

7.4.5 - Does your university as a body provide assistance for start-ups that foster and support a low-carbon economy/technology?

Azerbaijan State Oil and Industry University (ASOIU) actively supports innovation and entrepreneurship in the low-carbon and clean-technology sectors, providing its students, researchers, and young entrepreneurs with the tools, infrastructure, and mentorship needed to transform sustainable ideas into viable start-ups.

ASOIU's initiatives combine laboratory-based innovation, mentorship, hackathons, and incubation support through its Renewable Energy Laboratory, and Technology Transfer Center (TTC). Together, these platforms build a bridge from idea to application, helping develop real-world solutions that contribute to a low-carbon economy.

1. Renewable Energy Laboratory – Innovation Platform for Green Technologies

The Renewable Energy Laboratory, part of ASOIU's Faculty of Power Engineering, serves as a practical innovation hub where students and researchers design and test sustainable-energy systems and low-emission technologies.

Core functions of the lab include:

- Student-led prototype development: Teams design small-scale solar-powered devices, energy-efficient micro-grids, and IoT-based monitoring systems for clean-energy management.
- Low-carbon system modelling: The lab provides simulation tools to model CO₂-reduction impacts, battery-storage optimization, and efficiency of renewable-hybrid systems.
- Start-up incubation support: Selected student projects are mentored by ASOIU faculty and energy experts to advance from experimental prototypes to commercial-ready designs.
- Industry cooperation: The lab collaborates with the State Agency on Renewable Energy, SOCAR R&D, and private companies to provide technical evaluation and pilot-testing opportunities.



2. Technology Transfer Center (TTC) – Turning Ideas into Market Solutions

The ASOIU Technology Transfer Center acts as the university’s principal hub for transforming innovative student projects into start-ups that support a low-carbon economy. Through integrated training, mentoring, and competitions, the TTC empowers young innovators to build sustainable business models around their clean-energy solutions.

Main areas of activity:

Activity Type	Description	Impact
Innovation & Entrepreneurship Training	Regular workshops on sustainable business planning, renewable-energy markets, and digital entrepreneurship	>250 students trained annually
Hackathons and Green-Energy Challenges	Annual “ASOIU Green Hackathon” focuses on low-carbon technologies such as waste-to-energy systems, smart-grid management, and hydrogen storage	30+ teams developed start-up concepts
Prototype Funding & Mentorship	Small innovation grants and expert mentorship guide promising projects through proof-of-concept stages	Several projects now in industry testing
Partnerships for Commercialization	Collaboration with Startup Azerbaijan, Innovation Agency, and EU4Energy programs to commercialize clean-tech innovations	Strengthened academia-industry linkage

3. From Student Idea to Sustainable Start-Up

The Renewable Energy Lab and TTC work in tandem:

1. Research Stage: Students design prototypes in the Renewable Energy Laboratory with technical supervision from ASOIU engineers and visiting researchers.
2. Validation Stage: Feasibility and efficiency analyses are conducted to assess carbon-reduction potential and market viability.
3. Incubation & Launch: Through TTC’s innovation incubator, the most promising projects receive start-up mentorship, intellectual-property support, and links to investors or pilot programs.

Examples of supported projects include:

- A solar-powered irrigation controller developed by environmental-engineering students.
- A smart-grid data analytics platform that optimizes building-energy use.

- A bio-waste-to-energy micro-system created through ASOIU's annual hackathon and later showcased at national innovation fairs.



4. Collaboration and Community Outreach

ASOIU extends its start-up support beyond the university by engaging:

- Local industry partners, offering co-development projects for energy-efficient equipment.
- Regional incubators to help commercialize clean-tech solutions.
- Public workshops on entrepreneurship for sustainability, encouraging community participation in the low-carbon transition.

These programs position ASOIU as a national driver of green innovation and sustainable-economic diversification.



Conclusion

ASOIU provides direct, continuous support to start-ups promoting low-carbon technologies through a structured pipeline of innovation — from laboratory research and hackathons to business incubation and commercialization. By combining the Renewable Energy Laboratory's technical excellence with the Technology Transfer Center's

entrepreneurial guidance, the university ensures that student creativity transforms into real-world solutions that reduce emissions, improve efficiency, and advance Azerbaijan's clean-energy transition.