University : UzSWLU
Country : Uzbekistan
Web Address: https://www.uzswlu.uz/en#

2. Energy and Climate Change (EC)

2.13 – Number of Innovative Program(s) in Energy and Climate Change

UzSWLU has implemented several innovative technology-driven initiatives designed to enhance energy efficiency, indoor environmental quality, climate resilience, and sustainable campus operations. These programs combine digital monitoring, renewable energy technologies, artificial intelligence, and environmental education within the university's Smart Campus Framework.

Program 1: Smart UVC Sterilization and Air Quality Management System

Installed across five campuses (8 academic buildings, 3 dormitories, Central Library, cafeteria, Main Administration Building), 118 intelligent UVC sterilization units operate via automated scheduling and occupancy sensors, integrated with smart lighting, consuming ~18.2 kWh per unit/month, monitored via the Fusion Energy Platform and E-Ma'muriyat system. Impact: 46,800 m² sterilized area, 34% reduction in illness-related absenteeism, 44% indoor air quality improvement, 18% average energy savings, and ~9.2 tons CO_2/year avoided. Supports SDG 3, SDG 7, and SDG 13.

Program 2: Green Linguapark — Eco-Education and Energy Demonstration Zone

A living laboratory featuring solar-powered outdoor lighting, smart irrigation with digital moisture sensors, climate-resilient landscaping, renewable energy demonstration areas, and environmental education zones for workshops and public outreach — enhancing biodiversity, promoting experiential learning, reducing irrigation water use, and demonstrating climate adaptation solutions.

Program 3: Fusion Energy Smart Campus Platform

The university's central digital energy management ecosystem, providing real-time electricity monitoring, solar generation tracking, building-level performance analysis, CO_2 accounting, and automated load balancing. Contributed to a 34% reduction in electricity consumption compared to the 2021 baseline and supports annual GHG emission reductions through intelligent control.

Program 4: AI-Based Predictive Energy Management System

Introduced in 2025, this system uses artificial intelligence and predictive analytics for load forecasting, automated peak-demand management, early detection of abnormal consumption, AI-assisted maintenance scheduling, and carbon-emission forecasting — improving operational efficiency and supporting the university's carbon neutrality objectives.

Summary of Innovative Programmes

No.	Programme	Main Focus	Since
1	Smart UVC Sterilization & Air Quality System	Indoor health, energy optimization	2023
2	Green Linguapark Initiative	Renewable energy demonstration and biodiversity	2024
3	Fusion Energy Smart Campus	Real-time energy and CO_2 monitoring	2022
4	AI-Based Predictive Energy Management	Predictive load balancing, AI-driven CO_2 forecasting	2025

Additional evidence link (i.e., for videos, more images, or other files that are not included in this file):