BAKU ENGINEERING UNIVERSITY

CLIMATE ACTION POLICY

SECTION 1: INTRODUCTION

1.1. BACKGROUND

Azerbaijan possesses a unique climatic diversity, encompassing 9 out of the 11 existing climate zones. This makes the country particularly vulnerable to climate change, which can significantly affect agriculture, water resources, and the ecological balance of different regions. Hypothetically, Baku Engineering University can play a crucial role in environmental preservation and the country's ecological development. The implementation of environmentally sustainable engineering solutions, scientific research in green technologies, the development of energy-saving programs, and the reduction of carbon footprints can all contribute to mitigating negative environmental impacts. Particular attention should be given to the interconnection between climate and industry. As a country with substantial oil and gas reserves, Azerbaijan has a rapidly developing industrial sector, which inevitably influences the environment. It is essential to design and implement technologies that reduce greenhouse gas emissions, optimize the use of natural resources, and enhance the environmental safety of industrial enterprises. BEU can contribute to this process by educating specialists in environmental engineering, developing innovative solutions for sustainable development, and collaborating with industrial enterprises to introduce green technologies.

1.2. IMPORTANCE OF CLIMATE ACTION

The fight against climate change is not only a matter of preserving life on the planet but also a strategic and moral necessity for building a better future. This concept aligns with the core values and mission of BEU. BEU recognizes the severity of environmental challenges and their impact on society; therefore, it develops step-by-step strategies to cultivate environmental responsibility among students and contribute to the improvement of the ecosystem. Thus, Baku Engineering University not only prepares highly qualified professionals but also actively contributes to shaping a more environmentally sustainable future for the country.

SECTION 2: CURRENT SITUATION

2.1. OVERVIEW OF BEU'S CARBON FOOTPRINT

By 2024, BEU will conduct a comprehensive assessment of its carbon footprint, considering both direct and indirect GHG emissions associated with campus activities. This analysis will help identify key emission sources related to energy consumption, waste management, transportation infrastructure, and other operational processes within the university. Given the environmental challenges facing Baku, including severe air pollution, rapid urbanization, and dependence on hydrocarbon industries, BEU recognizes the urgent need for a systematic approach to reducing its environmental impact. Monitoring the university's carbon footprint serves as a foundation for targeted interventions aimed at mitigating environmental impacts. It supports energy-efficient technologies, renewable energy transition, optimized waste systems, and environmental awareness.

Problems of University Carbon Footprint

- **Scope 1**: University-owned vehicles, heating systems, generators
- **Scope 2**: Electricity consumption
- **Scope 3**: Resource consumption, waste, staff and student transportation

Methods for Calculating Emissions

1. Data Collection
2. Emission Factors Application
3. Use of Calculators (e.g., GHG Protocol, ISO 14064)
4. Annual Trend Analysis

Standards

- ISO 14064-1
- Azerbaijan's NDCs (35% reduction by 2030)
- Law on Environmental Protection
- State Renewable Energy Program

2.2. EXISTING ENVIRONMENTAL ACTIVITIES

BEU has committed to becoming a carbon-neutral institution and has

implemented various initiatives. These include strategies targeting both short- and long-term climate goals.

- Waste management initiatives
- Promotion of environmental responsibility
- Infrastructure improvement for sustainability
  These actions create a foundation for future green development and raise campus-wide environmental awareness.

SECTION 3: MISSION, VISION, AND SCOPE OF THE POLICY

3.1. MISSION STATEMENT

To cultivate a sustainable and environmentally responsible university environment through education, innovation, and community engagement, and to contribute to Azerbaijan's climate resilience.

3.2. VISION FOR SUSTAINABLE CAMPUS

To become a leading institution in climate action, known for its carbon neutrality, sustainable operations, and active research in green technologies by 2050.

3.3. SCOPE OF THE CLIMATE ACTION POLICY

The policy covers all university operations, including energy, water use, waste, transportation, education, research, and stakeholder engagement. It aligns with national and international environmental standards and BEU's strategic goals.

SECTION 4: EXECUTED ACTIONS

4.1. POST INITIATIVES AND ACHIEVEMENTS

Strategic Steps Implemented

1. Data Collection Systems
2. Energy Efficiency (building insulation, solar panels)
3. Waste Sorting and Plastic Reduction
4. Promotion of Eco-Transport

5. Campus Greening
6. Research in Sustainability
7. Periodic Evaluation and Reporting

Implemented Scientific Projects

- IL-based surfactants for oil spills
- Chemical-free water treatment using electric fields
- Economic analysis of climate policies
- LED lighting systems and thermal insulation upgrades
- Plastic recycling and biodegradable alternatives

SECTION 5: CURRENT ONGOING PROCESSES

5.1. ONGOING PROJECTS AND PROGRAMS

Plastic Waste Project

- Infrastructure for campus collection
- Research into recycling and bioplastics
- Awareness campaigns
- Lab collaborations
- Pilots and scientific publishing

Ionic Liquids Research

- Applied in synthesis of heterocycles
- Aligned with green chemistry
- Supports climate goals
- Promotes biodegradable and energy-efficient solutions

SECTION 6: FUTURE GOALS AND STRATEGIES

6.1. LONG-TERM OBJECTIVES

By 2040, BEU aims to significantly improve its environmental performance, with the ultimate goal of achieving full carbon neutrality by 2050. To support these objectives, the university is implementing the following scientific projects and Climate Initiatives

1. Project: IL-Based Eco-Surfactants for Oil Spill Remediation
Objective: Develop safe and effective ionic liquid (IL)-based surfactants for oil pollution cleanup.
Actions: Research and test ILs for their application in ecological systems.

2. Project: Innovative Chemical-Free Water Treatment
Objective: Develop water purification methods using high-voltage pulsed electric fields.
Actions: Assess the impact of pulsed electric fields on pathogenic microorganisms and optimize the technology for water treatment applications.

3. Project: Sustainable Economic Growth and Climate
Objective: Analyze the impact of climate measures on economic growth and develop "green growth" scenarios.
Actions: Model the economic effects of climate policies and formulate sustainable development scenarios.

4. Project: Energy Efficiency and Emission Reduction
Objective: Implement energy-efficient technologies to reduce carbon emissions.
Actions: Conduct energy audits and optimize energy consumption through LED lighting systems and enhanced thermal insulation.

5. Project: Plastic Waste Recycling
Objective: Develop a sustainable approach to plastic waste recycling and the creation of biodegradable materials.
Actions: Establish a plastic waste collection system on campus, research biodegradable alternatives, and engage students in the development of innovative solutions.

6.2. INNOVATIVE STRATEGIES FOR CLIMATE ACTION

1. Data Collection and Emission Analysis
Objective: Establish a monitoring system to track energy consumption, waste generation, and transportation-related emissions.
Actions: Develop and implement a system for accurately assessing the university's environmental impact.

2. Energy Efficiency and Transition to Renewable Energy

Objective: Reduce dependence on fossil fuels by improving infrastructure and utilizing renewable energy sources.
Actions: Invest in energy-saving technologies, enhance building insulation, and install additional solar panels and other renewable energy systems.

3. Sustainable Waste Management
Objective: Minimize the environmental impact of waste.
Actions: Develop systems for waste sorting and recycling, reduce the use of single-use plastics, and promote composting initiatives.

4. Environmentally Friendly Transportation Initiatives
Objective: Decrease carbon dioxide emissions from transportation.
Actions: Encourage the use of bicycles and public transport, and introduce electric vehicles on campus.

5. Green Campus Development
Objective: Enhance ecological balance within the campus environment.
Actions: Increase green areas, plant trees, and implement water-saving technologies.

6. Educational and Research Contributions
Objective: Integrate sustainability principles into the educational process and scientific research.
Actions: Promote environmental research and awareness campaigns, and incorporate sustainable technologies into academic programs.

7. Regular Progress Evaluation
Objective: Ensure transparency and accountability in sustainability efforts.
Actions: Conduct periodic assessments of environmental indicators, set emission reduction targets, and publish sustainability reports.

SECTION 7: STAKEHOLDER ENGAGEMENT

7.1. INVOLVEMENT OF STUDENTS, FACULTY AND STAFF

- Participation in plastic recycling
- Student-led scientific initiatives
- Integration of sustainability into curriculum

- Research support and international presentations

7.2. COMMUNITY OUTREACH AND PARTNERSHIPS

International Collaborations

Baku Engineering University (BEU) continues to strengthen its international outreach by planning new strategic contracts with foreign partner institutions to support the implementation of diverse scientific initiatives and academic programs. These collaborations are designed to foster innovation, knowledge exchange, and joint research in priority areas such as environmental sustainability, climate change mitigation, green technologies, energy efficiency, and chemical engineering.

Through these new partnerships, BEU aims to align its efforts with global climate goals and make meaningful contributions to reducing greenhouse gas emissions. A key objective of this international engagement is to support the university's roadmap towards achieving net-zero carbon emissions by 2050. Joint research projects, capacity-building programs, and knowledge transfer activities developed with partner institutions will play a crucial role in achieving this vision.

By leveraging the expertise and experience of leading universities and research centers across Europe, Asia, and the Middle East, BEU is committed to transforming its scientific potential into practical solutions that address pressing global challenges and contribute to a more sustainable future.

1. European Union – Horizon 2020 Program
• **Project:** CAMPAIGNers
• **Focus:** Development of strategies for climate change mitigation
• **Status:** The first meeting under the project was held on June 7, 2021. The project concluded in 2024. Preparations are underway to renew the grant or launch a new phase of the project in 2026.

2. European Union Countries
• **Partner Institutions:**

- Sapienza University of Rome (Italy)
- Aalborg University (Denmark)
- University of Granada (Spain)

- University of Patras (Greece)

  - •**Project:** ITACA (funded by the European Union) **Focus:** Establishment of a research and training center to address environmental issues related to oil and gas extraction in Azerbaijan **Status:** The opening ceremony took place on January 18, 2022. The project concluded in 2024. Renewal of the grant or contract is planned for 2026 to continue the collaboration.

3. South Korea

• **Partner Institution:** INHA University

- Climate Change Response Program
- Focused on joint educational initiatives and training programs to address the climate crisis

Status: The partnership agreement was signed on January 10, 2025. The collaboration is currently active.

4. China

• **Partner Institution:** Beijing University of Chemical Technology (BUCT)

- Joint undergraduate programs in chemical engineering
- Research collaboration in the field of chemistry

Status: A **Cooperation Contract** was signed on April 17, 2025. Program planning and development are currently in progress.

5. United Arab Emirates (UAE)

• **Partner Institution:** United Arab Emirates University (UAEU)

• **Joint Research Projects Proposed:**

- Project 1: Development and Characterization of Eco-Friendly IL-Type Surfactants for Enhanced Petroleum Spill Remediation
- Project 2: Development of Innovative Methods for Disinfecting Water Resources Using Strong Electric Fields and Discharges
- Project 3: Climate Action and Economic Growth: Creating a Sustainable Balance

- Project 4: The Role of Energy Efficiency in Reducing Greenhouse Gas Emissions
  Status: The **contract** has not yet been signed. It is expected to be signed **by the end of April**.

SECTION 8: RESOURCE ALLOCATION

8.1. RESOURCE ALLOCATION

Baku Engineering University (BEU) demonstrates a firm institutional commitment to climate action through strategic and well-structured resource allocation. Recognizing that effective climate change mitigation requires not only policy but also tangible investment, the University has dedicated substantial financial and operational resources to advancing sustainability across its campus and academic community.

The University's climate-related budget is purposefully structured to support a broad range of priority areas, including:

- Campus Infrastructure Efficiency: Targeted investment in the modernization of engineering systems and the integration of renewable energy sources—such as solar panels—to reduce reliance on fossil fuels and improve overall energy performance;
- Research and Innovation: Allocation of funds to support research on energy consumption, renewable technologies, and low-carbon solutions. BEU also provides dedicated grants for cutting-edge studies in green chemistry and environmental engineering;
- Student and Faculty Engagement: Financial support for student- and faculty-led projects that promote climate action, sustainability, and environmental awareness at both the institutional and community levels;
- Sustainable Mobility: Funding for initiatives that encourage the use of electric and hybrid vehicles, cycling, and the development of supporting infrastructure to reduce transportation-related emissions;
- Interdisciplinary Collaboration Platforms: Resources for creating collaborative, practice-oriented platforms involving students and academic staff across faculties to address climate challenges collectively;
- Curriculum and Outreach: Ongoing investment in the enhancement of academic programs, organization of seminars, workshops, and conferences

to foster knowledge exchange and embed environmental topics into education;

- Monitoring and Evaluation: Provision of resources for regular monitoring, data collection, and impact assessment to ensure the effectiveness of implemented strategies and guide future decisions;
- Partnership Development: Financial and administrative support for establishing national and international partnerships aimed at securing external funding, facilitating joint research, and promoting long-term environmental initiatives;
- Stakeholder Involvement: Ensuring that resources are allocated to promote inclusive decision-making processes, engaging both internal and external stakeholders in the co-creation of climate solutions.

BEU's resource allocation strategy is guided by a balance between structure and adaptability. While aligned with long-term climate goals, the University remains responsive to emerging needs and external dynamics. This flexible and forward-looking approach reinforces BEU's role as a leader in environmental transformation and sustainable development.