DELTA UNIVERSITY
FOR SCIENCE AND TECHNOLOGY
FACULTY OF ENGINEERING

CARBON FOOTPRINT ASSESSMENT & EMISSIONS MANAGEMENT

Reporting period: 1 January–31 December 2025 | Evidence review: 2023–2025

Prepared by: Energy Sustainability Team

Executive summary

This report documents Delta University's published energy-conservation and emissions-reduction commitments, records relevant implementation evidence, and establishes a reproducible carbon-footprint inventory procedure for its operations.

The Energy Efficiency and Sustainability Report 2025 reports 160 lighting-unit replacements at the Faculty of Engineering, rooftop PV installations and resource-efficiency measures, alongside three years of total energy consumption. These are evidence of energy-related mitigation activity, not by themselves a calculated greenhouse-gas inventory.

Evidence position at a glance

What is evidenced	2025 status	Evidence / limitation
Strategic energy and carbon-reduction intent	Documented	University strategic plan, pp. 4–12
Lighting upgrade	Reported implementation	160 conventional lamps replaced by LED; sustainability report, pp. 5–7
Solar PV	Reported installation	Photographs and narrative
Campus energy consumption	Reported totals	2023–2025 energy series

1 Purpose, period and boundaries

Purpose: establish a traceable process to identify greenhouse-gas sources, gather activity data, calculate and review emissions in tonnes of CO_2 equivalent (tCO_2e), and prioritize effective reductions.

Reporting year: calendar year 2025. Comparative years 2023 and 2024 may be presented only when equivalent boundaries and source data are verified.

Framework: GHG Protocol Corporate Accounting and Reporting Standard; Scope 2 Guidance; relevant Scope 3 standard. Include CO_2, CH_4, N_2O and material refrigerant gases with a documented, consistent GWP vintage.

2 Emissions identification and accounting coverage

Scope / category	Relevant university activity
Scope 1: stationary fuel	University-operated generators or combustion equipment
Scope 1: mobile fuel	University-controlled transport
Scope 1: refrigerants	HVAC and refrigeration leakage
Scope 2: purchased energy	Grid electricity for controlled buildings
Scope 3: selected	Waste treatment, business travel, commuting, goods and services if data allow

3 Calculation methodology and controls

General equation: Emissions (tCO_2e) = Activity quantity × emission factor (kg CO_2e per activity unit) ÷ 1,000. For individual gases, apply the GWP factor to the gas mass before conversion.

Scope 2: use actual purchased grid electricity in kWh and an appropriate documented Egypt grid factor; report location-based Scope 2. Market-based values require eligible contractual instruments.

- Solar PV: document separately as generated, consumed and exported electricity; avoid subtracting solar generation from already net-billed purchased electricity a second time.
- Fuel and refrigerants: use source-specific activity data rather than assumptions wherever records exist; distinguish top-up from true emissions where inventory records allow.
- Comparability: retain the same boundary, categories, units and factor approach between years; record any justified recalculation or revised boundary.
- Quality assurance: reconcile invoices to annual totals; check outliers, missing months, duplicated meters, fuel-unit conversions, factor versions and spreadsheet formulas.

4 Existing documented energy and mitigation evidence

Year	Reported total energy use	Year-on-year change
2023	20,196 GJ	Baseline for comparison
2024	14,111 GJ	−30.13% vs 2023
2025	11,570 GJ	−18.01% vs 2024

Reported 2023–2025 change: −8,626 GJ (−42.71%).

Mitigation action	Reported or planned?	Evidence and carbon relevance
LED lighting at Faculty of Engineering	Reported as implemented	160 replacements; reduced electricity and Scope 2
Daylight-oriented design	Documented building feature	reduce lighting demand
Rooftop photovoltaic systems	Reported as installed	displace grid purchases

Mitigation action	Reported or planned?	Evidence and carbon relevance
HVAC setting and operating controls	Reported as implemented	26°C set point and peak-hour reductions
Equipment review and replacement	Strategic plan measure	Survey / efficient replacement specified
Waste segregation and water-saving fixtures	Reported measures	Relevant to resource management

5 Carbon-management process and proposed accountability

A management cycle is proposed below for formal adoption or confirmation against the university's existing procedures. The 2023–2025 strategic plan establishes several relevant measures.

Stage	Action / control	Suggested owner	Proposed frequency
1. Boundary	Confirm controlled sites and emission-source register	Administration + Facilities	Annual / on change
2. Data acquisition	Collect bills, fuel, refrigerants, PV and selected Scope 3	Facilities, Finance, Transport, Procurement	Monthly
3. Calculation	Approve factor register; calculate source and scope totals	Carbon Inventory Coordinator / Sustainability Team	Annual
4. Validation	Reconcile source evidence; review exceptions and missing data	Internal reviewer independent of preparation	Quarterly checks + annual QA
5. Action	Prioritize LED, HVAC, PV, waste and equipment improvements	Facilities + decision-makers	Annual action plan
6. Reporting	Approve inventory; publish boundaries, factors, results and caveats	Authorised university signatory	Annual

6 Carbon-reduction action register (2025 evidence / forward actions)

Action	2025 evidence status	Proposed KPI / record	Next verification
Maintain and expand	160 lamps reported	Lamp inventory,	Quantify annual kWh

Action	2025 evidence status	Proposed KPI / record	Next verification
LED upgrades	replaced	before/after W, operating hours	savings
Improve HVAC operations	Measures specified in strategic plan	Set-point logs, maintenance tasks, run-hours	Confirm implementation, refrigerant losses
Document rooftop PV	Panels described and photographed	Installed kWp, monthly kWh, exported kWh	Obtain inverter and billing records
Monitor purchased electricity	Aggregate energy series reported	Monthly grid kWh by meter, kWh/m^2	Reconcile with utility invoices

7 Indicators and reporting schedule

Indicator	Definition
Total Scope 1 emissions	tCO_2e from direct sources
Total Scope 2 emissions	tCO_2e for purchased electricity
Selected Scope 3 emissions	tCO_2e for declared categories
Total campus energy consumption	Annual GJ on a consistent basis
Renewable electricity contribution	Measured PV kWh / defined electricity denominator
Energy use intensity	kWh or GJ per verified gross floor area
LED project savings	Old–new rated power × verified operating hours

Suggested internal milestones: monthly activity-data review; quarterly exception and implementation review; annual calculation, methodological sign-off, and public summary.

8 Data collection request – minimum set

- Electricity: 12 months of bills and meter numbers for 2025, plus reconciliation to the published total energy series.
- Fuel: generator and fleet litres by fuel type, station/vehicle and reporting period.
- Refrigerants: type, kg charged/top-up/recovered and asset servicing details.
- PV: installed capacity, commissioning dates, monthly generated/consumed/exported kWh.
- Campus inventory: operated premises, floor area, occupancy and boundary changes.
- Scope 3: weighbridge or waste contracts, travel data, commuter survey and procurement records for selected material categories.
- Approval: name and date of carbon-inventory technical reviewer and institutionally authorized signatory.

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