Report on Assiut University's Progress Against 2024-2025

SDG 7: Affordable and Clean Energy

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Assiut University is dedicated to promoting sustainable development, which emphasizes providing access to modern, affordable, dependable, and sustainable energy.

1. Energy Efficiency Policies in Renovations and New Builds

Assiut University has established a policy that mandates energy efficiency standards for all renovation and construction projects. This through the project of **"Improving Energy Efficiency in University Buildings"** project, funded by the German Development Bank (KfW). Running from 2022 to 2026, this involves the renovation of several buildings, integrating modern energy-saving measures. It aims to implement standards aligned with ISO 50001 which is specifically geared towards energy management systems.

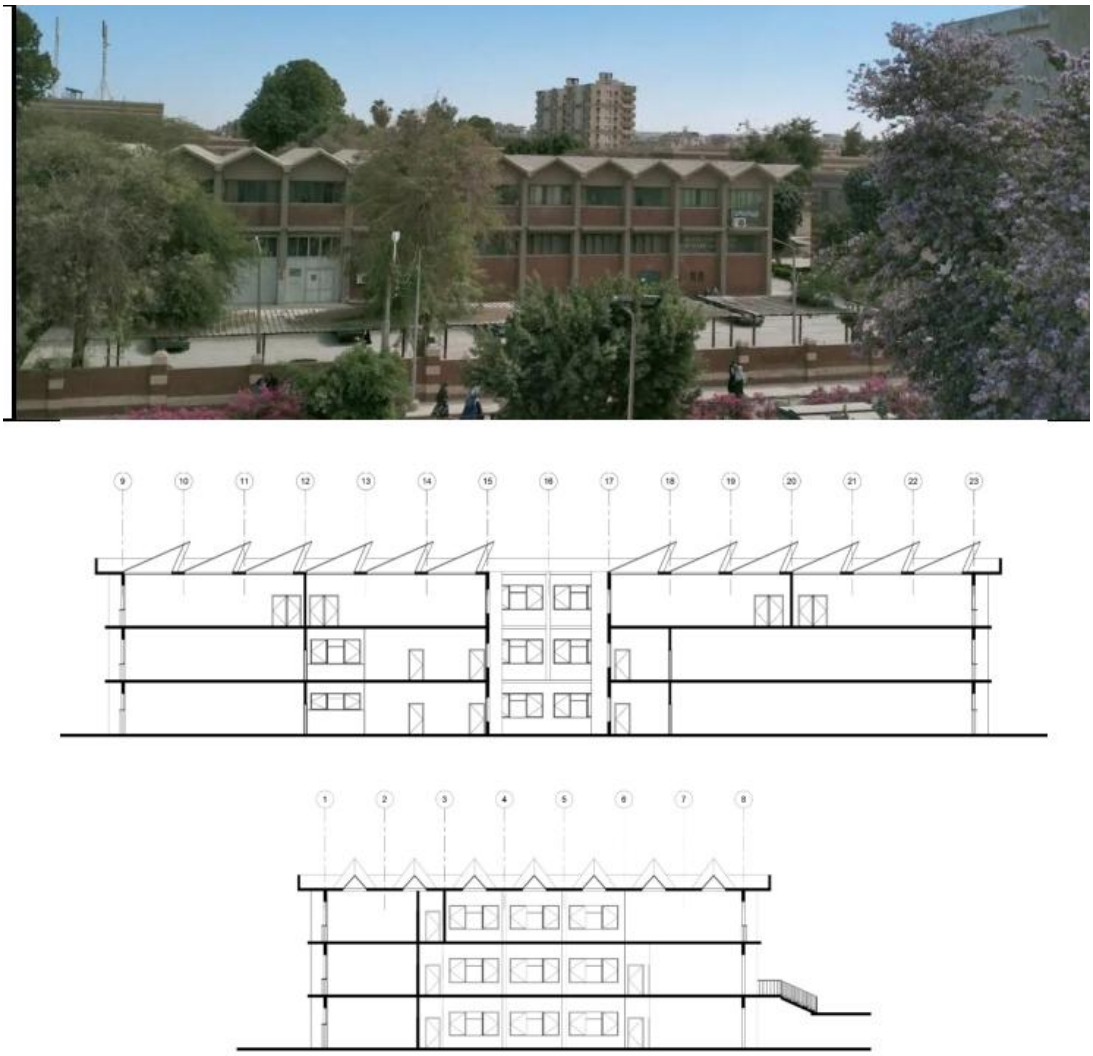
- **Smart building implementation**

There is a smart area allocated faculty of engineering which option some of smart fitter such as solar panel wind measurement devices and free mobile charge. This area approximates 75629 m2

No.			automation		safety				energy		water		Indoor environment				lighting				Building Area (m²)
			B1	B2	S1	S2	S3	S4	E1	E2	A1	A2	I1	I2	I3	I4	L1	L2	L3	L4	
	University X; Building A	City, Country				x	x	x				x				x	x	x		x	7860
	University X; Building B	City, Country				x			X	X		X				x	x			X	3590
	Total																				**11450**

2. Upgrading Existing Buildings for Higher Energy Efficiency

To further improve energy efficiency, Assiut University has admitted many projects. The university expects a **7.5% reduction** in annual energy consumption compared to 2022 levels, attributed to investments of approximately **€1.5 million** in energy efficiency projects across 18 public universities. The installation of **Photovoltaic (PV) solar stations** with a capacity of **800 kW** is also underway, anticipated to generate about **1.4 GWh** annually, thereby covering approximately **4%** of the university's total energy needs.



Green Building Implementation - Overview Green Technologies implemented at the Environmental

3. Carbon Management and Reduction Initiatives

Assiut University is actively following strategies to reduce carbon emissions through the development of a **Carbon Neutrality Strategy**. The university targets for "zero carbon emissions" by evaluating its current carbon footprint, adopting clean technologies, and enhancing transportation efficiency. The annual reduction

of **1,600 tons** of CO_2 emissions is projected from newly implemented energy-saving projects. These initiatives not only help achieve carbon credits worth approximately **€48,000** but also promote a sustainable campus environment through tree planting and waste management practices.

The projects implemented by Assiut University, valued at 1.5 million euros, in collaboration with the Supreme Council of Universities and their returns.

Carbon Footprint Results

A. Scope 1: Direct Emissions (Fuel Combustion)

Fuel Type	Consumption (Liters)	Emission Factor	Total Emissions
Gasoline (80 octane)	23,346	2.31	53,929
Gasoline (92 octane)	51,721	2.31	119,475
Diesel/Solar	186,220	2.68	499,070
Total Scope 1	**672,474 kg (672.5 tons)**		

B. Scope 2: Indirect Emissions (Electricity Consumption)

Energy Source	Consumption (kWh)	Emission Factor	Total Emissions
National Grid	42.13	0.5	21,065
Total Scope 2	**21,065 kg (21.1 tons)**		

C. Total Carbon Footprint (Scope 1 + Scope 2)

Total GHG Emissions = 672.5 + 21.1 = 693.6 tons CO_2

4. Energy Efficiency Plans

The university has developed a thorough energy efficiency plan, which includes the **"Improving Energy Efficiency in University Buildings"** initiative. This plan is designed to reduce overall energy consumption by implementing modern energy management systems and promoting awareness of energy conservation among students and staff. The goal is a **7.5% reduction** in energy use by 2026, alongside significant investments in renewable energy sources.

Time Plan

of Five Years Strategic Plan Zero Carbon Emission University

no	Topic	period	Month 5	Month 10	Month 15	Month 20	Month 25	Month 30	Month 35	Month 40	Month 45	Month 50	Month 55	Month 60
1	Carbon Footprint Calculation of Assiut University	10												
2	University Energy Monitoring	25												
3	Improvement of Electrical Energy Consumption Efficiency	30												
4	Renewable Energy Instillation in Assiut University	50												
5	Green Education, Training and Research	30												
6	Increase University Public Transportation	30												
7	Replacement of Oil University Buses by Electrical Buses	50												
8	Campus Greening	20												
9	Sustainable Research Institute	30												

5. Energy Reviews to Identify Waste

Regular energy inspections are conducted to evaluate areas of high energy wastage. Faculty committees monitor energy-saving measures, guaranteeing agreement with university policies to rationalize energy consumption. This includes cleaning fixtures, optimizing the use of air conditioning, and employing energy-efficient devices across campus facilities.

In **2023**, Assiut University recorded an electricity consumption of **42,130,000** kWh with renewable energy production of **535,000 kWh**, representing **1.27%** of total energy use. In **2024**, consumption decreased to **35,000,000 kWh**, while renewable energy generation increased to **1,600,000 kWh**, raising the renewable share to **4.57%.**

These results demonstrate the university's strong progress toward energy efficiency and sustainable campus operations. Assiut University continues expanding its renewable energy infrastructure—primarily solar photovoltaic systems

6. Carbon management and reducing carbon dioxide emissions

The reduction in CO_2 emissions from annual energy savings due to new projects is estimated at 1,600 tons of carbon equivalent (assuming each GWh reduces emissions by 500 tons of carbon equivalent).

Carbon Credit Value: The annual additional reduction in CO_2 emissions due to new projects is expected to yield carbon credits worth €48,000 (assuming €30 per ton of carbon equivalent).

Conducting a precise evaluation of the university's current carbon emissions.

Analyzing the primary sources of emissions (electricity, transportation, building consumption, etc.).

Adoption of Clean Technology:

- Utilizing renewable energy technologies and systems, such as solar and wind energy.

- Investing in improving building energy efficiency and using green building techniques.

Enhancing Transportation:

- Promoting the use of public transportation and encouraging environmentally friendly transportation, such as bicycles and electric vehicles.
- Encouraging carpooling among students and staff.

Waste Management:

- Improving waste management, recycling, and proper waste disposal processes.

Collaborating with local entities to advance sustainability and secure financial and technical support.

Continuous Evaluation and Monitoring:

- Periodically assessing the university's progress toward achieving the target.
- Monitoring environmental performance and documenting improvements and challenges.

Tree Planting for Climate Adaptation: The university is planting trees to absorb CO_2, leveraging the process of photosynthesis, in which trees use sunlight to absorb CO_2 and convert it into sugars and oxygen.

Estimated Carbon Absorption by Trees: Based on tree species and environmental conditions, large trees such as oak and pine can absorb significant amounts of CO_2 (ranging from approximately 10–30 kg of CO_2 per tree per year).

Carbon Absorption by Tree Type:

- Pine: Large pines can absorb approximately 21 kg of CO_2 annually.
- Eucalyptus: A mature eucalyptus tree can absorb about 25 kg of CO_2 annually.
- Oak: Mature oaks can absorb about 15–20 kg of CO_2 per year.
- Beech: Large beech trees can absorb around 20–30 kg of CO_2 per year.
- Cedar: Mature cedar trees absorb approximately 20–25 kg of CO_2 annually.
- Palm: Mature palms can absorb around 20 kg of CO_2 annually.

7. Community Engagement in Energy Efficiency

The university actively engages the local community in programs that highlight the importance of energy efficiency and clean energy. Through the **Assiut University Green Initiative**, **Tree Planting Initiatives at Assiut University under the "Go Green" Initiative:**

4,000 Jojoba trees were planted at the Faculty of Agriculture's demonstration farm, in collaboration with the Egyptian-Gulf Agricultural Land Company.

In 2023, a nursery for mahogany trees—high-quality wood for furniture making—was established, utilizing wastewater/industrial drainage/well water.

During the 2022/2023 academic year, 655 fruit trees and 612 non-fruit trees were planted across the Assiut University campus.

Assiut University hosts an environmental seminar on the "Carbon Footprint" as part of the events of the First Student Green Dream Conference

Under the presidential "100 Million Trees" initiative, 1,000 fruit trees were planted at Assiut University during the 12th International Conference on Development and the Environment in the Arab World, held from February 25–27, 2024.

Assiut University witnesses the launch of the qualifying introductory meeting of the NASA Space Apps Assiut competition to find innovative solutions to the challenges of the planet

17 Sep 2024

8. Commitment to Renewable Energy

Assiut University promotes for a public commitment to transition toward **100% renewable energy**. The ongoing projects, including the **PV Stand-Alone System for Green Hydrogen Generation**.

9. Sustainability Initiatives & Future Goals

To reduce our carbon footprint, Asyut University is implementing the following strategies:

A. Short-Term Actions (2024-2025)

✓ Transition to energy-efficient lighting (replacing 2,300 bulbs with LEDs).

✓ Expansion of solar energy projects to offset grid electricity.

✓ Waste reduction & recycling programs for paper, plastic, and e-waste.

B. Medium-Term Goals (2025-2027)

Green transportation: Introducing electric buses and promoting carpooling.

Tree-planting initiatives to enhance carbon sequestration (estimated absorption: 20-30 kg CO_2/tree/year). Smart energy management systems to optimize electricity use.

C. Long-Term Vision (2030)

Carbon neutrality roadmap with renewable energy investments.

Sustainable campus certification (e.g., LEED or Green Pyramid)