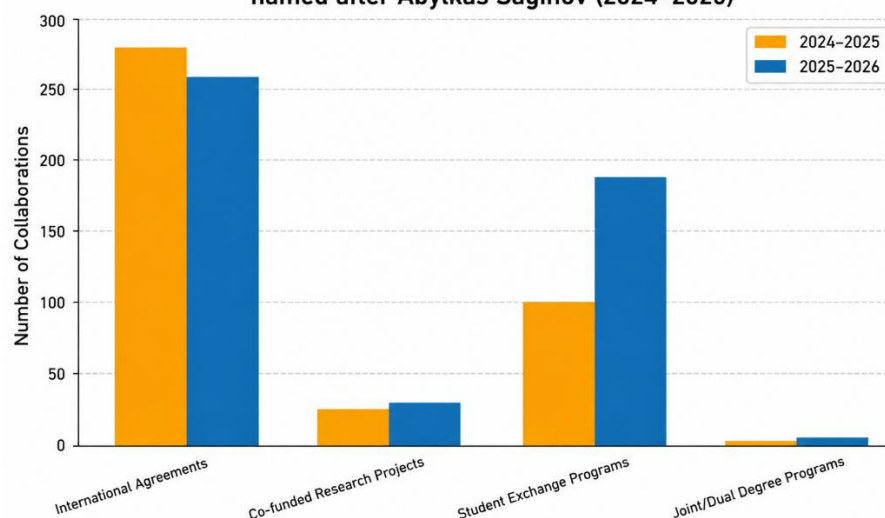




The University has a **system for integrating international students**, including both academic and extracurricular activities aimed at developing verbal and sociocultural competence. Studying in mixed academic groups facilitates the successful integration of international students into a new sociocultural environment.

Research activities are carried out in accordance with the priority areas of socioeconomic development of the Republic of Kazakhstan. International partnerships contribute to improving the quality of scientific research and the integration of sustainable development principles into the educational process.

**Dynamics of International Collaboration of KarTU
named after Abylkas Saginov (2024–2025)**



As part of the Bolashak "500 Scientists" scholarship program, the Embassy of the Republic of Kazakhstan in Berlin hosted a meeting with a group of 27 young Kazakhstan scientists who had arrived in Germany for a research internship. The topic of the meeting was "Green Technologies and Sustainable Development." The group included faculty

from the Department of Mine Aerology and Occupational Safety at Abylkas Karaganda Technical University.

4.2 Implementation of “green” and sustainable research projects

As part of its sustainable development policy and the promotion of green science principles, A. Saginov Karaganda Technical University, in 2025, continued to implement a number of research projects aimed at improving environmental safety, resource conservation, developing green technologies, energy-efficient solutions, and the sustainable modernization of industry and infrastructure.



In the area of high-quality education and digital transformation, a project led by D.D. Jzhantassova, "Intensifying Scientific and Professional Language Training for Technical Specialists in the Context of the Digital Transformation of Education" (2023–2025), is being implemented.



In the area of affordable and clean energy, a project led by R.R. Buzyakov, "Development of an Energy-Efficient Steam Electric Vacuum Heater for Domestic and Industrial Heating" (2025–2027), is being implemented. The project aims to improve the design of an energy-saving heating device.



The following projects are being implemented within the area of "Industrialization, Innovation, and Infrastructure":

- led by A.A. Ganyukov – development of the design and calculation of a mobile overpass for use in utility network repairs;
- led by A.S. Kadyrov – development of a methodology for calculating operating modes, design of devices, and materials for cleaning exhaust gases from transport equipment using ultrasound and laser radiation.

The following projects are being implemented within the framework of environmentally oriented research and "green technologies":

E.R. Khalikova: Studying mine working maintenance technologies with geomechanical process stability management;

A.A. Mussin: Developing resource-saving technologies for mining mineral deposits under conditions of high tectonic activity;

S.K. Arinova: Developing a technology for producing linings from man-made steelmaking waste, aimed at reducing the environmental impact and reusing industrial waste.



In the area of sustainable cities and communities, the project "Development of Methodological Approaches for Monitoring Critical Hydraulic Engineering Facilities Using Unmanned Aerial Vehicles and Earth Remote Sensing" is being implemented. This project aims to improve infrastructure safety, monitor man-made and natural risks, and reduce the environmental impact of mining activities.

Thus, the projects implemented in 2025 cover key aspects of sustainable development, including environmental safety, green technologies, energy efficiency, digitalization of education, resource conservation, development of sustainable infrastructure, and social stability, which collectively strengthen the university's scientific potential and its contribution to achieving the Sustainable Development Goals.

During the reporting period, scientists of A. Saginov Karaganda Technical University also obtained results of scientific and/or scientific and technical activities (S&T) as part of implementing environmentally oriented and resource-saving projects consistent with the principles of sustainable development and the concept of "green science":

Takibayeva A.T. "Technology for Obtaining Betulin from Birch Bark Using the Microwave Method";

Mekhtiyev A.D. "Micro Thermal Power Plant of the Cogeneration Type with Recovery";

Balabayev O.T. "Mobile Machine for Machining Seats for Liner Cylinder Blocks of Transport Vehicle Engines";

Kudryavtsev S.S. "Methodology for Assessing the Risk to the Environment from Emergencies at Chemically Hazardous Facilities";

Timokhina T.V. "Adaptive Digital Resources for Inclusive Education in Universities Using Artificial Intelligence Algorithms";

Khalikova E.R. "Technological Scheme for Strengthening a Weakened Zone of Rock Formations When Intersecting a Geological Disturbance with a Development Working";

Sarsembekov B.K. "Method for Cleaning Exhaust Gases of Internal Combustion Engines of Transport Equipment";

Imashev A.Zh. "Drilling and Blasting Technology Ensuring the Preservation of Mine Workings Design Parameters";

Huangang N. "Methodology for Assessing the Impact of Underground Mining on Surface Social Facilities";

Shormanbayeva D.G. "Institutional Regulation of the Prevention of Interethnic Conflicts Among Student Youth in the Context of the Sociocultural Transformation of Kazakhstani Society";

Pak Yu.N. "Assessing the Impact of Using Coals Containing Radioactive Elements in Fuel Energy on the Radioecological Situation of the Environment";

Mekhtiyev A.D. "Developing a Technology for an Energy-Saving Low-Pressure Steam Electric Heater with a Climate Control System";



Takhanov D.K. "A Method for Predicting Host Rock Movement and an Improved Scheme for Re-Mining Flat Ore Deposits".

The results obtained confirm the active development of scientific research at the University in the fields of sustainable development, green technologies, digitalization, energy efficiency, and environmental safety.

4.3 Support of initiatives

As part of implementing the strategic trends for sustainable development at Abylkas Saginov Karaganda Technical University, special attention is paid to developing an innovation ecosystem, supporting youth entrepreneurship, commercializing scientific research, and fostering a practice-oriented educational environment. The University actively promotes the development of innovative projects and entrepreneurial initiatives among students, graduates, and staff, creating conditions for the implementation of modern technological solutions, increasing entrepreneurial activity, and developing sustainable startup culture.

In 2025, the University continued to implement startup support programs as part of Abylkas Saginov Karaganda Technical University grant funding competition. The program main goal is to develop technological entrepreneurship, to stimulate innovative activity among students and young professionals, and to support projects aimed at solving pressing issues in digitalization, automation, ecology, education, and the service sector.

The University startup ecosystem is being formed in accordance with the modern requirements of the labor market and the knowledge economy. The University creates a favorable environment for launching and developing its own projects, provides consulting and organizational support, and facilitates interaction with the business community, industrial partners, accelerators, and development institutions. Particular attention is given to projects focused on the implementation of artificial intelligence technologies, digitalization, and sustainable development.

In 2025–2026, the first round of the grant funding competition supported innovative startup projects by the University students and young entrepreneurs.

One promising project was the "GEON" startup (IP "Academy 360" led by M.G. Kozhanov), which focuses on career guidance using artificial intelligence technologies. During the reporting period, the project was preparing an application for grant funding from QazInnovation.

The "Print Box" project (IP "IT Vend" led by Zh.M. Orynbekov) provides online document printing services through a network of vending machines located in the University academic buildings. The project is currently preparing an application for grant funding from QazInnovation.

The "Agro Sky" project (Agrosky IP led by M.A. Mukhametov) focuses on surveying agricultural land using drones and artificial intelligence. In 2025, the project completed the GCIP 2025 international acceleration program.

The "STU STORE" project (STU STORE led by M.M. Mussayev) aims to create branded University products and to develop the corporate culture.



The "STU Futsal" project (STU Futsal led by E.A. Okassov) provides professional mini-football training at the KTU sports complex. The project is implemented as part of continuing education programs.

The "Smart Stick" project (Smartstick led by N.S. Zhansagym) aims to create RFID/NFC stickers for access control and security systems.

The "Nomad Smart" project (Nomad Smart led by B.M. Kanagat) focuses on developing intelligent chatbots for automating business processes. During the reporting period, the team completed the Terricon Valley acceleration program.

The "Printing Studio 'Architecture and Design'" project (IP "DHOMANE" led by I.A. Dhomane) provides large-format printing services for university students and faculty.

Following the implementation of startup projects in the first round of the grant funding competition, the total income earned by individual entrepreneurs amounted to 10,304,894.77 tenge in 2025 and 4,956,101.36 tenge for January–March 2026. These results confirm the demand for the projects, sustainability of the established entrepreneurial ecosystem, and a high potential for commercializing youth initiatives.

The development of the startup movement at the University has a positive impact on achieving sustainable development goals, including ensuring high-quality education, supporting innovation, developing sustainable infrastructure, digitalizing processes, and increasing youth employment. Startup projects contribute to the development of students' practical competencies, the fostering of an entrepreneurial mindset, the enhancement of graduate competitiveness, and the strengthening of the University interactions with business and industrial partners.

The University will continue to develop an innovative environment, expand acceleration programs and grant support, stimulate young people's scientific and technical creativity, and create conditions for the sustainable development of technological entrepreneurship and the commercialization of innovative ideas.

4.4 Integration of science, industry, and education

The University actively maintains contacts with industry and the regional community on issues of educational and scientific development.

Currently, the Corporate University comprises 87 systemically important industrial enterprises and research centers in Kazakhstan, including city-forming companies.

In 2025, with the support of the Akimat of the Karaganda Region, the regional innovation and industrial hub QarTech was established at Abylkas Saginov Karaganda Technical University.

The hub serves as a platform for the integration of science, education, and industry and is focused on solving applied problems for regional enterprises, developing engineering and scientific competencies, and commercializing scientific research.

The QarTech's activities are aimed at developing four priority scientific and industrial clusters: mining and metallurgy, coal chemistry and new materials,



Industry 4.0 and automation, and ecology and waste management. The total planned funding for 2025–2027 is 1 billion tenge and is aimed at developing the hub infrastructure and implementing programs.

In 2025, the first phase of the hub activities was completed, aimed at creating an innovative environment and launching an ecosystem for interaction between science, education, and industry.

In 2026, the QarTech will move on to the second phase of development focused on scaling up programs and developing tools for systematically addressing applied research and industrial needs. This includes creating a regional registry of applied scientific developments, launching a regional grant program to support applied projects, conducting a foresight study of the Karaganda region innovative potential, and creating an R&D customer showcase to consolidate and publish requests from regional enterprises.

This will enable the region enterprises to address specific production and technological challenges with the involvement of scientists, engineers, and students.

Overall, the development of the QarTech is seen as a long-term tool for creating a sustainable innovation and industrial ecosystem in the region, ensuring personnel training, developing applied science, and technologically modernizing industry in the Karaganda region.



Conclusion

In 2024, Abylkas Saginov Karaganda Technical University NJSC approved a Development Program. It includes a number of sustainable development target indicators for 2024–2029. To inform the public of the University's activities within the SDG framework, a "Sustainable Development Center" tab was created on the website in three languages.

The University has established a mechanism for stakeholder engagement, implementation of sustainable development principles, and risk management, and has identified links with regional and national strategic priorities. This provides a solid platform for promoting the SDGs and the practical implementation of ESG initiatives.

Abylkas Saginov Karaganda Technical University NJSC has launched specific initiatives, which require further scaling through a KPI system and transparent reporting.

In 2025, the practical impact of SDG implementation varied across different areas. Achievements in the digitalization of core business processes, academic mobility, and the creation of innovative laboratories are enshrined in the Development Program and the University reports. At the same time, greater efforts are needed in the areas of scientific, innovative, and environmental projects.

Thus, in 2025, Abylkas Saginov Karaganda Technical University NJSC took important institutional steps toward sustainable development: it developed a Development Program, formalized its Sustainable Development Policy, and implemented projects on digitalization, AI, support for inclusive education, and support for the University environmental sustainability.

These achievements represent a **transitional stage from formal initiatives to sustainable and responsible practices**. The next, critically important stage is the transition from normative and organizational decisions to systemic, measurable practices: the introduction of KPIs for structural divisions, annual transparent reporting on activities, and the materiality and external verification of results. This will ensure that these efforts translate into sustainable socioeconomic impacts for the region and tangible international achievements.

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