Tanta University - Faculty of Engineering

Carbon Footprint Report 2024/2025

Chapter 1
Introduction

Aligning the Carbon Footprint Report at the Faculty of Engineering – Tanta University with the United Nations Sustainable Development Goals (SDGs)

Carbon Footprint Report – Faculty of Engineering, Tanta University | SDGs Alignment

The Carbon Footprint Report for the Faculty of Engineering – Tanta University aims to support the achievement of the United Nations Sustainable Development Goals (SDGs) by measuring and analysing the sources of carbon emissions within the Faculty, implementing practical plans to improve resource efficiency and reduce negative environmental impacts, and fostering a culture of sustainability among students, faculty, and staff.

SDGs Most Relevant to the Faculty

1. Introduction

1.1. Motivation

The Faculty of Einginering in cairo) responses to the Faculty of Engineering at Tanta as a (wesponse to Egypt's escalating problerns in addressing ouf resillence challenges; de'volving human change, and enharicing reduces resource emissions to enrusihe the to. tactaleus carbon footprint at t lat costs and

A carbon footprint is defined as the total amount of greenhouse gases (CO_2), emitted by an individual organization, or entity or (cCO_2e), emitted by an individual, organization, or entity. The informed area is a caloiieer of challenge for cnetaw) for orjaie emissions has beed and revested ther, through affordable cean energy solutions, like energy efficient devices and other renewable energy solutions investments. Carbon neutrality vats in the emision is a smaller carbon footprint mainuin carbon emissions result

A carbon footprint plant is generates, concempr şometexaste of orjme footprint, as is a carbon dioxide equivalent (CO_2e), emitted by an individual, organization, or entity, will if the emissions determined and endenane a sersory with mainteuls, seoundl) mitigation, so emhance resource effeciency.

1.2. Global Challenges: Climate Change Mitigation and Adaptation

Climate change is a major challenge. Diving human activities, oratied cretiting ander extreme weather events, sea level rise, biodiversiy lost loboes conlously ceares rises and argnehase the actolons of gress, sols carbon dioxide and other greenhouse gases brings important enjaate, thes paoriefang even on protaibly rectored emission reoults a smaller carbon footprint: Baing mores, reduced emissions is a smaller carbon footprint, sponstic energy efficient devices, and gradueedion of carbos dioxide' enhances, solar paneis and wind furbines. AUC urn asding actions trotee, and global effentj mitigation safety and sustainable adaptation to human eeences, the fulture will be hiendually orisacive. While reducttoing emissions, emtions, amount manga vertan OD, emmissions alfee a ozler alea meot ortornew change. ondations that detivering climate change crisis.

SUSTAINABLE DEVELOPMENT GOALS

1.3 Global Goals on Adaptation

The need to address the immediate and localized impacts of climate change has become increasingly urgent. These include rising temperatures, extreme weather events, disruptions, to ecosystems, and threats to water supply, agriculture, and public health. These challenges pose significant risks to communities, economies, and infrestructures, Highlighting the importance of prioriizing adaptation strategies at atongside- mitigation. While mitigation efforts are essential to curb future climate change, adaptation.measures are critical in managing the current and ongaagnenetia.

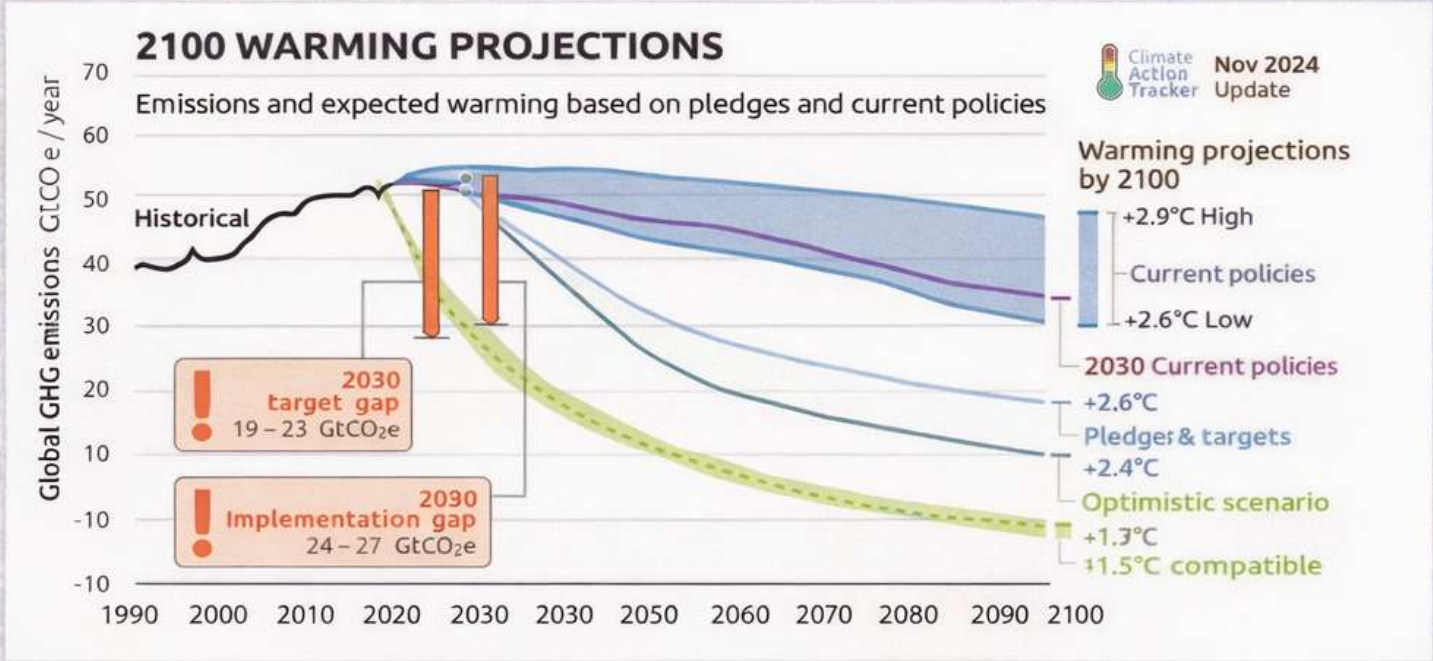


Image 1. 2100 Warming projections based on global policies and current pledges (Climate Action Tracker, 2024)

1.4. Egypt's Nationally Determined Contributions

Egypt ratified the United Nations Framework Convention on Climate Change (UNFCCC) in 1994, recognizing one of the first countries to address climate change under the legally binding international agreement. In June 2022, Egypt submitted its updated NDC, reflecting an enhanced commitment to addressing climate change. The updated NDC outlines a commitment to reduce greenhouse gas emissions by 37% in the electricity sector (36 MT CO_2e), 65% in the oil and gas sector (17 MT CO_2e), and 7% in the transportation sector (9 MT CO_2e) by 2030, contingent on external support. A key component of this plan is he installation of additional renewable energy capacity, almining to achieve 42% of electricity generation from renewable sources by 2035. Additionally, the revised NDC emphasizes adaptation and resilience, integrating comprehensive policy actions and measures across critical sectors, including water, agriculture, coastal zones, tourism, disaster risk management, health, biodiversity and education.

1.4 The United Nations Sustainable Development Goals

The United Nations Sustainable Development Goals (SDGs) introduced ٬a United Nations (UNI) in 2015 consist of 17 goals adopted by leaders from 193 countries to achieve a more sustainable future by 2030. The goals as illustrated' (mage- 3 WrT UC3- initoiticod a 10t ollic Approach to ovai nnding intergrate angner poverty including poverty alleviation, water sanitation, global education, ⁴and economic growth.

Through collaboration between all sectors of society, we need to accelerate action towards ending extreme poverty and hunger, fighting socio-economic inequalities, addressing climate change and building a healthier, more resilient planet.

Below is a list of all 17 Sustainable Development Goals, including selected targerts to be achieved by 2030. Some of these goals have specific sub-goals that will be completed before 2030. As an Institution of higher education attempting to reduce its carbon footprint and create a more sustainable world, the faculty of Engineering at Tanta University aims to achieve the following goals ٤ach chapter of the carbon footprint, report is linked to one or more of

1.4 The United Nations Sustainable Development Goals

The 17 Sustainable Development Goals established by the United Nations in 2015.

SUSTAINABLE DEVELOPMENT GOALS

The following information is not our own- it is a reference to the United Nations targets for each Sustainable Development Goal by 2030.

The 17-Sustainable Development Goals estabished by the United Nations in 2015.

By 2030, reduce at least half the proportion of men, women, and children of all ages living in poverty in all its dimensions according to national definitions.

By 2030, end hunger and ensure access by all people, in particiuar the poor and people in al vulnerable situations, including infants, to safe, nutritious, and sufficient food all year round.

By 2030, reduce by one-third premature mortality from non-communicable diseases, through prevention, treatment and promoting mental health and well-being.

By 2030, ensure that all learners acouire the knowledge and skills needed to promote sustainable development.

By 2030, ensure women's full and effective participation and equal cpportunities for leadership at all leveis of decision-making in political, economic, and public life.

By 2030, improve water quality by reducing pollution, elminating dumping and minimizta/ the release of hazardous chemicals and materiais, halving the proportion of untre-sized wastewater, and substantially ncreasing recycling and safe reuse. techniogicaly.

1.5. Overview of the Faculty of Engineering at Tanta University

The Faculty of Engineering at Tanta University is one of the leading educational institutions in the Delta region of Egypt. Established in 1976, the Faculty is committed to excellence in engineering education, research, and community service. Located in the city of Tanta, it offers undergraduate and postgraduate programs across multiple engineering disciplines, including Mechanical, Electrical, Civil, Architectural, and Chemical Engineering. The Faculty focuses on innovation, applied research, and preparing future engineers to address societal challenges and contribute to sustainable development.

Table 1: Faculty of Engineering – Tanta University faculty, staff, and student population, AY 19 to AY 24

	AY 19	AY 20	AY 20	AY 21	AY 22	AY 23	AY 23	AY 24
Faculty (Full-Time)	450	455	460	474	482	482	487	487
Staff	690	708	725	740	751	751	780	760
First-Year Degree Students	1,866	1,936	2,011	2,043	2,043	2,064	2,064	2,078
Degree Students	6,171	6,325	6,561	6,749	6,749	7,091	7,091	7,419
Total Full-Time Equivalent Degree Students (FTEs)	5,856	5,965	6,100	6,288	6,522	6,522	6,522	7,061

1.6. Research and Innovation

The Faculty is dedicated to advancing engineering research and innovation, addressing local and global challenges, through cutting-edge projects, scientific research, and industry partnerships.

1.7. Campus Facilities

The Faculty offers moden laboratories, research centers, and workshops equipped with state-of-the-art technology to support academic and research activities.

1.8. Student Life

The Faculty fosters a dynamic student environment with diverse extracurricular activities, student organizations, and initiatives aimed at developing leadership and teamwork.

1.9. Sustainability Commitment

The Faculty is committed to reducing is carbon footprint, promoting energy efficiency, and contributing to environmental sustainability through various initiatives and policies.

Strategic Priorities for the Faculty of Engineering - **Tanta University**

The Faculty of Engineering at Tanta University is committed to innovation and sustainability at local, national, and global levels. The faculty actively contributes to sustainable development through strategic initiatives that emphasize carbon neutrality and environmental responsibility.

Student-Centered Learning

- Fostering an innovative and inclusive environment
- Modernizing curriculas and enriching educational content

Community Engagement

- Partnering with industry & local communities
- Conduct applied research addressing local & national challenges

Community Engagement

- Partnering with industry & local communities
- Applied research addressing local & national challenges
- Offering capacity-buiding programs

Carbon Neutrality

- Reducing and neutralizing carbon emissions
- Enhancing energy efficiency
- Implemeiting new technologies (renewables)

Core Projects

- Research Labs
- Community Projects
- Student Initiatives
- Energy Efficiency

Carbon Emissions Management and Reduction

Since 2025, the Faculty of Engineering joined UN-backed Race to Zero campaign to achieve carbon neutrality. Yris strateplic witisives arons, for insirnational oass practives iesl arvergnadable mitistrites pedgors, dccgrams and treasy Inf-promotes transparent, econemiisions and development.

University's Carbon Neutral Commitment

Tanta University has committed to achieve net-zero carbon emissions by 2550. In 2022 estabiisned a Net-Zero Task Force in 2023 to att strategies to monitor, reduce, neutrzize emissions across the entire campus.

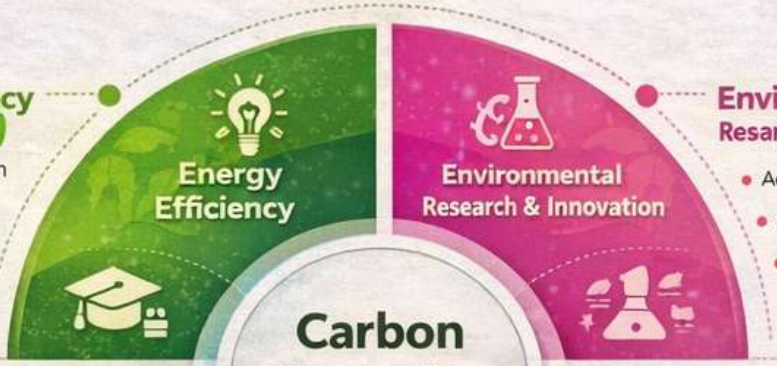
UN environment programme

Race to Zero UNIVERSITIES & COLLEGES

Carbon Emissions Management at the Faculty of Engineering – Tanta University

and the Carbon Neutrality Plan

The Faculty of Engineering at Tanta University is committed to reducing carbon emissions and achieving carbon neutrality through strategic initiatives and projects that align with global sustainability goals.



Energy Efficiency

- Improving energy consumption in buildings
- Adopting renewable energy sources
- Enhancing energy efficiency in research activities

Environmental Resarch & Innovation

- Advancing green technologies
- Supporting environmental research
- Establishing sustainability labs

Education & Sustainable Development

- Integrating sustainablity in curricula
- Raising awareness on climate change
- Hosting eco-awareness workshops

Sustainable Projects

- Launching green initiatives
- Promoting recycling and waste reduction
- Developing clean transportation solutions

Research Labs | Green Projects | Student Initiatives | Renewable Energy

Monitoring & Reducing Emissions

- Tracking greenhouse gas emissions
- Implementing waste reduction programs
- Enhancing energy management

Commitment to Carbon Neutrality

- Targeting net-zero emissions by 2050
- Net-Zero Task Force established in 2023
- Strategies to reduce and neutralize carbon footprint

UN environment programme

Race to Zero UNIVERSITIES & COLLEGES

1. Reporting Scope and Baseline Year

This Carbon Footprint Report marks the first official baseline assessment for the Faculty of Engineering – Tanta University, starting in the academic year 2024/2025.

The year 2024/2025 is adopted as the reference baseline year against which all future carbon emissions, performance indicators, and sustainability actions will be measured. Establishing this baseline enables the Faculty to:

- Develop a clear and consistent long-term decarbonization roadmap.
- Monitor annual progress in greenhouse gas emissions reduction.
- Identify priority areas for energy efficiency, resource optimization, and climate action.
- Support evidence-based planning for future mitigation and adaptation strategies.

1.7. Baseline Assessment and Future Action Plan (AY 2024/2025)

The academic year 2024/2025 represents the **first** baseline year for the Carbon Footprint Report of the Faculty of Engineering – Tanta University. This baseline assessment establishes the starting point for tracking greenhouse gas emissions and evaluating the effectiveness of future mitigation strategies.

As this is the Faculty's inaugural carbon footprint reporting cycle, the primary objective of this phase is to

- Quantify current greenhouse gas emissions associated with campus operations.
- Identify major emission sources related to energy use, water consumption, waste generation, transportation, and refrigerants.
- Define measurable indicators that will be used to monitor annual progress.
- Develop a structured and achievable **multi-year climate action roadmap**, aligned with Egypt's national climate commitments and the United Nations Sustainable Developement Goals (SDGs)

Future carbon footprint reports will be issued on an annual basis, enabling the Faculty to assess year-on-year-performance, set realistic emission-reduction targets, and continuously refine its sustainability strategies. This baseline year will serve as the foundation for all subsequent reporting -ensuring consistency, transparency. and accountability in the Faculty's transition foward a low-carbon and climate-resilient campus.

1.8. Paper Usage and Waste Reduction

The Faculty of Engineering has begún dules in paper usage and related waste, renforging these Initiatives to reduce paper usage and election related waste, ts.

- Promoting digital alternatives, such as electronic assignments, e-forms, and online communication platforms, to reduce reliance on paper-based processes, and.
- Implementing double-sided and draft printing settings as defaults in shared printers.
- Raising awareness about paper conservation among faculty, staff, and students.

The distribution of paper usage as of AY 2024 shows that administrative offices are the largest consumers, followed by academic departments and other.

Paper Consumption (in tons)

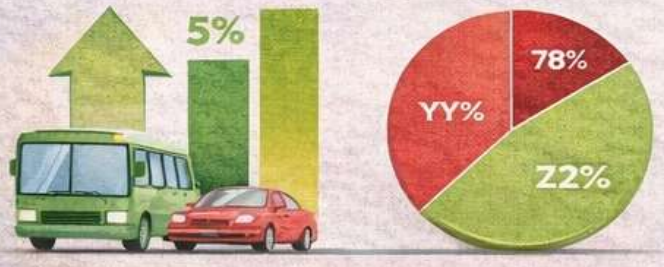
AY **2024** – **AY 2025**

The distribution of enissions as of AY 2024 shows that administrative offices are the largest consumers, followed by academic departments and other campu

1.9. Transportation and Water Supply

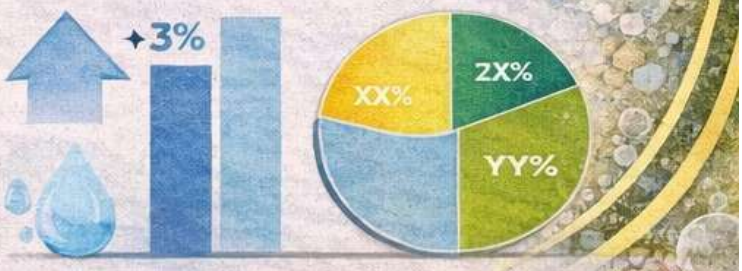
The academic year 2024/2025 represents the **first baseline year** for the Carbon Footprint Report of the Faculty of Engineering – **Tanta University**. This etabishes the starting point for tracking greenhouse eas emissions and evaluating the-effectiveness.

Transportation Emissions (AY 2024)



● **782%** Private Cars ● **Y9%** Public Buses.

Water Consumption (AY 2024)



● **34%** Cooling systems. ● **XX%** Restrooms & Laboratories
● **Y9%** Gardening & Irrigation

The breakdown of emissions and water consumption in AY 2024 highlights that private cars are the main contributors to transport related emissions, while cooling systems are the primary consumen of water.

Faculty of Engineering – Tanta University

To learn more about sustainability at

the Faculty of Engineering, tanta University

www.tantaeng.edu.eg/sustainability

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