SUSTAINABLE
DEVELOPMENT GOAL

13 CLIMATE ACTION

العمل المناخي



REPORT 2024–2025

Assiut University

REVISED BY
International Ranking Office

SDG 13 · 2024–2025

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SUMMARY

Assiut University reports activity under all four areas of SDG 13: resilience and adaptive capacity, integration of climate measures into planning, climate education and awareness, and support for mitigation and adaptation. It has adopted a carbon-neutrality strategy based on the Greenhouse Gas Protocol and aligns its climate work with Egypt Vision 2030 and the National Climate Change Strategy 2050. Its largest funded measure is the "Improving Energy Efficiency in University Buildings" project: seven projects costing 1.5 million euros, financed by KfW and implemented across 18 Egyptian public universities under the Supreme Council of Universities, with an expected reduction in consumption of approximately 3.2 gigawatt-hours.

In education, climate and sustainability content is taught at undergraduate and postgraduate level, and the University has hosted international conferences on climate and the environment. Student teams from the Assiut University Green Initiative placed second and fourth at Climathon Upper Egypt on 30–31 October 2023. Campus planting includes 4,000 jojoba trees and 1,000 fruit trees under the presidential "100 Million Trees" initiative. The University states that approximately 80% of the renewable-energy production projects carried out by STEM students fall under its supervised student work.

€1.5M
KfW-funded energy-efficiency projects (7 projects)

3.2 GWh
Expected reduction in consumption

18
Public universities in the programme

4,000
Jojoba trees planted

2nd · 4th
Climathon Upper Egypt placings

~80%
Renewable-energy projects by STEM students

01

SCOPE AND BASIS OF THE REPORT

The report covers climate education, climate action planning, cooperative planning for climate disasters, early warning and monitoring, and collaboration with NGOs.

Climate education	Action planning	Disaster planning	Early warning	NGO collaboration

02

CLIMATE EDUCATION AND AWARENESS

Teaching

Assiut University offers undergraduate and postgraduate courses addressing climate and environmental sustainability. Specialised programmes and new courses have been introduced to strengthen climate-sustainability awareness among students.

Research support

The University supports climate-related research through studies, joint supervision, scientific missions, and international scholarships.

Conferences and seminars

The University has organised or hosted international conferences that provide a platform for experts to discuss sustainability and environmental challenges:

1. International Conference on Development and Environment in the Arab World
2. 12th International Conference on Development and Environment in the Arab World: “Sustainable Development and Confronting Environmental & Climate Changes: Challenges and Solutions”
3. Second International Conference of Biological Sciences: “Innovative Solutions in Biology for a Sustainable Future”
4. MEPCON, the Middle East Power Systems Conference
5. 9th International Architectural Conference, IACA-9

02

CLIMATE EDUCATION AND AWARENESS (CONTINUED)

Campus awareness activities

As part of the First Student Green Dream Conference, the University hosted a seminar on the carbon footprint, addressed to students and the wider campus community. The Assiut University Green Initiative aims to raise environmental awareness among students and staff and to apply strategies that reduce the effects of climate change for the benefit of the community.

STUDENT EXHIBITION · 11 NOVEMBER 2024

The University President inaugurated an environmental projects exhibition for fourth-year students of the STEM Bachelor's programme at the Faculty of Education. The exhibition formed part of the 9th International Conference of the Faculty of Education (11–12 November 2024), "The Role of Arab Education in Achieving Sustainable Development Goals". It was attended by the Vice Presidents for Education and Student Affairs, for Community Service and Environmental Development, and for Postgraduate Studies and Research. The products shown included:

Electricity-generating staircase
Energy from footsteps

Recycled plastic tile
Made from plastic waste

Waste-to-energy furnace
Burns waste to generate electricity

Solar-powered farm
Solar energy for agriculture

8 Semesters of capstone projects: STEM Teacher Preparation students from the first to the fourth year present projects on rationalising energy consumption and generating energy innovatively.

03

INTEGRATING CLIMATE MEASURES INTO PLANNING AND POLICY

Alignment with national frameworks

The University cites its participation in the Climate Summit of Upper Egypt as part of its efforts to implement Egypt Vision 2030 and the National Climate Change Strategy 2050. The Climathon event, "Climathon Upper Egypt – Towards Localizing the National Climate Change Strategy Egypt 2050", was organised on 30–31 October 2023 by the Ministry of Environment in collaboration with the European Union and the German International Cooperation Agency in Egypt. Two teams from the Assiut University Green Initiative won second and fourth places (see Section 6).

Carbon-neutrality strategy

Assiut University aims to become a carbon-neutral campus by following the Greenhouse Gas Protocol. The strategy covers:

Building efficiency	Transport	Waste management	Tree planting
Energy-efficient buildings and green construction practices	Promoting eco-friendly options to minimise emissions	Including recycling and composting	Planting for carbon reduction (Section 4)

FUNDED ENERGY-EFFICIENCY PROGRAMME

Seven projects will be executed at a total cost of 1.5 million euros under the "Improving Energy Efficiency in University Buildings" project. The project involves 18 Egyptian public universities under the supervision of the Supreme Council of Universities and is funded by KfW, the German development bank. The projects are intended as models for expansion at Assiut University and are expected to reduce consumption by approximately 3.2 gigawatt-hours.

7	€1.5M	18	3.2 GWh
Projects	Total cost	Public universities	Expected reduction

Funder: KfW (German development bank) · Supervision: Supreme Council of Universities

04

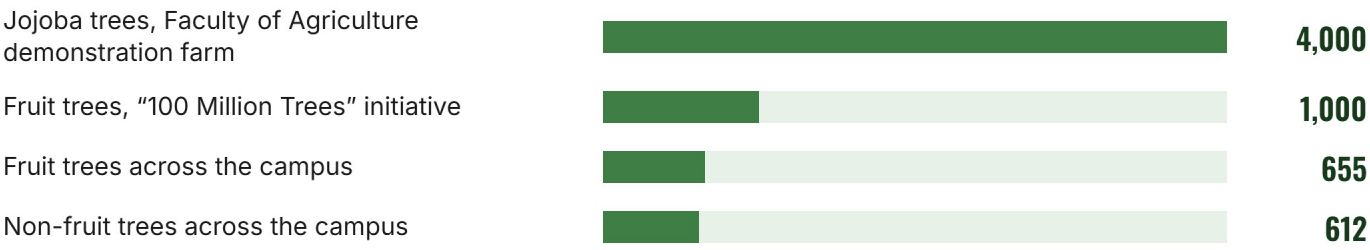
MITIGATION

Low-carbon energy and efficiency

Improvement in low-carbon energy consumption and building efficiency, with the energy-efficiency programme in Section 3 as its main funded measure. The University states that a significant share of its renewable-energy production projects is carried out by STEM students, approximately 80% of their projects, under the supervision of professors from the Faculties of Science, Engineering, and Education.

TREE PLANTING UNDER THE “GO GREEN” INITIATIVE

MEASURE	DETAIL
Jojoba planting	4,000 jojoba trees at the Faculty of Agriculture's demonstration farm, in collaboration with the Egyptian-Gulf Agricultural Land Company
Other species	Expansion to species such as mahogany and eucalyptus; a mahogany nursery established using wastewater, industrial drainage, and well water
Campus planting	655 fruit trees and 612 non-fruit trees planted across the campus
“100 Million Trees” initiative	1,000 fruit trees planted at the University during the International Conference on Development and the Environment in the Arab World



6,267 trees in total across the four plantings (calculated from the figures above).

Waste reduction

The University has a dedicated policy to reduce paper and plastic waste through electronic exams and communication, reusable containers, and recyclable materials.

04

STUDENT MITIGATION PROJECTS

Eco-Fuel Innovators

2ND PLACE · CLIMATHON 2023

Converts burned agricultural residues (rice straw, sorghum husks, and others) into biogas and animal feed through anaerobic fermentation, avoiding greenhouse-gas emissions from open burning.

Blast-tech

4TH PLACE · CLIMATHON 2023

Produces diesel fuel from plastic by pyrolysis to reduce carbon emissions from accumulated plastic waste.

Liquid Tree

CARBON CAPTURE

A 600-litre water container in which microalgae absorb carbon dioxide and release oxygen, proposed for dense cities with limited green space.

Footstep energy

PROTOTYPE

Pressure-sensor prototype; tests showed limited output, not enough to run lamps continuously.

Road hump generator

PIEZOELECTRIC

Piezoelectric sensors in the hump's spring system convert vehicle vibration to current; a related capstone speed bump stores energy in batteries for street lamps and traffic signals.

HIGHWAY WIND STUDY

Vertical-axis turbines on the Cairo–Alexandria Agricultural Road, suitable for low-consumption uses such as traffic signals and roadside sensors.

~220 km Road length, 8 lanes	**~110,554** Vehicles per day	**~30%** In the roadside lane
187,601 J Estimated per turbine per day	**52.11 Wh** Per turbine per day	**~19 kWh** Per turbine per year

04

STUDENT MITIGATION PROJECTS (CONTINUED)

PV hydrogen system

STDF PROJECT NO. 46069

24-month project at the Faculty of Engineering led by Prof. Dr. Mohamed Abdel Azim Ibrahim Nayel: off-grid PV with batteries, fuel cell, hydrogen tank, and electrolyser for hybrid household loads.

Dusty PV modules, Benban Solar Farm

SOLAR MAINTENANCE

Develops an early-alert indicator, based on cell temperature and electrical efficiency, for the best time to clean PV modules.

PV water pumping, New Assiut

50-ACRE FARM

Optimal sizing of a PV pumping system for a 50-acre farm, using a multi-objective genetic algorithm to minimise energy cost and greenhouse-gas emissions.

3D-Printed Scout

PHYSICS DEPARTMENT

Device combining a vertical-axis wind turbine, solar auxiliary power, PIR motion-sensor lighting, and a Wi-Fi extender.

Energy for life

GALVANIC CELL

Galvanic cell generating voltage from environmental resources and chlorine.

PUBLICATIONS LINKED TO THE PV HYDROGEN PROJECT

- → Energies 19(2):452 (MDPI)
- → IEEE Xplore, document 10701066
- → Energies 18(13):3395 (MDPI)
- → IEEE Xplore, document 10119610

05

RESILIENCE AND ADAPTIVE CAPACITY

ADAPTATION PROJECTS AND THE CLIMATE HAZARDS THEY ADDRESS

TerraNova Tech

DROUGHT AND SOIL DEGRADATION

Vermicompost produced with red wigglers to improve soil fertility, combined with a smart irrigation system that cuts water use through precise control.

Corn cobs for an eco-friendly life

HEAT

A smart home built from corncob, with an interior coating of clay and wheat straw to regulate humidity and lower temperature, palm-stem supports, and an HC-SR501 motion sensor that switches off electricity when a room is empty.

Smart Home (natural materials)

HEAT

Houses built of clay, hay, and fronds, whose insulating properties keep interiors cool in hot climates.

CASR Eco Brick

CONSTRUCTION IMPACTS

Bricks made from sugarcane waste as an environmentally friendly alternative.

PV water pumping, New Assiut

WATER AND ENERGY SECURITY

Water and energy security for agriculture, replacing a grid-powered pumping system.

Jojoba cultivation

DESERTIFICATION

Desertification and climate change: a resilient industrial crop.

Cooperative planning and early warning

The source cites the University's cooperation with government agencies, international universities, research institutions, industry partners, and civil-society organisations, and the conferences listed in Section 2. On this basis the report presents these as knowledge-exchange and capacity-building contributions.

NGO collaboration

The University reports that partnerships with NGOs strengthen local resilience efforts for immediate and long-term climate challenges.

RELATED LINKS

→ Evidence: NGO collaboration

06

STUDENT AND COMMUNITY ENGAGEMENT

The Assiut University Green Initiative supported two student teams at the Climathon Upper Egypt event (30–31 October 2023). Eco-Fuel Innovators finished second and Blast-tech fourth; each team brought together students from different faculties (Science, Engineering, Agriculture, and Medicine). The event was held under the supervision of the University President and the Vice President for Community Service and Environmental Development.

CLIMATHON UPPER EGYPT · 30–31 OCTOBER 2023

Eco-Fuel Innovators

2nd
Biogas and feed from residues

Blast-tech

4th
Diesel from plastic

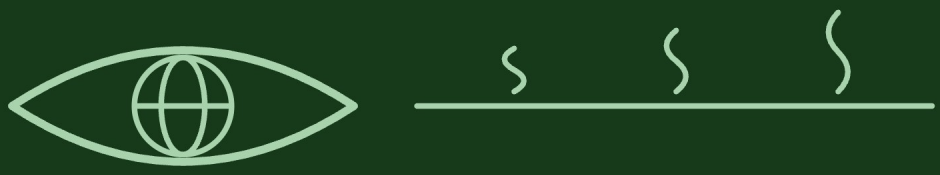
Science	Engineering	Agriculture	Medicine
Faculty	Faculty	Faculty	Faculty

The University also encouraged the Liquid Tree project. These activities link students directly to the national climate strategy and to the community's waste and air-quality problems.

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CLIMATE ACTION

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