

PLAN ACHIEVING CARBON NEUTRALITY AT TIAME NATIONAL RESEARCH UNIVERSITY FOR 2022-2030

Introduction

Carbon neutrality, also known as climate neutrality, refers to the balance between the amount of greenhouse gas emissions produced and the amount removed from the atmosphere. The goal is to achieve a net-zero carbon footprint. Greenhouse gases, such as carbon dioxide (CO₂), contribute to global warming and climate change. Achieving carbon neutrality is a key strategy in addressing climate change and its associated environmental impacts.

Uzbekistan's goals of reducing greenhouse gas emission intensity by 35 per cent and increasing the share of renewable energy sources by 25 per cent by 2030 are ambitious and strategic. Presidential Decree № PF-220, adopted on 9 September 2022, on additional measures to introduce energy-saving technologies and develop small-scale renewable energy sources, is considered an important legal basis in this regard.

BASIC CONCEPTS

Greenhouse Gas Emissions-Organizations, countries, or individuals produce greenhouse gas emissions through various activities such as burning fossil fuels for energy, industrial processes, transportation, and deforestation. These emissions contribute to the accumulation of greenhouse gases in the atmosphere.

Carbon Offsetting-To achieve carbon neutrality, entities strive to offset their emissions by investing in projects or activities that reduce or remove an equivalent amount of greenhouse gases from the atmosphere. This is often done through the purchase of carbon credits, which represent a reduction or removal of greenhouse gases elsewhere.

Renewable Energy and Energy Efficiency-Transitioning to renewable energy sources (such as solar, wind, and hydroelectric power) and improving energy efficiency are critical steps in reducing emissions. By using cleaner energy sources and improving energy efficiency, organizations can minimize their carbon footprint.

Carbon Capture and Storage (CCS)-Carbon capture and storage technologies involve capturing CO₂ emissions from industrial processes or directly from the atmosphere and storing them underground to prevent them from entering the atmosphere.

Reforestation and Afforestation-Trees absorb CO₂ as part of photosynthesis, making reforestation (replanting trees in deforested areas) and afforestation (planting trees in areas that were not previously forested) important strategies for carbon sequestration.

Sustainable Practices-Adopting sustainable practices across various sectors, such as agriculture, construction, and waste management, can also contribute to carbon neutrality. These practices focus on minimizing environmental impacts and reducing resource consumption.

I. ASSESSMENT AND BASELINE

1. Conduct a Carbon Footprint Assessment:

- Identify and quantify the university's current carbon emissions from all sources, including energy consumption, transportation, waste, and other activities.
- Consider outsourcing this task to environmental consultants with expertise in carbon footprint assessments.

Every year, the university conducts work on determining the carbon footprint. A plan of practical work to reduce the emission of waste gases into the atmosphere will be drawn up to improve these statistical indicators from year to year.

2. Set Baseline Metrics:

- Establish a baseline for current carbon emissions and energy usage. This will serve as a reference point for tracking progress.

II. STAKEHOLDER ENGAGEMENT AND AWARENESS

3. Create a Sustainability Committee:

- Form a committee with representatives from various departments and stakeholders across the university to oversee the carbon neutrality initiative.

4. Raise Awareness:

- Develop and implement a communication plan to inform the university community about the carbon neutrality goals and the importance of their participation.

III. ENERGY EFFICIENCY AND RENEWABLE ENERGY

5. Energy Efficiency Measures:



Solar absorption Air Conditioning system ("TIAME" National Research University)

At TIAME NRU (Tashkent Institute of Irrigation and Agricultural Mechanization Engineers), various energy-efficient devices and systems are employed to minimize energy consumption and promote sustainability. These include the utilization of LED lamps with motion detection

system, energy-efficient lighting for campus illumination, conditioning with solar panels, and the implementation of an individual campus heating system to reduce natural gas usage.

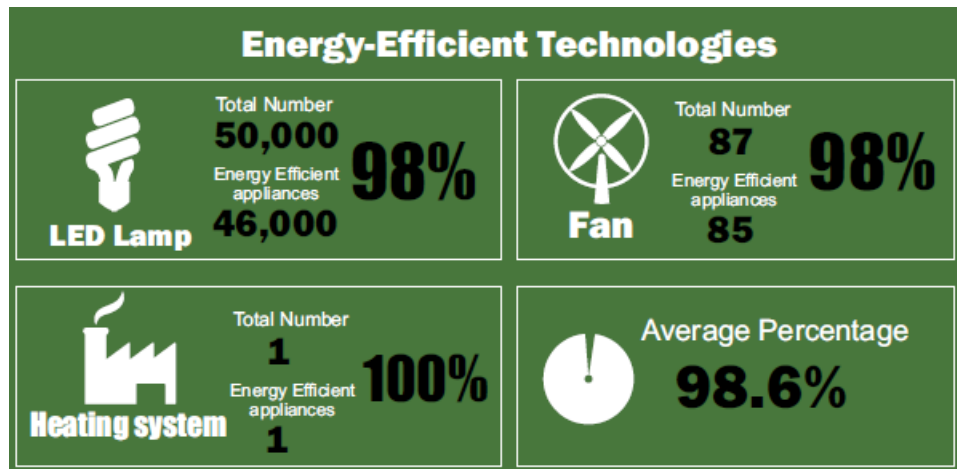


Individual campus heating system to reduce natural gas
(Heating system based on electric heats and use solar energy)

LED lamps with motion detection system TIIAME NRU utilizes LED lamps integrated with a motion detection system for efficient lighting. LED lamps are known for their energy efficiency, consuming significantly less electricity than traditional lighting options. The motion detection system ensures that the lights are activated only when motion is detected, minimizing unnecessary energy usage. This intelligent lighting solution not only saves energy but also enhances safety and security on the campus.

Energy-efficient lighting for campus illumination Energy-efficient lamps, such as LED or compact fluorescent lamps (CFLs), are extensively used for campus illumination at TIIAME NRU. These lamps consume less power while providing high-quality lighting. By replacing conventional lighting fixtures with energy-efficient alternatives, TIIAME NRU reduces overall energy consumption and contributes to a more sustainable environment.

Conditioning with solar panels To facilitate energy-efficient air conditioning, TIIAME NRU employs solar panels. Solar panels harness the power of sunlight and convert it into electricity, which can be utilized to operate the air conditioning systems. By utilizing renewable solar energy, TIIAME NRU reduces its reliance on conventional energy sources and decreases its carbon footprint. This approach promotes environmental sustainability and helps in reducing long-term energy costs.



Individual campus heating system to reduce natural gas usage TIIAME NRU has implemented an individual campus heating system as part of its efforts to reduce the usage of natural gas. This system optimizes energy usage and reduces dependence on natural gas, contributing to sustainable energy consumption on campus. The individual heating system relies on alternative energy sources such as electricity or renewable sources like solar energy. By replacing traditional gas-based heating systems, these alternative energy sources provide reliable and energy-efficient heating for campus buildings.

The individual campus heating system allows for temperature control in each room separately, ensuring more efficient energy usage. Through advanced automation and control technologies, the system detects occupancy and adjusts comfort settings. Energy is only utilized in areas where it is needed, reducing energy consumption and minimizing natural gas usage.

By incorporating LED lamps with motion detection, energy-efficient campus lighting, conditioning with solar panels, and an individual heating system, TIIAME NRU demonstrates its commitment to energy efficiency and sustainable practices. These initiatives not only contribute to a greener and more sustainable campus environment but also serve as a model for other institutions to adopt similar energy-efficient technologies, reducing their reliance on non-renewable energy sources.

6. Transition to Renewable Energy:

In recent years, great work has been done at the university to reduce the use of electricity and gas due to the use of renewable energy sources. In particular, solar batteries have been installed on the territory of the university, and 22.6% of the electricity consumed today is obtained from these solar panels. Based on the CLIMATE ACTION PLAN, it is planned to produce all the electricity consumed in the university territory until 2030. In the graph below, we can see that energy consumption will decrease in 2020 and 2022.



IV. SUSTAINABLE TRANSPORTATION

7. Promote Sustainable Transportation:

- Encourage the use of public transportation, biking, and walking.
- Transition the university's vehicle fleet to electric or hybrid vehicles.

Students, teachers and staff move around the territory of "TIIAME" NRU mainly on foot. Also at the entrance to the university there are free bikes and scooters that can be used for free by anyone who attends the university, but they are mainly used by students to move around the university



Free bicycles for rent



Free scooters for rent

V. WASTE MANAGEMENT

8. Waste Reduction and Recycling:

- Implement waste reduction strategies and increase recycling efforts across the campus.
- Encourage the use of reusable materials and containers.

VI. CARBON OFFSETTING AND REMOVAL

9. Carbon Offsetting Programs:

- Invest in carbon offset programs to compensate for emissions that cannot be eliminated.
- Explore partnerships with organizations focused on carbon removal technologies.

VII. RESEARCH AND EDUCATION

10. Integrate Sustainability into the Curriculum:

- Incorporate sustainability and environmental topics into various academic disciplines.
- Support research initiatives focused on sustainable practices and technologies.

VIII. MONITORING AND REPORTING

11. Establish Monitoring Systems:

- Implement systems to regularly monitor and report on the university's progress toward carbon neutrality goals.
- Use key performance indicators (KPIs) to measure success in different areas.

12. Annual Reports and Transparency:

- Publish annual reports on the university's carbon neutrality progress.
- Maintain transparency with the university community and stakeholders.

IX. FUNDING AND INCENTIVES

13. Secure Funding:

- Identify and secure funding sources for sustainability initiatives and infrastructure improvements.
- Explore government grants, private partnerships, and alumni donations.

14. Incentive Programs:

- Implement incentive programs to encourage departments and individuals to contribute to carbon reduction efforts.

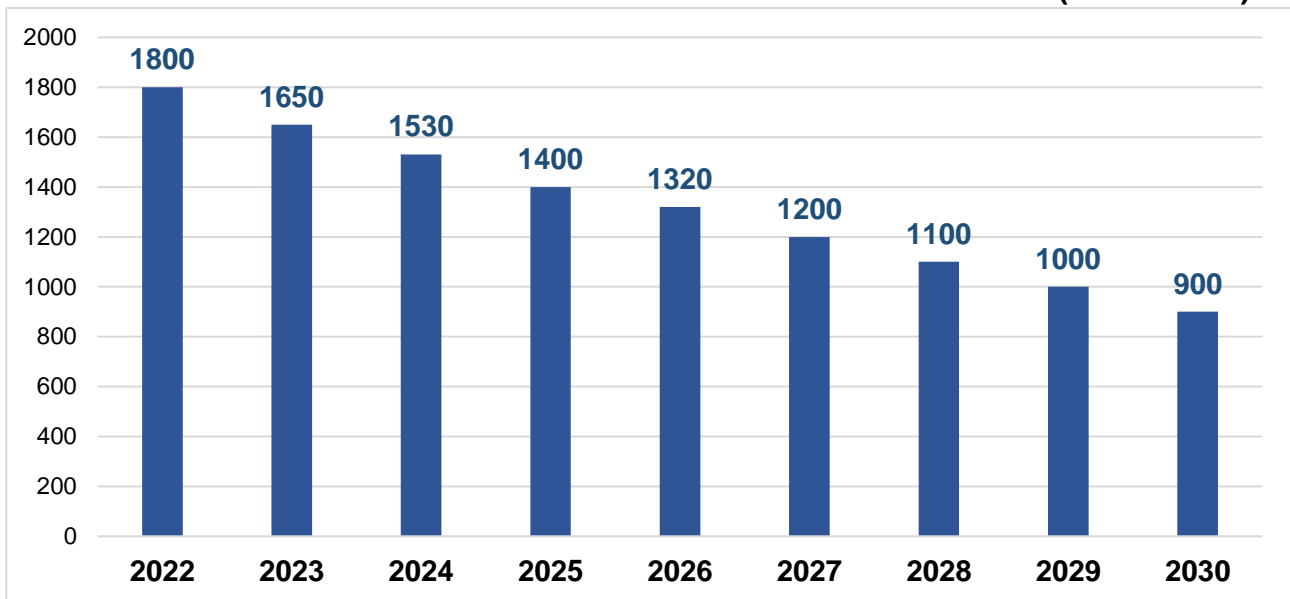
X. CONTINUOUS IMPROVEMENT

15. Review and Update:

- Periodically review the carbon neutrality plan to ensure it remains aligned with the latest technologies and best practices.

- Adjust goals and strategies based on new developments and lessons learned.

TIIAME NRU Greenhouse Gas Reduction Plan from 2020 until 2030(metric tons)



By implementing this plan, TIIAME National Research University can work toward achieving carbon neutrality by 2030, contributing to a more sustainable and environmentally friendly future.