# Report on the activities on Sustainable Development Goals of the Kazakh-British Technical University

The materials for the report are presented for2024-2025

**KBTU**
**2025**

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**Report on the implementation of the Sustainable Development Goals (SDGs) at KBTU**

# 1. Introduction: General Strategy for Implementing the SDGs at KBTU

The Kazakh-British Technical University (KBTU) demonstrates its commitment to sustainable development principles by supporting and implementing initiatives aimed at reducing its carbon footprint, improving energy efficiency, and reducing resource consumption. The university has integrated SDG concepts into its educational and research programs, as well as into projects and daily activities, becoming a leader among Kazakhstani universities in implementing these initiatives. The Kazakh-British Technical University (KBTU) actively develops projects and initiatives aimed at achieving **the Sustainable Development Goals (SDGs)** , particularly in the areas of quality education, innovation, and green technologies.

In the 2024–2025 academic year, KBTU continued to actively develop sustainable development initiatives through the KBTU SDG Center, international partnerships, research, educational programs, and innovative projects. KBTU is a member of the United Nations Global Compact and the United Nations Academic Impact ( UNAI ), affirming its commitment to the international sustainable development agenda.

During the reporting period, the university focused its activities on developing the following areas:

- sustainable and inclusive education;
- digital transformation;
- artificial intelligence and Smart City;
- sustainable energy and climate solutions;
- international partnerships and grant programs;
- student innovation and youth leadership.

# 2. SDG 1:

The Kazakh-British Technical University (KBTU) actively promotes Sustainable Development Goal 1, which addresses poverty alleviation and supports social initiatives. The KBTU Endowment Fund operates within the framework of this goal . Fund ), created in 2018 to search for and organize charitable and sponsorship assistance.

The main areas of the Foundation’s activities:

- Support for educational, scientific, sports and cultural initiatives.
- Sponsoring projects for the development of KBTU infrastructure.
- Establishing professional relationships with public and private organizations to secure resources for educational and scientific initiatives.

Social projects:

- Since 2019, KBTU has been actively collaborating with Almaty Orphanage No. 1. University students, including international students, teach children English and Chinese and organize events to support the orphans.
- These actions not only promote education but also help improve social conditions for vulnerable groups.

## 3. SDG 7: Affordable and Clean Energy

In March 2025, KBTU representatives conducted a working visit to the UK as part of the development of international cooperation in the field of sustainable energy, climate technologies and decarbonisation.

The key focus of the visit was developing cooperation with Cardiff University , one of the UK's leading research universities in the fields of Sustainable Energy, Net Zero Technologies, and Low-Carbon Systems.

During the visit, KBTU representatives participated in working meetings, discussed joint research, and studied international practices in the following areas:

- renewable energy technologies ;
- integrated energy systems ;
- smart grids ;
- low-carbon technologies ;
- sustainable infrastructure ;
- decarbonization and climate resilience .

The trip also included meetings and research visits to other UK cities to explore:

- sustainable urban infrastructure;
- climate solutions;
- international Smart City practices;
- energy efficient technologies;
- innovative scientific and educational ecosystems.

The trip contributed to:

- strengthening international academic ties;
- development of joint scientific research;
- expanding opportunities for academic mobility;
- the formation of new international projects on sustainable energy and climate technologies.

## 3.1 Implementation of energy-efficient technologies and energy-saving solutions

KBTU is actively implementing energy-efficient technologies in its buildings and academic units. The university has switched to 100% LED lighting, significantly reducing energy consumption. Additionally, automatic lighting control systems using motion sensors have been installed in academic buildings and offices. These systems minimize indoor energy consumption, helping to reduce carbon emissions.

## 3.2 Energy Transition Project: Implementation of Renewable Energy Sources

In partnership with the British University, KBTU is developing a project to implement renewable energy sources in Kazakhstan. The research includes developing solutions for the implementation of solar and wind energy systems in the urban environment of Almaty and surrounding regions. The project's goal is to support a "green transition" and improve the energy efficiency of urban infrastructure.

## 3.3 Environmental Policy

The Kazakh-British Technical University (KBTU) actively supports environmental initiatives and adheres to international environmental management standards, such as ISO 14001:2015. The main goals of KBTU's environmental policy are to minimize environmental impact, improve energy efficiency, and manage resources responsibly.

The university has implemented a comprehensive energy management system that incorporates energy-efficient technologies and renewable energy sources. Offices are equipped with LED lamps and energy-saving devices, as well as automated lighting control systems, reducing energy consumption and minimizing carbon emissions.

KBTU is also actively working to optimize water consumption. Water-saving faucets and dual-flush systems have been installed, significantly reducing water consumption. The installation of water meters in each room facilitates more efficient use of resources and allows for the prompt repair of any leaks.

The university has developed and implemented a waste separation program. Containers for paper, plastic, glass, and hazardous waste (light bulbs, batteries) are located throughout the campus. KBTU actively collaborates with waste management providers, ensuring recycling and disposal of waste in accordance with environmental standards. The waste paper recycling program allows for the recycling of hundreds of kilograms of paper annually, minimizing the impact on landfills.

KBTU's green policy encompasses not only waste and resource management but also greening the campus. The university actively plants trees and plants throughout the campus, creating comfortable working and relaxing conditions. Natural materials and living plants are used inside the buildings, improving air quality and supporting eco-friendly design.

In addition, the university organizes regular training and awareness programs for staff and students in the field of sustainable development. Training sessions, seminars, and competitions are held to promote environmental education and integrate sustainable development principles into the daily lives of staff and students.

KBTU's environmental policy is aimed at reducing environmental impact, efficient use of resources, and the implementation of advanced sustainable development technologies.

### 3.4 KBTU events

KBTU students won the international Student Energy Challenge 2024 competition with their projects:

- Dronette ;
- Aqua Save.

The projects were aimed at:

- environmental monitoring;
- sustainable use of resources;
- climate solutions;
- environmental technologies.

Student Energy Challenge 2024

## 4. SDG 6: Clean water and sanitation

### 3.1 Water resources management: water-saving technologies and water reuse

KBTU has implemented water-saving technologies in all its buildings. Water-saving faucets and dual-flush systems have been installed, significantly reducing water consumption. Reusing process water for irrigation is planned as part of the university's expanded environmental program.

# 5. SDG 12: Responsible Consumption and Production

## 5.1 Separate waste collection system and recycling programs

KBTU actively promotes waste separation on campus. Containers for sorting paper, plastic, glass, and hazardous waste (lamps and batteries) are installed throughout the university. In 2020, KBTU recycled over 500 kg of waste paper and recycled over 100 lamps, demonstrating the high level of staff and student engagement in recycling.

## 5.2 Circular Economy Project

Together with Nazarbayev University, KBTU is developing circularity indices for cities in Kazakhstan using big data and artificial intelligence. This project aims to create indicators for managing urban environmental policies and optimizing waste and energy management. The project team, consisting of researchers from the Institute of Intelligent Systems and Artificial Intelligence (ISSAI) at Nazarbayev University and KBTU researchers, has been working on the topic of the circular economy since 2023. The project's main goals are to use modern technologies and artificial intelligence (AI) to develop a new method for circular city indexing (CCI) for the management and operation of construction sites. The creation of circularity indices for cities is an emerging area of research ( Muscillo) . et al ., 2021); recent research initiatives attest to its emergence and importance, with ICLEI Europe[1] and the OECD[2] recently funding similar studies. CCI typically incorporates big data analysis (BDA) and provides a concise measurement of factors extracted from data related to urban performance that support local, national, and international green policies. This project focuses on a new contribution to the built environment aspect of urban circularity. It will therefore contribute to the development of CCI for the built environment with a focus on construction activities.

The project consists of four phases, which will be implemented sequentially to achieve the stated goals and objectives. In the first phase, AI-powered search tools (e.g., Deep Learning-DL) will be used to find new construction sites in several cities at different levels of circularity using satellite imagery. We will then create an open, large-scale dataset of construction site images. The dataset will contain multiple records (e.g., layout characteristics, material storage and use, construction stage, on-site construction safety, sustainable site management, and waste management practices) (PHASE 1). Next, an AI classifier (CCI) will be created that will use satellite imagery of the construction site to decide whether the image belongs to a city with a high or low circular economy (PHASE 2). After this, explanatory visualization methods can be used to highlight areas in the image that contributed to the decision (PHASE 3). In the final stage, experts will study these regions, draw conclusions about them, and compile lists of actions, planning methods, and work site management principles for different levels of cyclicality (STAGE 4).

Principal Investigator, Project Manager ( **Nazarbayev University** ) **Ferhat Karacha** (PhD) has experience in sustainable development, green buildings, sustainable construction and urban assessment methods, indoor and outdoor air quality, pollution prevention, source-

based air quality, qualitative modeling, pollution impact analysis, spatial analysis, and environmental risk assessment.

The first co-director of the project, **Hussein Atakan Varol** (PhD) is the founding director **of the Institute of Intelligent Systems and Artificial Intelligence (ISSAI)** and a professor of robotics at **Nazarbayev University** .

Project Manager : **Aidana Tleu , Postdoctoral Fellow, Nazarbayev University**

The second co-director of the project, Zhanna Kapsalamova (PhD), is an associate professor in the Department of Economics at Nazarbayev University.

The national partner of this project is **the Kazakh-British Technical University** and the co-director of the project , **Asel Zholdasovna Akzhalova** , professor, head of the project group and professor of the Faculty of Information Technology at the Kazakh-British Technical University.

Chief Research Fellows ( **Kazakh-British Technical University** ) - Associate Professor Alexander Pak, Associate Professor Iskander Akhmetov.

Young research fellow ( **Kazakh-British Technical University) – Shakarim Aubakirov, graduate of the International School of Economics of KBTU.**

The results of the scientific research were published in **the highly ranked journal (Q1) PeerJ Computer Science: Beyond buzzwords : NLP reveals common threads in sustainable and circular construction discourse** in 2025


More detailed information about the project can be found on the website of the Institute of Intelligent Systems and Artificial Intelligence (ISSAI) of Nazarbayev University here .

## 5.3 KBTU Events

KBTU is actively involved in initiatives promoting the circular economy. The 2021 International Forum on Innovation and Modernization of Water and Energy Resources in Central Asia discussed approaches to reducing emissions and efficient resource use, including the development of circular economy plans. The Forum aims to develop solutions to the many challenges associated with implementing the 2030 Agenda for Sustainable Development, and, in particular, to jointly discuss investment opportunities in

regional and cross-border projects and refine approaches, financing mechanisms, and partnerships in an interactive setting. Specifically, the Forum will explore opportunities for projects that bring together multiple Central Asian countries, address cross-border or regional needs and opportunities, and could be financed through a combination of national budgets, donor funds, and, ultimately, private or IFI financing. Among other things, the recommendations developed at the workshop in Almaty will be presented for consideration at the Governing Council meeting of the Special Program for the Economies of Central Asia (SPECA) later this month. The recommendations may also be useful as countries in the region develop concrete forms of cooperation.

## 6. SDG 11: Sustainable cities and communities

The Kazakh-British Technical University (KBTU), with the support of the SDG Projects Department of the Academy of Corporate Education, is proud to announce the successful completion of the International Workshop on Technology and Innovation for Achieving the Sustainable Development Goals ( SDGs ), which took place on May 20–21, 2025, at KBTU's main campus in Almaty.

The workshop brought together scientists, students, researchers, and industry professionals from Kazakhstan and international partner universities to discuss innovative solutions and interdisciplinary approaches to global sustainability challenges. Over the course of two days, participants presented research and projects on topics such as AI for sustainable development, smart cities, green technologies, the circular economy, ESG, and social innovation. Particularly noteworthy was the poster session on May 21, where students and young researchers presented their work aligned with one or more of the 17 UN Sustainable Development Goals, demonstrating their creativity and commitment to contributing to global sustainable development. Particularly noteworthy is the participation of representatives from various Kazakhstani universities, including the Kazakh-British Technical University (KBTU), Satbayev University, and Al-Farabi Kazakh National University , highlighting the growing interest and collaboration within Kazakhstan's academic community. All accepted

poster session abstracts underwent international peer review and were published in the book series "Technologies and Innovations for Sustainable Development Goals Projects " (Volume 1) with an ISBN assignment, which became an important milestone in the dissemination of scientific knowledge and the global exchange of experience.

KBTU expresses its sincere gratitude to Aida Karazhanova , Economic Affairs Officer, United Nations Economic and Social Commission for Asia and the Pacific (ESCAP), for her valuable support of the workshop. Her participation significantly contributed to the success of the event, stimulating dialogue and knowledge exchange among the participants.

This workshop became another significant milestone for the Kazakh-British Technical University (KBTU), which continues to actively develop academic and project cooperation within the framework of the UN Sustainable Development Goals ( SDGs ). The event also provided a unique opportunity to establish professional contacts, collaborate, and

exchange experiences between the academic community and industry representatives. The international workshop on technologies and innovations for achieving the SDGs was held within the framework of the International Scientific and Technical Conference " Colloids and Nanotechnology in Industry – CollNanoIndustry 2025".
More information about the workshop and upcoming events can be found on the website:
https://sdg-center.kbtu.kz/workshop-conference

## 6.1 KBTU Sustainable Cities Initiatives

The Kazakh-British Technical University (KBTU) actively participates in promoting Sustainable Development Goal (SDG) 11, which focuses on creating sustainable cities and communities. The university implements various projects and activities aimed at improving urban infrastructure, supporting sustainable technologies, and developing smart urban solutions. KBTU actively supports campus greening programs. The university plants trees and shrubs around buildings, creating a comfortable and environmentally friendly environment for students and staff. Interior spaces are also decorated using natural materials and plants, improving the microclimate and creating a comfortable working environment.

Smart City Development Projects

KBTU is actively involved in projects related to the Smart City concept, which involves using intelligent technologies to improve the quality of life for city residents. Students and researchers at the university are working on developing solutions for smart urban management, such as transport automation systems, energy-efficient buildings, and environmental monitoring systems. In 2024, the university organized seminars and workshops on "IoT for Smart City" and "AI for Smart City," discussing innovations for improving the efficiency of urban infrastructure.

Innovations in Green Transport

As part of its efforts to promote environmentally friendly transport, KBTU supports projects aimed at developing sustainable transportation systems. In 2023, the university held a series of events dedicated to green energy and sustainable transport, where students and researchers presented solutions for reducing emissions and using renewable energy sources in transportation. Such initiatives contribute to the development of environmentally friendly and accessible public transportation systems, an important aspect of SDG 11.

Research in the field of energy-efficient technologies

KBTU also implements projects to improve the energy efficiency of buildings and urban systems. These projects include research into green technologies and sustainable construction. The use of innovative energy and construction solutions helps create low-energy buildings, reducing the carbon footprint of cities and promoting sustainable development.

International conferences and partnerships

KBTU hosts international conferences aimed at sharing experiences and best practices in sustainable urban development. These events bring together representatives from academia, business, and government organizations, allowing the university to share its achievements and expand collaboration. These initiatives address issues of urbanization, waste management, climate change adaptation, and improving urban ecology, which directly supports SDG 11.

# 7. SDG 4: Quality Education

## 7.1 Educational programs

Sustainable Development Goal 4—"Quality Education"—is one of the key focus areas for the Kazakh-British Technical University (KBTU). The university actively promotes the international recognition of its educational programs, which contributes to improving the quality and accessibility of education both in Kazakhstan and internationally.

One of the key areas of KBTU's activity remains participation in the international program of UNDP and the European Union to support the education of Afghan women in Central Asia.

Since 2020, KBTU has been participating in the project:
“ Supporting the Economic Empowerment of Afghan Women through Education and Training in Kazakhstan, Kyrgyzstan and Uzbekistan," implemented by UNDP with financial support from the European Union. The project aims to expand access to higher and vocational education for women in Afghanistan.

As part of the program, KBTU provides:

- bachelor's degree;
- Master's degree;
- TVET programs;
- language and academic training;
- support in adaptation and development of professional skills.

Educational areas include:

- marketing;
- statistics;
- finance;
- business and management.

The project covers the SDGs:

- SDG 4 - Quality education;
- SDG 5 - Gender equality;
- SDG 10 - Reduced inequalities;
- SDG 16 – Peace, justice and strong institutions.

## Continuing education and professional courses

In the 2024–2025 academic year, KBTU SDG Center continued to develop continuing education and professional training programs in the fields of sustainable development, ESG, and digital transformation.

The following courses were implemented:

- Introduction to ESG;
- Change Management;
- Sustainability and ESG;
- Finance and Data Science;
- Project management and sustainable leadership.

The courses are aimed at developing competencies in the following areas:

- ESG and sustainable management;
- strategic thinking;
- digital transformation;
- change management;
- sustainable business approaches.

The development of modular TVET programs ( Technical and Vocational Education and Training ), focused on practical skills and training of personnel for a sustainable economy.

## 7.2 Online courses and internship programs in sustainability

KBTU has launched synchronous online courses on cybersecurity, smart grid management, and the circular economy. The courses are taught by KBTU experts, along with international experts from the University of Salerno (Italy), Nexgen (Spain), and Janser Expert (Germany). The courses cover key aspects of sustainable development and resource management.

## 7.3 Workshops and summer schools with international partners

KBTU also collaborates with prestigious universities such as the Kyoto Institute of Technology and the University of Reading through exchange programs and summer schools. Students participate in interdisciplinary projects related to technology, engineering, and management, expanding their competencies in innovation and sustainable development (SDG 9: Industry, Innovation, and Infrastructure).

The university places special emphasis on IT. KBTU students participate in workshops and hackathons organized with international partners, where they develop projects on cybersecurity, artificial intelligence, and big data processing. This not only helps students master cutting-edge technologies but also promotes innovative solutions for the

sustainable development of cities and digital infrastructures (SDG 11: Sustainable Cities and Communities) ( forbes.kz , Inbusiness.kz ).

The Academy of Corporate Education organizes summer schools in the UK and Italy, where students develop projects under the guidance of international experts. These schools help implement best global practices and technologies in the educational process.

### 7.4 KBTU Events

KBTU conducts educational events, such as seminars and workshops, aimed at developing skills in sustainable development. For example, seminars on cybersecurity for smart cities and internship programs with international experts from the UN and leading European universities provide students with the opportunity to delve deeper into sustainable development and earn international certifications.

At the request of the construction company BI Group, a new educational program, "Business Management and Economics," was developed and implemented for 98 senior and mid-level executives. The introduction of new master's programs, such as "Strategic Risk Management," further demonstrates KBTU's commitment to developing students' competencies.

As part of its collaboration with international universities, KBTU conducts summer schools and workshops where students have the opportunity to work on real-world projects under the guidance of experts. This ensures the integration of best global practices into the educational process and helps students become more competitive in the labor market.

## 8. SDG 9: Industry, Innovation and Infrastructure

SDG Center KBTU continued to develop project groups in the following areas:

- artificial intelligence (AI);
- quantum computing;
- Smart City;
- IoT ;
- cybersecurity;
- digital transformation;
- blockchain .

The projects aim to develop solutions for:

- sustainable cities;
- intelligent infrastructure;
- digital economy;
- environmental monitoring;
- big data analysis.

Project Groups – SDG Center KBTU

As part of Sustainable Development Goal 9—"Industry, Innovation, and Infrastructure"—the KBTU SDG Center is building a comprehensive research ecosystem focused on the development of advanced technologies, digital transformation, and innovative solutions for the real economy. Two key project groups are particularly important in this process: **the quantum computing group** and the **smart agriculture group** .

The quantum computing project group at the KBTU SDG Center researches and integrates quantum technologies with artificial intelligence and machine learning. Their primary focus is on developing new computational approaches that can significantly improve the efficiency of complex data processing, optimization problems, and decision-making systems. In the context of SDG 9, this work forms the foundation for future high-tech infrastructure, where quantum computing is viewed as the next stage in the evolution of digital technologies. Particular attention is paid to the application of quantum methods to modeling complex systems, including urban infrastructure, energy networks, logistics, and industrial optimization. Thus, the group contributes to the development of innovative scientific and technological potential necessary for the development of the digital economy and next-generation industry.

In parallel, the Smart Agriculture project group Innovators develops intelligent solutions for agriculture based on Internet of Things technologies Things ( IoT ), artificial intelligence, and big data. The group's primary goal is to transform traditional agriculture into a sustainable, highly efficient, and technologically driven system. The solutions being developed include intelligent soil and climate monitoring systems, automated resource management systems, and yield forecasting models based on real-time data. This approach significantly improves agricultural production efficiency, reduces resource losses, and adapts agriculture to climate change.

In the context of SDG 9, it is particularly important that Smart Agriculture is viewed not only as a technological project but also as an element of a new agro-industrial infrastructure based on digital platforms and data. The integration of IoT and AI into agriculture forms the basis for the creation of "smart farms" that can function as part of the country's broader innovation ecosystem.

Together, the two project groups—quantum computing and smart agriculture—demonstrate the SDG Center KBTU's strategic approach to developing innovative infrastructure. While quantum computing forms the foundation for future computing systems and complex analytical models, Smart Agriculture enables the practical implementation of digital technologies in a critically important economic sector: food security.

Thus, within the framework of SDG 9, the KBTU SDG Center not only develops individual technological areas but also creates an interdisciplinary innovation platform that unites fundamental science, engineering development, and applied solutions. This contributes to the creation of a sustainable technological infrastructure, the development of innovation, and the strengthening of Kazakhstan's digital economy in line with the UN's global Sustainable Development Goals.

## 8.1 Contribution book series SDG Center KBTU “Technologies and Innovations for Sustainable Development Goals Projects”

The KBTU SDG Center book series is a research platform aimed at developing innovative technologies and their application to achieve the UN Sustainable Development Goals. In the context of SDG 9—"Industry, Innovation, and Infrastructure"—this initiative plays a key role in shaping the university and country's research and applied technology ecosystem.

The book series' core content includes the publication of the results of undergraduate, graduate, and research projects focused on the application of modern digital technologies. Among the areas presented, special attention is paid to artificial intelligence (AI), big data analysis, the Internet of Things ( IoT ), blockchain technologies, digital twins, and intelligent control systems. These technologies are viewed not as theoretical concepts, but as applied tools for solving specific sustainable development challenges, including the management of urban infrastructure, energy systems, transportation, and environmental monitoring.

In line with SDG 9, the book series promotes the development of the university's innovation infrastructure, creating conditions for the transformation of academic research into practical technological solutions. Students and young researchers are given the opportunity not only to develop concepts but also to create prototypes, models, and analytical systems that can potentially be implemented in industry and the public sector. Thus, the book serves as a mechanism for the transition from academic theory to applied innovation.

The interdisciplinary nature of the published research is particularly significant. The projects integrate engineering, information technology, ecology, economics, and management, meeting the modern requirements of innovation ecosystems. This approach strengthens the university's ability to generate comprehensive solutions that can impact the development of sustainable infrastructure and the digital economy.

Furthermore, the book series forms the foundation for developing the innovative potential of young people. Student participation in research publications fosters skills in scientific analysis, project thinking, and technological entrepreneurship. This is directly related to the development of future specialists capable of creating and implementing innovations in industry and public administration.

Thus, through its book series, the KBTU SDG Center makes a significant contribution to the implementation of SDG 9 by creating a sustainable platform for fostering innovation, digital transformation, and strengthening scientific and technological infrastructure. The project not only promotes academic development but also provides a practical foundation for integrating science, technology, and industry in the context of sustainable development.

## 8.2 Cybersecurity Project: Smart Cities Infrastructure Management

The Kazakh-British Technical University (KBTU) is actively developing cybersecurity initiatives, including smart city infrastructure management. One significant aspect of this project is the creation of intelligent networks that ensure reliable management of urban infrastructure and protection from cyberattacks. As part of its cyberinfrastructure efforts, KBTU also organizes various events, such as international cybersecurity competitions and olympiads, which engage students and young professionals. For example, KBTU hosts annual hackathons and cybersecurity championships, bringing together experts from various countries to share experiences and develop practical skills. These events help raise awareness of modern cybersecurity threats and strengthen skills in protecting information systems. Furthermore, KBTU collaborates with major IT companies and government agencies to integrate cybersecurity best practices into educational programs and develop innovative solutions that promote the safe use of technology in smart cities. Thus, the university not only focuses on the theoretical aspects of cybersecurity but also actively develops a community of specialists prepared to address modern challenges in this field.

## 8.2 Case Championship in Risk Management

The first risk management case championship in Kazakhstan, which involved 39 teams from 22 educational institutions, was held in 2024. This championship helps students develop practical skills and apply theoretical knowledge in real-world settings. The KBTU risk management case championship, organized jointly with the Agency for Regulation and Development of the Financial Market and the State Credit Bureau, is a significant event in the educational and innovation spheres. Participants developed an analytical service for modeling borrower default risks, enabling the application of modern risk management approaches. The presented tasks, using machine learning and statistical models, provide practical experience in innovation and support SDG 9 (Innovation and Infrastructure) and SDG 8 (Decent Work and Economic Growth) ( Optimism.kz - Success Stories ).

## Hackathon “BASTAU – KBTU Autumn Cup (UN SDG 9)”

KBTU, together with the UN Office in Kazakhstan, organized the international hackathon “BASTAU – KBTU Autumn Cup (UN SDG 9)”, dedicated to SDG 9 – “Industrialization, Innovation and Infrastructure”.

The hackathon was aimed at:

- development of youth innovations;
- support for startups;
- promotion of digital technologies;
- development of technological entrepreneurship;
- creating innovative solutions for sustainable development.

Participants developed projects in the following areas:

- AI;
- Smart City;
- digital platforms;
- sustainable infrastructure;
- technological innovations.

BASTAU – KBTU Autumn Cup (UN SDG 9)

# 9. SDG 5: Gender equality

## 9.1 Supporting Afghan women through educational programs

As part of the UN Sustainable Development Goals (SDGs), the KBTU Center is developing educational initiatives aimed at expanding access to quality education, strengthening professional competencies, and supporting women's inclusive participation in the global economy. In this context, two interconnected programs are particularly important: a

summer internship in **Change Management for participants from Afghanistan** and an educational course in **Digital Marketing using Apple case studies (2025)** .

The Change Management internship program is designed to develop management and leadership skills in young women from Afghanistan who face limited access to educational and professional opportunities. The program includes an examination of the principles of change management in organizations, strategic planning, and communications during transformation, as well as practical case studies on adapting organizations to social, technological, and economic challenges. Particular attention is paid to developing leadership skills, critical thinking, and decision-making in uncertain environments.

This initiative directly aligns with **SDG 5—Gender Equality** —as it aims to expand women's opportunities for quality education, professional development, and participation in governance processes. The program promotes social inclusion and strengthens women's role as active participants in economic and institutional transformation. Furthermore, it supports elements of **SDG 4—Quality Education** —by providing access to modern educational methodologies and international practices in change management.

The second initiative is a course on **Digital Marketing (Apple case) study (2025)** is aimed at developing practical skills in digital marketing, branding strategies, and digital platform analysis. During the course, participants study real-world Apple case studies, including building a global marketing strategy, brand management, and digital Storytelling and the use of data-driven approaches in product promotion. The training includes digital channel analysis, user behavior analytics, and modern marketing automation tools.

This course is primarily aligned with **SDG 4—Quality Education** —by providing access to modern digital competencies in demand in the global labor market. It promotes practice-oriented learning, focused on real-world cases from international companies, and strengthens the digital economy skills of students and young professionals.

Together, both programs create a sustainable educational ecosystem aimed at developing human capital, digital skills, and leadership competencies. The Change Management internship enhances the social dimension of sustainable development by supporting women and vulnerable groups, while the Digital Marketing course provides a technological and economic component through digital skills development.

Thus, through these initiatives, the SDG Center KBTU makes a significant contribution to both **SDG 4 (Quality Education)** and **SDG 5 (Gender Equality)** , creating an inclusive, internationally oriented and technologically advanced educational environment that meets the contemporary challenges of global development.

KBTU continued to develop initiatives to support girls and women in STEM, digital technologies, and entrepreneurship.

A hackathon on the development of digital public goods (DPG) was organized jointly with UNICEF Kazakhstan with the participation of schoolgirls and students.

Participants developed projects in the following areas:

- AI;
- digital services;
- social technologies;
- educational platforms.

The event was aimed at:

- development of digital competencies;
- increasing girls' involvement in STEM;
- development of leadership skills;
- supporting gender equality in the technology sector.

UNICEF & KBTU Digital Public Goods Hackathon

One of the key areas of KBTU's activity remains participation in the international program of UNDP and the European Union to support the education of Afghan women in Central Asia.

Since 2020, KBTU has been participating in the project:
“ Supporting the Economic Empowerment of Afghan Women through Education and Training in Kazakhstan, Kyrgyzstan and Uzbekistan”, implemented by UNDP with financial support from the European Union.

As part of the program, KBTU provides:

- bachelor's degree;
- Master's degree;
- TVET programs;
- language and academic training;
- support in adaptation and development of professional skills.

Educational areas include:

- marketing;
- statistics;
- finance;
- business and management.

The project contributes to the implementation of SDG 4, SDG 5, SDG 10 and SDG 16.

UNDP Afghan Women Project at KBTU

A programme funded by the European Union (EU) and implemented by UNDP enables Afghan women to study at higher education institutions in Kazakhstan and Uzbekistan. The initiative aims to Creation opportunities receipt higher education For women from Afghanistan . In in general V framework programs until 2025 V universities Central Asia will be 50 women study .

The first group of Afghan women arrived in Almaty in October 2019. In 2020, Kazakhstan and Uzbekistan welcomed the remaining winners of the educational scholarship. After completing language courses, the project participants will study at various universities in Kazakhstan and Uzbekistan in undergraduate, graduate, and additional technical education (technical and vocational education and training) programs in agriculture, finance/statistics, and mining.

A total of 48 women from Afghanistan are studying at KBTU. Currently, in 2024, 12 Afghan students continue their education at KBTU. Two of them are studying finance/statistics, and three are studying marketing programs in the technical and vocational education and training (TVET) program. In 2023, fifteen graduates of the MBA "Marketing" program and another seven students of the bachelor's degree "Marketing" will study at KBTU until 2026. From 2020-2022, 18 completed training in vocational education and training programs, and 15 received a master's degree in the MBA "Finance/Statistics" program. From 2021-2022, KBTU trained 11 students from Afghanistan in the Faculty of Geology and Geological Exploration in the technical and vocational education and training program "Mining."

## 10. SDG 17: Partnership for Sustainable Development

In 2025, KBTU continued to develop an international platform for sustainable development, uniting:

- universities;
- international organizations;
- research centers;
- industrial partners;
- youth communities;
- startup ecosystems.

Through the activities of the SDG Center KBTU, the university contributes to:

- development of international grants;
- technology transfer;
- development of AI and sustainable innovation;
- academic mobility;
- interdisciplinary research;
- promoting the UN SDGs in Kazakhstan and Central Asia.

SDG Cen t er KBTU

## 10.1 International cooperation and exchange of experience in the implementation of the SDGs

KBTU actively collaborates with international organizations and universities, which allows it to attract experts and cutting-edge technologies. These partnerships strengthen KBTU's position as a leader in sustainable development.

In 2021, the Sustainable Development Goals Center (SDG Center) was established to promote the implementation of the SDGs through educational programs, international projects, and research initiatives. The Center's primary mission is to develop the potential of students and professionals, equip them with modern skills in sustainable development and ESG (environmental, social, and corporate governance), and support innovative research.

The Kazakh-British Technical University (KBTU) is actively implementing an international cooperation strategy to achieve **Goal 17: Partnership for Sustainable Development** . By collaborating with leading global educational and research institutions, KBTU is creating a solid foundation for exchanging experience and developing innovative solutions aimed at supporting the SDGs.

One of the key areas is the development of dual degree programs. For example, KBTU offers joint programs with **the University of London** (UK), allowing students from the International School of Economics to earn dual degrees. Other partnership programs include a Master's degree in Chemical Engineering with **the Ecole Nationale Supérieure. des Mines de St- Etienne** (France), and the Master's in Information Systems and Management **at Shanghai Polytechnic University** (China). These programs not only promote academic exchange but also strengthen global connections between universities, enabling the development of solutions for sustainable economic and social development.

KBTU also actively participates in international scientific initiatives. In collaboration with **UNECE** (United Nations Economic Commission for Europe), the university is forming working groups on sustainable resource management in Central Asia. This partnership aims to support the energy transition and promote more efficient resource management, which aligns with SDG targets related to sustainable urban development and industrial innovation.

Furthermore, KBTU's international partnerships with leading universities, such as [the Russian equivalent of "Kazakhstan's University of Applied Sciences" - context needed], open up new horizons for students and faculty in the exchange of knowledge and technology. These initiatives contribute to the development of information technology and management programs, equipping students with the necessary skills to address global challenges in sustainable development.

KBTU's international cooperation thus plays a key role in the implementation **of Goal 17** by providing opportunities for joint research, knowledge sharing and strengthening global ties, which contributes to the achievement of other Sustainable Development Goals, such as quality education, innovation and sustainable infrastructure development.

### 10.2 KBTU Events

KBTU strengthens international cooperation to advance the SDGs. Forums and joint projects with UNDP and other international organizations foster partnerships and promote new ESG practices. The university actively works to expand green technologies, collaborating with global experts in sustainable development.

## 11. Belt and Road Institute

KBTU actively participates in the Belt and Road Initiative, providing the university with unique opportunities to expand its educational programs and scientific exchange. This institute focuses on developing oil and gas projects, thereby enhancing students' qualifications and integrating them into the international labor market. Attracting students from countries participating in the initiative enhances cultural diversity and creates a platform for the exchange of knowledge and experience.

The institute's director is actively working to ensure high-quality educational programs and research focused on developing international ties. This collaboration opens new horizons for KBTU in terms of participation in joint initiatives and research, which, in turn, contributes to strengthening the university's position on the international stage.

## 12. SDG 13 - Climate change

In 2024-2025, the KBTU SDG Center conducted a **Green Economy course** aimed at developing a systemic understanding of the climate agenda and mechanisms for transitioning to a low-carbon economy among students and young professionals . Over 35 students attended the course. The main goal was to prepare participants to understand economic decisions through the lens of climate risks and sustainable development, as well as to develop practical competencies for participating in climate-sensitive economic transformation.

The course covered key aspects of modern climate policy and the economics of climate change. Participants studied the causes and consequences of global warming, mechanisms for reducing greenhouse gas emissions, and international climate regulation instruments, including carbon markets and emissions reporting systems. Special attention was paid to issues of economic adaptation to climate change, including increasing the resilience of energy, industrial, and urban systems.

An important part of the course included examining practical cases of transitioning to a low-carbon development model. Students analyzed examples of green technology implementation in energy, transport, and industry, and assessed the effectiveness of decarbonization policies in various countries. This allowed them to develop an understanding of how economic and technological decisions directly impact climate resilience.

In line with **Sustainable Development Goal 13—"Climate Action," the Green** Economy course directly contributes to the development of climate literacy and the formation of a new generation of professionals capable of making decisions that take environmental impacts into account. The program promotes awareness of climate risks, develops carbon footprint analysis skills, and enhances understanding of climate management tools.

Furthermore, the course lays the foundation for long-term behavioral and professional change in participants, guiding them toward the implementation of sustainable practices in business, public administration, and engineering. This is particularly important in the context of the global transition to a decarbonized economy, where knowledge, innovation, and an interdisciplinary approach play a key role.

Thus, Green Economy Course (2025) at KBTU is a significant educational initiative that directly supports the implementation **of SDG 13** by promoting climate responsibility, disseminating environmental knowledge, and training personnel to combat climate change at the national and global levels.

## 13. Impact and results

KBTU has trained over 100 specialists in cybersecurity, energy management, and the circular economy. The university actively implements sustainable development principles and develops innovative solutions for urban infrastructure and resource management. Through its participation in international projects and initiatives, KBTU has significantly strengthened its position in scientific research, expanding its network of partnerships and exchanges of experience with leading universities worldwide.

Successful programs and courses implemented within the SDG framework contribute to the development of a new generation of specialists capable of addressing modern challenges and contributing to the country's sustainable development. KBTU is actively working to enhance its academic reputation, as evidenced by its participation in international rankings and projects, as well as an increasing number of international publications and research articles, demonstrating the university's high level of research activity.

## 14. Conclusion

KBTU demonstrates its commitment to the SDGs and actively supports their implementation through educational programs, international projects, and innovative solutions. The university plays a key role in promoting sustainable development principles in Kazakhstan and beyond, working to address global challenges and implement innovative technologies to create a sustainable future.

KBTU continues to strengthen its efforts to develop and support environmentally friendly technologies, strengthen the social and economic aspects of sustainable development,

and develop a new generation of specialists prepared to address modern challenges. The university strives to expand partnerships and launch new projects aimed at achieving the Sustainable Development Goals, thereby contributing to a sustainable future for Kazakhstan and the world.

## Achieving the SDGs at KBTU for 2024-2025

| Month | Event/Project | Quantitative indicators | Quality indicators | Potential partners | Target audience |
|---|---|---|---|---|---|
| October 2024 | Seminar on IoT for Smart Cities | 100+ participants, 5+ presentations | Implementation of Internet of Things solutions for urban management | International IoT experts | Urban students, engineers, and city officials |
| November 2024 | Workshop on Artificial Intelligence for Smart Cities | 50+ participants | Implementation of AI solutions for urban infrastructure management | IITU, international experts | IT students, engineers, researchers |
| December 2024 | Publication of a report on SDG projects | 10+ projects in the annual report | Assessing KBTU's contribution to the implementation of the SDGs and developing new initiatives | UNDP, KBTU partners, international experts | Teachers, students, researchers |
| January 2025 | Updating educational programs on SDGs | 5+ new courses | Updating and optimizing programs based on sustainable development trends | British-Kazakh Society, Kings College London | Students, teachers |
| February 2025 | Launching new partnership projects on SDGs | 3 new international projects | Involving students in joint SDG projects | British-Kazakh Society, IITU | Master's students, teachers |

| | | | | | |
|---|---|---|---|---|---|
| March 2025 | Workshop on Circular Economy and AI | 50+ participants, 2 workshops | Implementing AI to address circular economy challenges | IITU, British-Kazakh Society | IT students, teachers, and sustainability experts |
| April 2025 | Green Energy Workshop | Participation of 100+ people | Discussion of renewable energy solutions | British-Kazakh Society, IITU | Students, young scientists, energy specialists |
| May 2025 | Publishing scientific papers on sustainable energy | 5+ articles in international journals | Growing KBTU's academic reputation and influence in sustainable energy | International Journals, Kings College London | Teachers, researchers |
| June 2025 | Summer School on SDGs for Central Asian Students | Participation of 80 students from the region | Formation of new regional initiatives on SDGs | UNDP, British-Kazakh Society, IITU | Students from Kazakhstan, Kyrgyzstan, Uzbekistan |

**Key indicators:**

- **Quantitative:** number of participants in events, publications, workshops, projects.
- **Qualitative:** impact on the student and academic environment, development of infrastructure for sustainable development, increased international cooperation.

**Target audience:**

Undergraduate and graduate students, faculty, researchers, business and city officials, and international experts.