

Report on Sustainable Development Goal 9

Industry, Innovation and Infrastructure

2024



Foreword

Azerbaijan Technical University (AzTU) has emerged as a prominent example of how educational institutions can work alongside industry to not only advance scientific research but also provide students with invaluable hands-on experience. Through various high-impact projects, particularly in partnership with organizations like Turkish Aerospace Industries (TUSAŞ), AzTU is successfully integrating theory and practice, thus preparing students for the challenges and opportunities of the modern workforce.

This foreword introduces the efforts made by AzTU in contributing to SDG 9, where collaboration with industry partners has paved the way for innovation in fields such as aerospace engineering, mobility planning, and logistics. By embedding real-world projects into the curriculum, AzTU is not only developing the next generation of engineers, scientists, and innovators, but also actively contributing to the broader goals of infrastructure development and industrial innovation in Azerbaijan.

Introduction

In Azerbaijan, this goal is being actively pursued by institutions such as Azerbaijan Technical University (AzTU), where strategic university-industry collaborations are helping to drive innovation, enhance educational outcomes, and support the development of a robust industrial ecosystem.

In this document, we explore the key projects and collaborations undertaken by AzTU in 2024 that directly contribute to SDG 9, while examining how such initiatives help bridge the gap between academic knowledge and industry needs, and foster a culture of innovation and industrial development. Through these efforts, AzTU is playing a crucial role in building a sustainable future for Azerbaijan, and setting an example for universities worldwide in how to effectively integrate education with industry to achieve long-term sustainable development.

References

[National Information Portal on Sustainable Development Goals of the Republic of Azerbaijan](#)

[AzTU Sustainability](#)

[AzTU SDG 9 Report / November 2023](#)

SDG 9 keywords - Industry, innovation and infrastructure

Access to the internet	Environmentally sound technologies	Mobile networks in developing countries	Resource use efficiency	Transborder infrastructure
Affordable access	Financial services	Network infrastructure	Roads	Transport
Affordable credit	ICT infrastructure	National Security	Sanitation	Value chains
Clean technologies	Industrial diversification	Public policy	Scientific research	Value chains and markets
Cooperation	Industrialization	Phone service	Society	Water infrastructure
Data banks	Information and communication technology	Quality of life	Sustainable industrialization	Water resources
Economic development	Infrastructure	Research	Sustainable infrastructure	
Electrical power	Innovation	Regional infrastructure	Technological capabilities	
Energy	Internet access	Resilient infrastructure	Technology	
Enterprises	Irrigation	Knowledge in education for all	Trade	

SDG 9 Targets

- **Green Energy Project:** AzTU is developing an innovative energy solution by installing 6,500 square meters of solar panels on its campus, transforming its technology park into an energy producer capable of generating 1.2 MW of electricity. This initiative positions AzTU as a leader in sustainable energy production, contributing to the broader goals of sustainable infrastructure development. The university will become the first model in Azerbaijan to operate as an independent energy producer, reducing its environmental footprint and setting an example for sustainable campus operations.
- **University-Industry Collaboration in Defense & Engineering:** AzTU focuses on fostering sustainable industrialization by aligning engineering education with industry needs. This is achieved through the development of modern educational programs that incorporate real-world industrial challenges, particularly in the defense sector. The university collaborates with leading industry players like Turkish Aerospace Industries (TUSAŞ) to provide practical, hands-on experience to students in aerospace and defense technology. Through collaborative projects such as TUSAŞ Lift Up and “AzTU-Turkish Aerospace, MGP 2023.1”, students engage in solving industry-specific problems related to aerospace technologies, thus supporting sustainable industrial growth.
- **Commercialization of Research:** AzTU aims to facilitate the commercialization of its research outputs by directly involving industry in the discussions of research results and the commercialization process. Through collaboration with industry stakeholders, the university will help bridge the gap between academic research and its practical applications in small and medium-sized enterprises (SMEs), contributing to their growth and development.
- **Food Waste Recycling Project:** AzTU is undertaking a project to investigate the potential of bioethanol production from food waste in Baku. This project, which is being developed in collaboration with the Turkish company **Ilginlar**, aims to upgrade the infrastructure for waste management and recycling in Azerbaijan. It will contribute to sustainable practices in industries dealing with food production and waste management, creating new opportunities for sustainable energy generation from organic waste.
- **Intra-City Mobility Plan (ICMP):** AzTU supports sustainable urban development in Azerbaijan through the **Institute of Logistics and Transport**, which provides advisory services for **Intra-City Mobility Plans**. In 2024, AzTU will expand its work to 25 cities and regions across Azerbaijan, including both large cities like Ganja and Sumgayit, as

well as smaller municipalities. By helping cities optimize their transport networks and improve mobility, AzTU contributes to the development of resilient infrastructure, thus aligning with SDG 9's targets for sustainable development.

- **“Innovative Solutions” Competition:** In 2024, AzTU launched the **“Innovative Solutions” Competition** for teachers, encouraging new approaches to teaching and problem-solving in areas like e-education, university asset management, and the reuse of university vehicles. These projects aim to generate innovative solutions to real-world challenges at AzTU and will contribute to the university's role in fostering domestic technological innovation.

SDG 9's Positive Impact on other SDGs

SDG 4 (Quality Education): AzTU's efforts to modernize its engineering education by incorporating the CDIO model (Conceive, Design, Implement, Operate) ensure that students not only gain theoretical knowledge but also acquire practical skills aligned with industry demands. This approach enhances the overall quality of education and prepares students for real-world challenges. Through industry partnerships like the collaboration with TUSAŞ and the introduction of industry-relevant curriculum, AzTU provides students with opportunities for hands-on learning, including participation in engineering development programs, coding Olympiads, and technology transfer activities.

SDG 8 (Decent Work and Economic Growth): SDG 9's emphasis on fostering innovation and industrialization directly supports decent work and economic growth by improving employability through tailored educational programs and hands-on training. AzTU students gain skills that meet industry requirements, making them more competitive in the job market. Furthermore, the university encourages entrepreneurship through programs like the University Entrepreneurship Development Program, which prepares students to create startups and participate in international competitions.

SDG 7 (Affordable and Clean Energy): AzTU's commitment to sustainable energy is demonstrated through its Green Energy Project, where the university is installing 6,500 square meters of solar panels to generate 1.2 MW of electricity. By becoming an energy producer, AzTU is reducing its carbon footprint and contributing to the global transition to affordable and clean energy.

SDG 11 (Sustainable Cities and Communities): AzTU contributes to sustainable cities and communities through its Intra-City Mobility Plan (ICMP), providing advisory services for urban transportation planning across Azerbaijan. This initiative promotes sustainable urban infrastructure and aims to enhance mobility within cities, reducing traffic congestion and environmental impact.

Current Situation

Azerbaijan Technical University (AzTU) implements several projects and educational programs in various fields in university-industry cooperation. Through this cooperation, a basis is created

for the promotion of innovations between universities and industrial institutions, the development of scientific research, and the acquisition of practical knowledge by students.

One of AzTU's important cooperation projects, especially **in 2024**, is being implemented with the **Turkish Aerospace Industries Company (TUSAŞ)**. Within the framework of **"TUSAŞ Lift UP"**, 3 teams consisting of 4th year undergraduate students completed diploma-graduate projects. The cost of each project implemented within the framework of "TUSAŞ Lift UP" in 2024 was 20,000 TL, a total of 60,000 TL, thus AzTU budget received approximately 3,000 AZN.

"AzTU-Turkish Aerospace, MGP 2023.1" engineering development training focuses on aviation technologies and provides students with experience in real industry projects. Here, students with various engineering backgrounds work in teams, formally, in an open competitive process on airplanes, helicopters, and unmanned aerial vehicles, researching solutions to problems, and developing products. The MGP Program started on 18.09.2023 and continued until 10.05.2024, it took a bit long time due to preparations of infrastructure and getting official permissions.

The students worked under 4 teams: "Structural analysis", "Structural design", "Avionics and Programming" and "Flight science". In the full-time program, which was implemented 5 days a week from 09:00 to 18:00, the students' skills in using MS Excel, MS Power Point, as well as the knowledge/skills in mastering and applying Siemens NX, Matlab, Python, Cura etc. software tools in the field were developed.

Another direction that continued in 2024 was the provision of advisory services for the **"Preparation of an Intra-City Mobility Plan"** implemented at the Institute of Logistics and Transport operating under the Azerbaijan Technical University, one of the important cooperation projects of AzTU, especially in 2024. **In 2024**, this service will be provided to **25 more cities and regions**. The total value of the contracts is **520,000 manats**.

Another service area in 2024 is the educational services and admissions provided in the additional education - repeated higher education block: In 2024, this figure is projected to be more than 200,000 manats in total for about 21 specialties.





- <https://www.aztu.edu.az/az/news/aztu-telebeleri-tusas-lift-up-musabiqesinin-qalibi-olub-8440>
- <https://aztu.edu.az/az/news/azerbaycan-texniki-universitetinin-ve-milli-aviyasiya-akademiyasinin-telebeleri-ilke-imza-atib-8592>
- <https://www.aztu.edu.az/az/news/16-seherin-heretik-mobillik-plani-hazirlanib-8600>
- <https://qebele-ih.gov.az/az/news/qebele-rayon-icra-hakimiyeti-ve-azerbaycan-texniki-universiteti-arasinda-muqavile-imzalanmisdir.html>

- https://www.aztu.edu.az/sub_site/az/school-of-lifelong-learning-113/page/tekrar-ali-tehsil-877
- <https://aztu.edu.az/az/news/aztu-daha-16-seher-ve-rayonda-seherdaxili-mobillik-planinin-icrasina-basladi-8679>

In 2024, teams consisting of AzTU students won various competitions with their innovative and creative solutions:

- AzTU's "AzMobility" team was represented at the "TECHNOFEST-2024" competition with the "Smart Traffic Light" project in the final stage held in Antalya, Turkey.
- The international competition "Finding Innovative and Creative Solutions (FICS)" was held in Islamabad, Islamic Republic of, jointly organized by AzTU and the National University of Science and Technology of Pakistan (METU). The AzTU team won the "Most Innovative Socially Oriented Idea" nomination.
- AzTU's "AzTU6" team became the semi-final winner of the "49th ICPC-International Student Programming Competition". The team will participate in the South Caucasus Open Championship (team and individual) in the semi-final stage to be held in Georgia on 13-15.12.2024.
- Anabaci Amiraslanova, a student of the German Engineering Faculty of AzTU, was awarded 2nd place individually at the VII Republican Robot Olympiad. Anabaci Amiraslanova was represented at the Olympiad in the "Future Innovators-Senior" category with the "CO2toD" device that fights global climate change. The Olympiad was jointly organized by the Ministry of Youth and Sports, the World Robot Olympiad Association and the Azerbaijan Academy of Robotics Engineering (AREA).
- This team from AzTU was awarded 1st place at the International Green STEAM Azerbaijan Festival with the same proposal. Along with Anabaci Amiraslanova, a student of the German Faculty of Engineering, Aliyoldash Amiraslanli, a student of SABAH groups, was also represented. They were awarded 1st place in the "Green Initiatives" category with their "CO2toD" device.
The festival was organized by the "STEAM Azerbaijan" project with the support of the Ministry of Science and Education and the COP29 Presidency.
- Trainings on "Soft skills" were provided to support the formation of industry-based groups and personnel training by supporting the personal, professional, and career development of the 3rd year bachelor's requirements of AzTU.

- Trainings on “**Mentoring specialization program**” were provided to the requirements of the SABAH group and to the teachers on coaching to strengthen the entrepreneurial ecosystem by developing mentoring skills at AzTU.
 - In cooperation with “**Nar**” **Company**, mobile communication trainings “Fundamentals of Mobile Communication” were provided in accordance with AzTU requirements, covering topics such as the evolution of mobile technology, the structure of the mobile communication network, the Internet of Things (IoT), 5th generation technology, the structure of mobile communication, wireless transmission network, and frequencies in mobile communication.
 - The “Blue Horizon” team, consisting of AzTU students, participated in the qualifying round of the **World Robot Championship**, held for the first time in our country, and our team, which performed in the Aviation Modeling category, qualified for the final round to be held in New Delhi, the capital of India.
 - AzTU's SABAH groups of bachelor's and master's students were awarded 1st place in the **3rd wave education project of the Azerbaijan Cybersecurity Center (AKM)**. 6-month trainings were organized for the candidates who succeeded in both stages in the direction of “Blue team” and “Red team”. The project is organized within the framework of cooperation between the Ministry of Digital Development and Transport (MIND) and the Technion University of Israel.
- <https://aztu.edu.az/az/news/aztu-nun-azmobility-komandasi-teknofest-2024-un-finalinda-temsil-olunub-8720>
 - <https://aztu.edu.az/az/news/aztu-da-innovativ-ve-yaradici-hellerin-tapilmasi-adli-beynelxalq-startap-musabiqesi-kecirilib-8590>
 - <https://aztu.edu.az/az/news/pakistanda-aztu-nun-teskilatciligi-ile-beynelxalq-musabiqe-kecirilib-8708>
 - <https://aztu.edu.az/az/news/aztu-komandasi-49-cu-icpc-telebelerin-beynelxalq-proqramlasdirma-musabiqesi-nin-yarimfinalinda-8779>
 - <https://aztu.edu.az/az/news/aztu-telebesi-vii-respublika-robot-olimpiadasinda-2-ci-yere-layiq-gorulub-8733>
 - <https://aztu.edu.az/az/news/aztu-telebeleri-beynelxalq-yasil-steam-azerbaycan-festivalinda-birinci-yere-layiq-gorulub-8772>
 - <https://aztu.edu.az/az/news/geleceyin-zekasi-pilot-layihesinin-yumsaq-bacariqlar-bloku-basa-catib-8639>
 - <https://aztu.edu.az/az/news/yanindayiq-mentorluq-pilot-layihesinin-quot-mentorluq-ixtisas-proqrami-quot-bloku-basa-catib-8644>
 - <https://aztu.edu.az/az/news/aztu-emekdasi-sabah-gruplarinin-telebelerine-seminar-kecib-8647>
 - <https://aztu.edu.az/az/news/nar-aztu-da-mobil-rabite-telimlerini-davam-etdirir-8776>

- <https://aztu.edu.az/az/news/aztu-telebeleri-dunya-robot-cempionatinin-finalina-vesiqe-qazanib-8651>
- <https://aztu.edu.az/az/news/aztu-telebesi-akm-in-tehsil-layihesinde-1-ci-yere-layiq-gorulub-8691>

The trainees who participated in the "AzTU-Turkish Aerospace, MGP 2023.1" training held at Azerbaijan Technical University, AzTU, were recruited to work at **"Bayraktar Technology Azerbaijan" Company in 2024** after partial training.

In 2024, upon the recommendation of AzTU teachers, up to 10 students were involved in labor activities as participants in the "Preparation of Urban Mobility Plans" project at the Azerbaijan Land Transport Agency (AYNA).

At Azerbaijan Technical University, AzTU students also participate actively **in various internship programs in abroad:**

- 1 master's student participated in an exchange program for 1 month at the University of Agricultural and Ecological Pedagogy (HUAP) in Austria. The exchange took place within the framework of the project "Enhancing the capacity of universities to initiate and participate in the development of clusters with the principles of innovation and sustainability" (UniClaD) implemented under the **"Erasmus+ KA2" program of AzTU**. After the exchange experience, the student organized a seminar on "Green Pedagogy" and shared the gained experience with stakeholders at AzTU.
- 6 students studied for one semester at the Technical University of Cluj-Napoca in Romania, the Bucharest University of Economics in Romania, and the Powislanski University in Poland within the framework of the **"Erasmus+ KA171" exchange program** in the 2nd semester of the 2023/2024 academic year (1st half of 2024).
- A team of AzTU students participated in an experience exchange at the **"Enactus Egypt" representative office** in the Arab Republic of Egypt.

- <https://aztu.edu.az/az/news/azerbaycan-texniki-universitetinin-ve-milli-aviasiya-akademiyasinin-telebeleri-ilke-imza-atib-8592>
- <https://aztu.edu.az/az/news/aztu-telebesi-avropada-qazandigi-tecrubesini-emekdaslarla-bolusub-8682>
- <https://aztu.edu.az/az/news/gencler-ve-idman-naziri-aztu-tgt-sedri-ile-gorusub-8661>
- <https://aztu.edu.az/az/news/aztu-tgt-sedri-enactus-misir-tecrube-mubadilesinde-istirak-edib-8660>
- <https://aztu.edu.az/az/news/aztu-nun-alti-telebesi-erasmus-cercivesinde-xaricde-tehsil-alacaq-8491>

Future Goals

- Establish stronger partnerships with leading national and international industries to foster innovation and knowledge transfer, with a particular focus on emerging sectors like aerospace, renewable energy, and digital technologies.
- Innovate and modernize educational programs to ensure they are in line with industry requirements and future technological advancements.
- Position AzTU as a leader in sustainable infrastructure and green technologies, helping Azerbaijan transition to a greener and more sustainable future.
- Create a robust entrepreneurial ecosystem that supports students and faculty in developing start-ups, fostering a culture of innovation, and contributing to local and global markets.
- Embrace digital technologies to transform the learning experience, improve administrative efficiency, and enhance collaboration with global institutions.
- Establish AzTU as a key research hub for industry-specific R&D, focusing on sectors critical to Azerbaijan's economy, such as oil and gas, renewable energy, transportation, and cybersecurity.
- Strengthen international partnerships and facilitate global mobility opportunities for students and faculty to promote cross-cultural exchange and collaboration in education, research, and industry.
- Use AzTU's research and innovations to address social challenges, improve quality of life, and contribute to inclusive and sustainable community development.

Conclusion

AzTU's strategy reflects a holistic and forward-looking approach to sustainable development through innovation, education, and industry collaboration. By strengthening its ties with industry, investing in research and development, embracing digital transformation, and fostering an entrepreneurial ecosystem, AzTU will continue to empower its students to become global leaders in technology and sustainability. With a focus on SDG 9, AzTU is committed to contributing to both Azerbaijan's economic growth and global sustainable development goals, ensuring that its graduates are prepared for the challenges and opportunities of the future.