

Ajman University Consolidated & Restated GHG Inventory Report

2021 - 2022 Baseline to 2024 - 2025
Performance Year



Prepared by:
Axosomatic
AI & Sustainability

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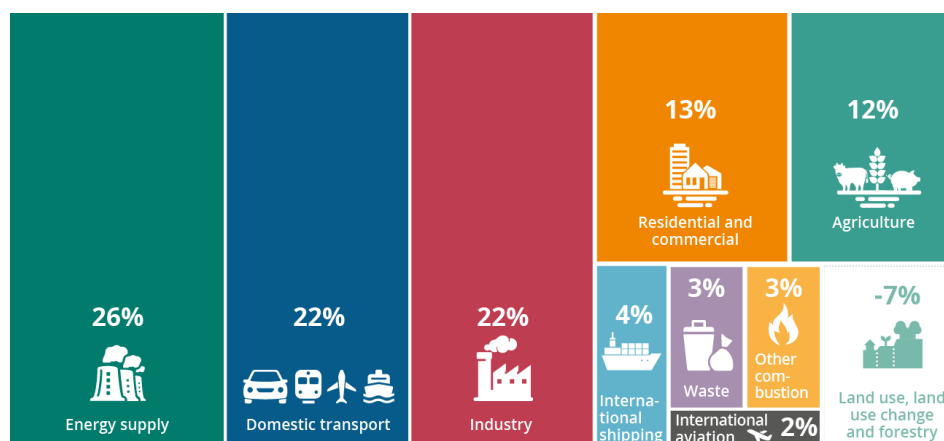
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Sources of Greenhouse Gases (GHG) Emissions

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List of Acronyms and Abbreviations

BEIS	Department for Business, Energy, and Industrial Strategy
BSI	British Standards Institute
CDP	Carbon Disclosure Project
CO ₂ e	Carbon Dioxide Equivalent
EPA	Environmental Protection Agency
EV	electric vehicles
GHG	Greenhouse Gases
GJ	Gigajoule
GRI	Global Reporting Initiative; GWP
	global warming potential
IPCC	Intergovernmental Panel on Climate Change
ISO	International Organization for Standardization
kg	kilogram
km	kilometer
LPG	liquefied petroleum gas
m ²	Square Meters
m ³	Cubic Meters

MW	Megawatt
MWh	megawatt-hour
passenger.km	passenger-kilometer
SBT	science-based target
SBTi	Science-Based Target initiative
t	metric ton
tCO ₂ e	metric ton carbon dioxide equivalent
T&D	Transmission and Distribution
UAE	United Arab Emirates
WBCSD	World Business Council for Sustainable Development
WRI	World Resources Institute
WTT	Well-To-Tank

EXECUTIVE SUMMARY

This Greenhouse Gas (GHG) Inventory Report represents the assessment phase of Axosomatic's Net-Zero Carbon Intelligence solutions framework at Ajman University (AU). It presents a consolidated assessment of AU's Scope 1, Scope 2, and Scope 3 GHG emissions for the four academic years from September 2021 to August 2025.

The 2021–2022 academic year is designated as the baseline year, while 2024–2025 is designated as the performance year. The 2022–2023 and 2023–2024 academic years are included as comparative years to support the evaluation of emissions trends and changes in AU's environmental performance.

This consolidated report brings together the four annual inventory periods in a single, integrated document. As part of the continuing development of AU's GHG inventory, the scope and level of detail of the activity data available for Scope 3 Category 1, Purchased Goods and Services, and Category 2, Capital Goods, were enhanced. The expanded datasets enabled quantification of relevant emissions across the baseline, comparative, and performance years using a consistent and comprehensive calculation approach. The results presented in this report therefore provide AU with an authoritative and comparable four-year GHG inventory.

The objectives of the report are to:

1. Establish a precise, consistent, and rigorous approach to GHG accounting and reporting in alignment with internationally recognized standards and guidance.
2. Identify and quantify the GHG emissions associated with AU's operations and value-chain activities across Scopes 1, 2, and 3.
3. Assess the 2024–2025 performance-year emissions against the 2021–2022 baseline and examine emissions trends across the four-year reporting period.
4. Identify the principal activities and emission sources contributing to AU's institutional carbon footprint.
5. Evaluate AU's progress in managing and reducing its GHG emissions.
6. Provide practical and evidence-based recommendations for reducing Scope 1, Scope 2, and Scope 3 emissions.
7. Strengthen AU's emissions data management, monitoring, and reporting practices.
8. Support AU's sustainability disclosures, strategic planning, institutional benchmarking, and relevant ranking submissions.

The GHG Protocol provides the principal accounting and reporting framework used in preparing the inventory. The emissions calculations and reporting approach are also informed, where applicable, by recognized standards, methodologies, emission factors, and technical guidance issued by the Intergovernmental Panel on Climate Change (IPCC), International Organization for Standardization (ISO), UK Government greenhouse gas conversion factors, United States Environmental Protection Agency (EPA), Carbon Disclosure Project (CDP), Global Reporting Initiative (GRI), World Resources Institute (WRI), World Business Council for Sustainable Development (WBCSD), Science Based Targets initiative (SBTi), and relevant local energy and activity-data sources.

The report presents AU's absolute emissions; emissions by scope and category; annual changes; performance against the baseline; emissions-intensity indicators; campus sustainability metrics; and key factors influencing the University's emissions profile. It also provides a structured reduction strategy to support AU's transition toward lower-carbon operations and continuous improvement in institutional sustainability performance.

Summary of GHG Emissions for the Performance Year¹

The following table summarizes the GHG emissions attributed to AU from 2021 – 2022 to 2024 - 2025:

GHG Emissions Summary (tCO ₂ e)					
Description	2021-2022 Baseline	2022-2023	2023-2024	2024-2025 Performance	Performance vs. Baseline
Scope 1: Direct GHG Emission	1,240.36	966.6	1,090.20	981.65	-20.86%
Scope 2: Indirect GHG Emission	12,576.45	12,586.40	12,469.80	12,801.41	1.79%
Scope 3: Indirect GHG Emission	11,654.99	17,232.15	11,706.53	12,897.50	10.66%
Total GHG Emissions	25,471.80	30,785.15	25,266.53	26,680.56	4.75%

Table 1. GHG emissions summary 2021-2022 to 2024-2025.

Comment

1. Total GHG emissions reached 26,680.56 tCO₂e in 2024–2025, an increase of 1,208.76 tCO₂e, or 4.75%, compared with the 2021–2022 baseline, the partial COVID-19 lockdown.
2. Scope 1 emissions demonstrated the greatest improvement, decreasing by 258.71 tCO₂e, or 20.86%, from 1,240.36 tCO₂e in the baseline year to 981.65 tCO₂e in 2024–2025.
3. Scope 2 emissions remained broadly stable throughout the reporting period, with a modest baseline increase of 224.96 tCO₂e, or 1.79%, reaching 12,801.41 tCO₂e in 2024–2025.
4. Scope 3 was the main contributor to the overall baseline increase, rising by 1,242.51 tCO₂e, or 10.66%, to 12,897.50 tCO₂e in 2024-2025. However, this remained substantially below the 2022–2023 peak of 17,232.15 tCO₂e

Year-on-Year Change

The following table shows the Year-on-Year (YoY) change in emissions from the baseline year:

Year-on-Year Change				
Scope	2021–2022 Baseline	2022–2023 YoY	2023–2024 YoY	2024–2025 Performance YoY
Scope 1	—	-22.07%	12.79%	-9.96%
Scope 2	—	0.08%	-0.93%	2.66%
Scope 3	—	47.85%	-32.07%	10.17%
Total GHG emissions	—	20.86%	-17.93%	5.60%

Table 2. Year-on-Year change.

Comments

1. Total GHG emissions increased by 20.86% in 2022–2023, primarily driven by the 47.85% rise in Scope 3 emissions.
2. A significant improvement occurred in 2023–2024, when total emissions declined by 17.93%, supported by a 32.07% reduction in Scope 3 emissions.
3. Total emissions increased again by 5.60% in 2024–2025, mainly due to increases of 10.17% in Scope 3 and 2.66% in Scope 2 emissions.
4. Scope 1 recorded an overall improving trend, declining by 22.07% in 2022–2023 and 9.96% in 2024–2025, despite a temporary increase of 12.79% in 2023–2024.

¹ Details are described in sections 5 to 7 of this report.

Absolute Year-over-Year Changes

The absolute year-over-year changes show the change in emissions between consecutive reporting periods, as shown in the following table:

Absolute Year-over-Year Changes (tCO ₂ e)			
Emission scope	2022–2023	2023–2024	2024–2025
Scope 1	-273.76	123.60	-108.55
Scope 2	9.95	-116.60	331.61
Scope 3	5,577.16	-5,525.62	1,190.97
Total GHG emissions	5,313.35	-5,518.62	1,414.03

Table 3. Absolute Year-over-Year changes.

Comments

1. Total GHG emissions increased by 5,313.35 tCO₂e (20.86%) in 2022–2023, primarily due to a 5,577.16 tCO₂e (47.83%) increase in Scope 3 emissions.
2. The greatest annual improvement occurred in 2023–2024, when total emissions decreased by 5,518.62 tCO₂e (17.93%), mainly driven by a 5,525.62 tCO₂e (32.07%) reduction in Scope 3 emissions.
3. In 2024–2025, total emissions increased by 1,414.03 tCO₂e (5.60%), reflecting increases in Scope 3 of 1,190.97 tCO₂e (10.17%) and Scope 2 of 331.61 tCO₂e (2.66%).
4. Scope 1 showed an overall favorable annual pattern, decreasing by 273.76 tCO₂e in 2022–2023 and by 108.55 tCO₂e in 2024–2025, while Scope 3 remained the principal source of year-over-year volatility.

Impact of AU's Activities on the Environment

The following table compares the environmental warming effect of AU's activities in the performance year relative to the baseline year. The impact has increased due to increased waste generation and WTT (Well-To-Tank) for purchased electricity.

Impact of the Warming Effect on the Environment				
Greenhouse Gases	Baseline 2021 - 2022	2022 - 2023	2023 - 2024	2024 - 2025
Carbon dioxide (CO ₂)	25,314.16	30,701.58	25,107.73	26,514.17
Methane (CH ₄)	57.13	69.56	57.62	60.36
Nitrous oxide (N ₂ O)	98.89	120.04	99.6	104.32
Hydrofluorocarbons (HFCs)	1.62	1.97	1.63	1.71
Perfluorocarbons (PFCs)	0	0	0	0
Sulphur hexafluoride (SF ₆)	0	0	0	0
Total	25,471.80	30,785.15	25,266.58	26,680.56

Table 4. Impact of AU's activities on the environment.

Campus Sustainability Metrics

The following table lists AU's campus sustainability metrics. These metrics serve as indicators of AU's efforts to reduce its emissions, water use, waste, and energy consumption.

Campus Sustainability Metrics				
Description	2021 - 2022	2022 - 2023	2023 - 2024	2024 - 2025
Operational Emissions (Scope 1 + Scope 2) tCO ₂ e	13,816.81	13,553.00	13,560.00	13,783.06
Energy Consumption per Capita (KWh/Capita ²)	3,425.94	3,115.17	3,268.72	3,267.19
Operational Carbon Intensity per Campus Area (tCO ₂ /m ²)	0.06	0.06	0.06	0.06
Operational Carbon Intensity per Capita (Students FTE and Employees FTE)	2.18	1.94	2.05	2.03
Total Water Consumption (m ³ per Capita ²)	9.58	3.36	3.70	3.15
Total Waste Generated per Capita ² (kg per student and employee)	10.54	33.91	35.61	37.85
Percentage of Green Space on Campus	4.00%	4.00%	4.00%	4.00%
Green Space per Student FTE	1.55	1.39	1.45	1.41
Trees per 1,000 Students	650.35	614.68	632.48	544.39
Grass Area per Student FTE	1.17	1.05	1.10	1.07

Table 5. AU's Campus sustainability metrics.

Comments

1. Energy consumption per capita decreased from 3,425.94 kWh in the 2021–2022 baseline year to 3,267.19 kWh in the 2024–2025 performance year, representing an overall improvement of approximately 4.63%. The indicator remained almost unchanged between 2023–2024 and 2024–2025, suggesting relatively stable energy use per campus user. This metric is significant because it measures energy-use efficiency relative to the university population and supports the evaluation of energy-conservation initiatives, operational efficiency, and progress toward lower-carbon campus operations.
2. Operational carbon intensity per campus area, calculated using Scope 1 and Scope 2 emissions, remained constant at 0.06 tCO₂e/m² throughout the four-year reporting period. This indicates that operational emissions remained stable relative to the physical size of the campus. The metric is significant because it evaluates the carbon efficiency of campus buildings, infrastructure, and direct operations independently of changes in student and employee numbers.
3. Operational carbon intensity per capita, based on Scope 1 and Scope 2 emissions, decreased from 2.18 tCO₂e per student and employee in the baseline year to 2.03 tCO₂e in the performance year, representing an improvement of approximately 6.88%. The lowest value was recorded in 2022–2023 at 1.94 tCO₂e per capita. This metric is significant because it shows the average operational emissions attributable to each member of the university community and enables comparison across years despite changes in the campus population.
4. Water consumption per FTE campus user decreased from 9.58 m³ in the 2021–2022 baseline year to 3.15 m³ in 2024–2025, representing a reduction of approximately 67.09%. Following an increase from 3.36 m³ in 2022–2023 to 3.70 m³ in 2023–2024, the indicator declined again in the performance year.
5. Waste generated per capita increased consistently from 10.54 kg in the baseline year to 37.85 kg in the performance year. This represents an increase of approximately 259.11%. The trend may reflect the resumption of normal campus activities following the partial lockdown period, increased waste generation, expanded waste-stream coverage, improved data collection, or a combination of

² Student FTE + Employee FTE

these factors. This metric is significant because it helps evaluate the effectiveness of waste prevention, reuse, recycling, food-waste reduction, and awareness programmes.

6. The percentage of green space on campus remained constant at 4.00% throughout the four-year reporting period, indicating no recorded change in the proportion of campus land allocated to landscaped or vegetated areas. This metric is significant because green spaces support biodiversity, reduce the urban heat-island effect, improve stormwater absorption, enhance the campus environment, and contribute to student and employee wellbeing.
7. Green space per student decreased from 1.55 m² in the baseline year to 1.41 m² in the performance year, representing a reduction of approximately 9.03%. This suggests that the amount of green space did not increase at the same rate as the student population. The metric is significant because it assesses the availability of landscaped and vegetated areas for recreation, outdoor learning, relaxation, and student wellbeing relative to enrolment.
8. Trees per 1,000 students decreased from 650.35 in the baseline year to 544.39 in 2024–2025, reflecting growth in the student population while the number of trees remained constant at 4,237.
9. Grass area per student decreased from 1.17 m² in the baseline year to 1.07 m² in the performance year, representing a reduction of approximately 8.55%. This suggests that grass-area provision did not expand proportionately with the student population. The metric is significant because grassed areas provide recreation and open space, but their environmental value should also be considered alongside irrigation demand, particularly in the UAE's arid climate, where extensive grass coverage may increase water consumption.

Comparisons with the 2021–2022 baseline should be interpreted cautiously because this period coincided with a partial COVID-19 lockdown, during which teaching was primarily delivered online and campus activities were limited.

Priority Axosomatic Recommendations

Based on AU's consolidated GHG inventory and campus sustainability performance from 2021–2022 to 2024–2025, Axosomatic recommends prioritizing the following actions.

1. **Sustain the progress achieved in Scope 1 emissions.**
Scope 1 emissions decreased by 20.86% from the baseline, supported by reductions of 41.06% in LPG emissions and 48.44% in refrigerant-leakage emissions. AU can maintain this progress through accurate fuel records, refrigerant-management procedures, preventive maintenance, leak detection, and continued monitoring of stationary-emission sources. Vehicle-level fuel and mileage monitoring can also support the management of petrol and diesel emissions.
2. **Advance energy-efficiency and renewable-electricity initiatives.**
Scope 2 emissions remained broadly stable, increasing by 1.79% from the baseline to 12,801.41 tCO₂e in 2024–2025. At the same time, energy consumption per capita decreased by approximately 4.63%, demonstrating improved energy efficiency relative to the campus population. Further progress can be supported through energy audits, HVAC optimization, enhanced building controls, efficient lighting, equipment scheduling, and assessment of on-site renewable-energy or renewable-electricity procurement opportunities.
3. **Develop an integrated sustainable-mobility programme.**
Employee and student commuting reached 7,618.52 tCO₂e in 2024–2025 and represented the largest individual emissions source. AU can build on its existing transportation services by optimizing university-bus routes and occupancy, promoting carpooling, encouraging public transportation, supporting lower-emission travel modes, and conducting annual commuting surveys to monitor changes in transport patterns.
4. **Introduce carbon-conscious business-travel measures.**
Business-travel emissions reached 334.04 tCO₂e in 2024–2025, representing a 41.17% increase

from the preceding year. Measures may include considering virtual participation where appropriate, selecting direct routes, encouraging economy-class travel, improving advance travel planning, and maintaining centralized records of routes, distances, cabin classes, passenger numbers, and hotel stays.

5. Strengthen sustainable procurement and supplier engagement.

Purchased-goods and services emissions totaled 919.72 tCO₂e in 2024–2025. Although this was 11.20% above the baseline, emissions decreased by 16.50% from 2023–2024. AU can continue this positive annual improvement by incorporating environmental criteria into procurement, engaging major suppliers, requesting product-level emissions information, and prioritizing lower-carbon options for software services, catering, paper products, water, books, and online services.

6. Preserve the substantial reduction achieved in capital-goods emissions.

Capital-goods emissions decreased by 90.88% from the baseline to 584.97 tCO₂e in 2024–2025. AU can sustain this performance through lifecycle-based purchasing, asset-utilization planning, equipment maintenance, repair and reuse, supplier environmental requirements, and consideration of product durability and embodied carbon in major capital purchases.

7. Continue improving waste prevention and diversion.

Waste-related emissions totaled 14.62 tCO₂e in 2024–2025, while waste generated per capita reached 37.85 kg. AU can strengthen waste performance through segregation, recycling, reuse, plastic reduction, food-waste prevention, awareness programmes, waste-composition audits, and verified waste-treatment information from contractors.

8. Coordinate Scope 2 and fuel- and energy-related reduction measures.

Category 3 fuel- and energy-related emissions totaled 3,419.02 tCO₂e in 2024–2025 and remained close to the baseline, with an increase of 2.00%. Because upstream emissions from purchased electricity represented the dominant component, energy-efficiency and renewable-electricity initiatives can contribute to reductions in both Scope 2 and the related Scope 3 emissions.

9. Maintain water-efficiency progress and enhance campus climate resilience.

Water consumption per capita decreased from the baseline, while green space remained constant at 4.00% of the campus area. AU can build on these results through leakage monitoring, water-efficient fixtures, irrigation optimization, treated-water use, expansion of shade coverage, and increased use of native and drought-tolerant plants.

10. Integrate emissions performance into institutional planning and governance.

AU can establish source-specific short-, medium-, and long-term targets supported by assigned owners, annual action plans, implementation schedules, budgets, performance indicators, and periodic reviews. Annual assessment can consider absolute emissions, year-on-year changes, performance against the baseline and SBTi-aligned pathway, and normalized indicators, while recognizing the partial-lockdown context of the 2021–2022 baseline year.

Axosomatic has the expertise to work with AU to achieve the above objectives with the action plans. The report is divided into 8 sections. Section 1 describes the institutional boundary, parameters, data assumption and methodology. Section 2 presents a comparison of annual emissions and benchmarking. Section 3 presents the SBTi-aligned pathway, Section 4 presents the reduction plan, and Sections 5–7 present Scope 1, Scope 2, and Scope 3 emissions. Section 8 presents a summary and recommendations.

I. INTRODUCTION

This section describes an overview of Ajman University, the institutional boundary, the institutional parameters, the data assumptions, and the methodology.

I.1 Institutional Description³

Established in 1988 as the first private university in the GCC, Ajman University (AU) was also the first university in the UAE to admit expatriate students. AU continues to be a pioneer for inclusion, innovation, and social impact. In 2020, Ajman University became one of the first six higher education institutions in the world to receive global accreditation from the Quality Assurance Agency (QAA), UK's independent body and a global leader in quality assurance for higher education.

Ajman University is proactive in maintaining a green campus and raising sustainability awareness among its students, faculty, and staff, details of which is available at this link: [Energy Conservation | CAMPUS \(ajman.ac.ae\)](https://ajman.ac.ae/energy-conservation-campus).

To further support its mission, AU established a Sustainable Investment Policy to guide its investment and in line with United Nations Sustainable Development Goals (SDGs 11,12,13) and the Global 2050 CO₂ Net Zero. Details of the AU Sustainable Investment Policy is available at this link: [Sustainable Investment Policy | CAMPUS \(ajman.ac.ae\)](https://ajman.ac.ae/sustainable-investment-policy-campus). The Greenhouse Gas Inventory Report is a further to the AU mission to maintain an Organizational Sustainable Intelligence.

I.2 Purpose and Basis of the Consolidated Report

This consolidated Greenhouse Gas Inventory Report presents AU's GHG emissions from the baseline year 2021–2022 through the performance year 2024–2025. It brings together the University's four annual inventory periods in one integrated report to provide a complete, consistent, and transparent view of emissions performance over time.

As part of the continuing development of AU's GHG inventory, the scope and level of detail of the activity data available for Scope 3 Category 1, Purchased Goods and Services, and Category 2, Capital Goods, were enhanced. The expanded datasets enabled the relevant emissions for the baseline, comparative, and performance years to be calculated using a consistent and comprehensive approach.

Accordingly, the report incorporates the updated results for all four years and provides a single authoritative record of AU's GHG emissions. This consolidated presentation improves comparability between reporting periods, supports transparent assessment of performance against the 2021–2022 baseline, and establishes a stronger basis for emissions monitoring, target setting, and future reduction planning.

The 2024–2025 academic year is presented as the performance year, while 2021–2022 is maintained as the baseline year for evaluating changes in emissions performance. The 2022–2023 and 2023–2024 results are presented as comparative years to support trend analysis and interpretation of AU's progress.

I.3 Contextual Note

The 2021–2022 baseline year coincided with COVID-19 lockdown conditions, during which Ajman University operated predominantly online. As a result, campus-based activities, purchased-goods movements, electricity-related losses, and transportation and distribution requirements were significantly lower than under normal operations. Consequently, percentage increases against the 2021–2022 baseline should be interpreted with caution, as they partly reflect the resumption of on-campus operations rather than a deterioration in emissions performance alone.

³ Source: Ajman University website.

I.4 Institutional Boundary

Descriptive information	Company response
Company name	Ajman University
Description of the company	Higher Education Institution
Chosen consolidation approach (equity share, operational control or financial control)	Operational Control
Description of the businesses and operations included in the company's organizational boundary	Providing undergraduate and graduate programs in Art, Humanities, Engineering, and Medical Sciences in one campus. Provides in-campus cafes and restaurants, transportation, and housing for students.
The reporting period covered	Sep 2021 – Aug 2025
A list of scope 3 activities included in the report	Upstream
A list of scope 1, scope 2 and scope 3 activities excluded from the report with justification for their exclusion	All scope 1 and scope 2 are included. Upstream scope 3 activities are included, excluding Upstream leased assets. All Downstream are excluded. Reason for exclusion: activities are not applicable to Ajman University.
The year chosen as Baseline year and rationale for choosing the Baseline year	2021 - 2022 ⁴
Carbon reduction plan and target by at least 2050.	Ajman University is in the process of implementing a solution framework to optimize its operations and reduce GHG emissions by 50%, by 2030.

Table 6. Institutional boundary.

I.5 Institutional Parameters⁵

Institutional Parameters					
Item	Descriptions	2021 – 2022 Baseline	2022 - 2023	2023 - 2024	2024 – 2025 Performance
1	Number of campuses owned	1	1	1	1
2	Number of campuses rented	0	0	0	0
3	Number of buildings owned	13	13	13	13
5	Total FT Faculty	259	239	248	258
6	Total PT Faculty	74	65	83	83
7	Total FT Staff	525	527	371	363
8	Total PT Staff	15	16	60	80
9	Total Employee	873	847	762	784
10	Employee FTE⁶	813	793	667	675
11	Total FT Students	5,048	5,848	5,548	5,262
12	Total PT Students	1,467	1,045	1,151	2,521
13	Total Students (TS)	6,515	6,893	6,699	7,783
14	Student FTE⁷	5,537	6,196	5,932	6,102
15	Total Students in dormitories	1085	1239	1367	1389
16	Total campus area (m ²)	215,000	215,000	215,000	215,000
17	Total area occupied by buildings	125,680	125,680	125,680	125,680
18	Total green area (m ²)	8,600	8,600	8,600	8,600
19	Number of trees	4,237	4,237	4,237	4,237
20	Total grass area (m ²)	6,500	6,500	6,500	6,500

Table 7. Institutional parameters 2021-2025.

⁴ The year 2021 – 2022 is chosen as the Baseline year because the year 2020 – 2021 was the lockdown year.

⁵ Source: Ajman University.

⁶ Employee Full-time Equivalent based on CHEDS Formula.

⁷ Student Full-time Equivalent based on CHEDS formula.

1.6 Methodology

The GHG accounting and reporting procedure adheres to the foundations outlined in the 'The Greenhouse Gas Protocol: GHG Protocol: A Corporate Accounting and Reporting Standard – Revised Edition' (referenced hereafter as the 'GHG Protocol') and its supplementary guide, the 'Corporate Value Chain (Scope 3) Accounting and Reporting Standard'. These standards represent the preeminent global accounting frameworks, endorsed by the World Resources Institute (WRI) and the World Business Council for Sustainable Development (WBCSD), that are utilized by both governmental entities and corporate leaders as trusted tools to effectively comprehend, quantify, and manage greenhouse gas (GHG) emissions. The development of these standards was a collaborative effort between the aforementioned institutions, reflecting collective wisdom and expertise in the field of GHG emissions measurement.

The accounting process was meticulously executed upon key principles encapsulated within the 'GHG Protocol, as outlined below:

1. **Relevance:** This involves the establishment of an inventory boundary that accurately represents the GHG emissions attributable to the company and caters to the informational needs of its user base, thereby facilitating informed decision-making.
2. **Completeness:** The execution of thorough and all-encompassing accounting that encapsulates every emission source that lies within the delineated inventory boundary. Any emissions not included are explicitly acknowledged and justified as to why they are not covered within the scope of the inventory.
3. **Consistency:** Ensuring that the GHG emissions information is comparable over distinct time periods and that any modifications to the collected data are methodically documented, maintaining a clear and consistent historical record.
4. **Transparency:** Upholding a standard of clarity and sufficiency in the data inventory that involves a coherent and systematic approach to handling and addressing pertinent issues.
5. **Accuracy:** Striving to minimize uncertainties and actively preventing the systematic overstatement or understatement of GHG emissions, thus achieving a high level of confidence in the reported figures.

1.7 Emission Factors

Axosomatic used a database of global emission factors, the applicable UAE location-based electricity factor for Scope 2, and applicable fuel-, refrigerant-, and gas-specific factors for Scope 1 and relevant Scope 3 sources.

1.8 Scope 3 Emissions Calculation

Scope 3 emissions associated with purchased goods, services, and capital goods were calculated using a hybrid life-cycle assessment approach based on the best available activity data. Physical-quantity data were prioritized where available, while expenditure-based methods were applied where only monetary values were provided.

Food and beverage emissions from cafeteria sales were assessed using product-level life-cycle data from AGRIBALYSE. Event catering, software subscriptions, cloud services, online advertising, books, furniture, medical equipment, UPS systems, and IT equipment were estimated using EXIOBASE environmentally extended input-output factors mapped to the closest relevant economic sector.

Municipal water supply and treated water were calculated using local and international factors. Paper products were calculated using appropriate physical production factors because monetary values were not available.

Monetary values were converted to the currency basis required by the selected emission-factor database using published exchange rates. The same sector classification and emission factor were applied consistently across all reporting periods for each activity to support year-to-year comparability.

The calculations represent upstream supply-chain, cradle-to-gate life-cycle emissions and include raw-material extraction, processing, manufacturing, supplier energy use, and upstream transportation embedded in the

selected factors. They are reported under Scope 3 Category 1, Purchased Goods and Services, or Scope 3 Category 2, Capital Goods, as applicable.

Electricity consumed by the university, including electricity used by on-campus water-treatment equipment and purchased IT equipment, was excluded from these calculations because it is reported separately under Scope 2. End-of-life treatment, equipment-specific maintenance, downstream transportation, and other use-phase emissions were excluded where supporting activity data were unavailable.

The resulting values should therefore be interpreted as hybrid life-cycle screening estimates rather than verified supplier-specific product carbon footprints. Where supplier environmental product declarations, product carbon footprints, detailed food composition, chemical identities, equipment quantities, or local UAE emission factors become available, these should be used to improve the accuracy of future inventories.

Note

It should be noted that, due to rounding, the figures may not add up exactly to the total tCO₂e for the same emission across different tables.

1.9 Data Assumptions & Estimation

Data Assumptions, Limitations, and Recommendations

Scope 1: Stationary Combustion and Fugitive Emissions

- LPG purchased quantities were used as a proxy for actual consumption because consumption and stock records were unavailable.
- Refrigerant leakage was estimated at 10% of the reported purchased quantity, in agreement with the AU engineer in charge.
- AU is recommended to record actual LPG consumption and refrigerant top-up quantities for each reporting period.

Scope 1: Mobile Combustion

- Vehicle and fuel-consumption records were used to calculate fleet emissions, with reasonable approximations where information was incomplete.
- AU is recommended to maintain annual fuel and distance records for each vehicle.

Scope 2: Purchased Electricity

- Electricity-consumption data for all campus buildings were used with the applicable UAE grid emission factor.
- Building-level records should continue to be maintained to support energy-performance monitoring.

Scope 3, Category 1: Purchased Goods and Services

- Emissions were calculated using product-specific, quantity-based, lifecycle, or expenditure-based methods, depending on data availability.
- AU is recommended to strengthen supplier data requirements and request environmental information for major purchases.

Scope 3, Category 2: Capital Goods

- Available quantity and expenditure data were used, with approximations where detailed product information was unavailable.
- More detailed supplier and product specifications would improve future calculation accuracy.

Scope 3, Category 3: Fuel- and Energy-Related Activities

- Upstream fuel and electricity emissions and transmission and distribution losses were calculated using AU's reported energy consumption.
- These emissions were reported separately from Scope 2 to avoid double counting.

Scope 3, Category 4: Upstream Transportation and Distribution

- Calculations were limited to purchased goods for which transportation information was available.
- This category may be underestimated because complete delivery distance, shipment weight, and vehicle data were not available from all suppliers.

Scope 3, Category 5: Waste Generated in Operations

- Reported waste quantities and treatment methods were used to calculate emissions.
- AU is recommended to continue recording waste streams separately and obtain verified treatment information from contractors.

Scope 3, Category 6: Business Travel

- Air, land, and accommodation data were used where available.
- Air travel was classified as short-haul below 3,700 km and long-haul at or above 3,700 km.
- Complete **WTW + RF factors** were applied to air travel, while complete **WTW factors** were applied to land travel. WTT emissions are therefore already included and were not reported separately.
- The 2021–2022 baseline was estimated using reduced travel activity to reflect the partial-lockdown period.
- AU is recommended to maintain centralized records of routes, distances, transport modes, cabin classes, passenger numbers, and hotel nights.

Scope 3, Category 7: Employee and Student Commuting

- Commuting emissions were estimated using survey responses, distance-band midpoints, transport modes, commuting frequency, and population extrapolation.
- Reduced commuting days were applied to 2021–2022 to reflect online teaching and limited campus attendance.
- Complete **WTW factors** were applied to all land-transport modes. WTT emissions are included within Category 7 and were not reported separately.
- AU is recommended to conduct the survey annually and improve data on commuting frequency, vehicle type, fuel type, and occupancy.

General Baseline Consideration

- The 2021–2022 baseline coincided with a partial COVID-19 lockdown, during which teaching was primarily online and campus activities, travel, and commuting were limited.
- Baseline comparisons should therefore be considered alongside year-on-year changes and normalized performance indicators.

2. COMPARISON OF ANNUAL EMISSIONS

The following tables show a summary of AU GHG emissions in Scopes 1, 2, and from the baseline year 2021 – 2022 to the performance year 2024 – 2025:

Annual GHG Emissions (tCO ₂ e)				
Description	2021-2022	2022-2023	2023-2024	2024-2025
Scope 1: Direct GHG Emission	1,240.36	966.64	1,090.23	981.65
Scope 2: Indirect GHG Emission	12,576.39	12,586.35	12,469.78	12,801.41
Scope 3: Indirect GHG Emission	11,654.99	17,232.15	11,706.58	12,897.50
Total GHG Emissions	25,471.74	30,785.14	25,266.59	26,680.56
GHG Emission by Source				
LPG	778.88	528.13	505.25	459.10
Nitrous Oxide	NA	NA	NA	9.94
Refrigerant Leakage	294.25	294.25	308.97	151.71
Petrol	52.27	42.11	78.71	94.50
Diesel	114.96	102.15	197.30	266.41
Purchased Goods	827.11	978.51	1,101.44	919.72
Capital Assets	6,414.70	6,005.72	660.10	584.97
Fuel- and Energy-Related Activities	3,352.01	3,350.15	3,319.17	3,419.02
Upstream TD Loss	1.53	6.78	6.97	6.62
Waste	11.17	14.20	14.14	14.62
Business Travel	59.09	236.12	236.62	334.04
Employee Commuting	989.38	6,640.67	6,368.08	7,618.52
Total	25,471.74	30,785.14	25,266.54	26,680.56

Table 8. Annual GHG emissions summary 2021 - 2025.

Comments

1. Total GHG emissions reached 26,680.56 tCO₂e in 2024–2025, representing an increase of 1,208.82 tCO₂e, or 4.75%, compared with the 2021–2022 baseline.
2. Annual emissions peaked at 30,785.14 tCO₂e in 2022–2023, representing an increase of 20.86% from the baseline, before declining by 17.93% to 25,266.59 tCO₂e in 2023–2024.
3. Scope 1 emissions showed favorable overall performance, decreasing from 1,240.36 tCO₂e to 981.65 tCO₂e, a reduction of 258.71 tCO₂e, or 20.86%, from the baseline.
4. Scope 2 emissions remained relatively stable across the reporting period, increasing moderately by 1.79%, from 12,576.39 tCO₂e in the baseline year to 12,801.41 tCO₂e in 2024–2025.
5. Scope 3 was the main source of emissions variability, increasing to 17,232.15 tCO₂e in 2022–2023, declining to 11,706.58 tCO₂e in 2023–2024, and then increasing to 12,897.50 tCO₂e in 2024–2025.
6. LPG emissions decreased consistently throughout the reporting period, falling from 778.88 tCO₂e to 459.10 tCO₂e, representing a reduction of 41.06% from the baseline.
7. Refrigerant-leakage emissions declined to 151.71 tCO₂e in 2024–2025, representing a reduction of 48.44% from the baseline and 50.90% from the 2023–2024 level.
8. Capital-asset emissions recorded the largest reduction among Scope 3 sources, decreasing from 6,414.70 tCO₂e in the baseline year to 584.97 tCO₂e in 2024–2025, equivalent to a reduction of 90.88%.
9. Employee commuting was the largest individual emissions source in 2024–2025, reaching 7,618.52 tCO₂e and accounting for approximately 28.55% of total GHG emissions.

10. Transport-related emissions increased compared with the baseline, with petrol rising by 80.79%, diesel by 131.74%, and business travel by 465.31%, although their combined contribution remained considerably lower than employee commuting and purchased electricity.

2.1 Year-on-Year Change

The following table describes the Year-on-Year emissions change:

Year-on-Year Emissions Change 2021 - 2025			
Description/Source	2022–2023 vs. 2021–2022	2023–2024 vs. 2022–2023	2024–2025 vs. 2023–2024
Scope 1: Direct GHG Emissions	-22.07%	12.79%	-9.96%
Scope 2: Indirect GHG Emissions	0.08%	-0.93%	2.66%
Scope 3: Indirect GHG Emissions	47.85%	-32.07%	10.17%
Total GHG Emissions	20.86%	-17.93%	5.60%
LPG	-32.19%	-4.33%	-9.13%
Nitrous Oxide	NA	NA	NA
Refrigerant Leakage	0.00%	5.00%	-50.90%
Petrol	-19.44%	86.92%	20.06%
Diesel	-11.14%	93.15%	35.03%
Purchased Goods	18.31%	12.56%	-16.50%
Capital Assets	-6.38%	-89.01%	-11.38%
Fuel- and Energy-Related Activities	-0.06%	-0.92%	3.01%
Upstream TD Loss	342.69%	2.73%	-4.95%
Waste	27.08%	-0.37%	3.35%
Business Travel	299.58%	0.21%	41.17%
Employee Commuting	571.20%	-4.10%	19.64%

Table 9. Year-on-Year GHG emissions change 2021 - 2025.

Comments

1. Total GHG emissions increased by 20.86% in 2022–2023, mainly due to a substantial 47.85% increase in Scope 3 emissions, while Scope 1 decreased by 22.07% and Scope 2 remained nearly unchanged.
2. The largest annual improvement occurred in 2023–2024, when total emissions declined by 17.93%, primarily supported by a 32.07% reduction in Scope 3 emissions and an 89.01% reduction in capital asset emissions.
3. Total emissions increased moderately by 5.60% in 2024–2025, mainly reflecting a 10.17% increase in Scope 3 and a 2.66% increase in Scope 2, partially offset by a 9.96% reduction in Scope 1.
4. Scope 1 showed an overall favorable pattern, decreasing in two of the three annual comparisons. LPG emissions declined consistently by 32.19%, 4.33%, and 9.13%, while refrigerant leakage fell significantly by 50.90% in 2024–2025.
5. Employee commuting was the most volatile emissions source, increasing by 571.20% in 2022–2023, decreasing slightly by 4.10% in 2023–2024, and rising again by 19.64% in 2024–2025.
6. Transport-related emissions increased in the later years, with petrol rising by 86.92% and diesel by 93.15% in 2023–2024, followed by further increases of 20.06% and 35.03%, respectively, in 2024–2025. Business travel also increased by 41.17% in the performance year.
7. Several Scope 3 sources recorded notable improvements, including capital assets, which declined in all three annual comparisons, and purchased goods, which decreased by 16.50% in 2024–2025. Nitrous oxide does not have a year-over-year comparison because emissions were reported only in 2024–2025.

2.2 Emissions Change with Baseline

The following table describes the emissions changes with respect to the Baseline:

Emissions Change with Baseline			
Description/Source	2022–2023 vs. Baseline	2023–2024 vs. Baseline	2024–2025 vs. Baseline
Scope 1: Direct GHG Emissions	-22.07%	-12.10%	-20.86%
Scope 2: Indirect GHG Emissions	0.08%	-0.85%	1.79%
Scope 3: Indirect GHG Emissions	47.85%	0.44%	10.66%
Total GHG Emissions	20.86%	-0.81%	4.75%
LPG	-32.19%	-35.13%	-41.06%
Nitrous Oxide	N/A	NA	NA
Refrigerant Leakage	0.00%	5.00%	-48.44%
Petrol	-19.44%	50.57%	80.78%
Diesel	-11.14%	71.63%	131.74%
Purchased Goods	18.31%	33.17%	11.20%
Capital Assets	-6.38%	-89.71%	-90.88%
Fuel- and Energy-Related Activities	-0.06%	-0.98%	2.00%
T&D Loss	342.69%	354.77%	332.25%
Waste	27.08%	26.60%	30.84%
Business Travel	299.58%	300.43%	465.29%
Employee Commuting	571.20%	543.64%	670.03%

Table 10. Emissions change with respect to baseline.

Comments

1. Total GHG emissions were 20.86% above the baseline in 2022–2023, decreased to 0.81% below the baseline in 2023–2024, and ended 4.75% above the baseline in 2024–2025.
2. Scope 1 emissions remained below the baseline throughout the period, with reductions of 22.07%, 12.10%, and 20.86%, respectively.
3. Scope 2 emissions remained broadly stable, ranging from 0.85% below the baseline in 2023–2024 to 1.79% above the baseline in 2024–2025.
4. Scope 3 emissions recorded the greatest variation, rising 47.85% above the baseline in 2022–2023, before moderating to 0.44% and 10.66% above the baseline in the following years.
5. LPG, refrigerant leakage, and capital asset emissions showed substantial reductions, reaching 41.06%, 48.44%, and 90.88% below the baseline, respectively, in 2024–2025.
6. Petrol, diesel, business travel, and employee commuting emissions increased significantly above the baseline, with employee commuting reaching the largest increase at 670.03% in 2024–2025.
7. Purchased goods, upstream T&D loss, and waste emissions remained above the baseline, while fuel- and energy-related activities remained close to baseline levels across the reporting period.

2.3 Summary of Emission Changes

From 2021–2022 to 2024–2025, AU's total GHG emissions increased by 4.75%, from 25,471.74 tCO₂e to 26,680.56 tCO₂e. Scope 1 emissions declined by 20.86%, supported by substantial reductions in LPG and refrigerant-leakage emissions, although petrol and diesel emissions increased above the baseline. Scope 2 emissions remained broadly stable, increasing by only 1.79%. Scope 3 emissions increased by 10.66%, largely reflecting higher employee commuting and business-travel emissions as campus activities returned to normal levels; however, this increase was significantly moderated by a 90.88% reduction in capital-assets emissions. Total emissions declined below the baseline in 2023–2024 before increasing by 5.60% in 2024–

2025, while remaining well below the 2022–2023 peak, indicating improved control of emissions despite the full resumption of campus operations.

2.4 GHG Emissions Benchmarking Metrics

GHG emissions benchmarking for universities is based on established metrics, listed in the table below:

Emissions Benchmarking Metrics				
Description	2021 - 2022	2022 - 2023	2023 - 2024	2024 - 2025
Scope 1: Direct GHG Emission ⁸ (tCO ₂ e)	1,240.36	966.64	1,090.23	981.65
Scope 2: Indirect GHG Emission ¹ (tCO ₂ e)	12,576.39	12,586.35	12,469.78	12,801.41
GHG (Scope 1 + Scope 2)	13,816.75	13,552.99	13,560.01	13,783.06
FTEF ⁹	813	793	667	675
FTSE ²	5,537	6,196	5,932	6,102
GHG/(FTEE + FTSE)	2.18	1.94	2.05	2.03
Weighted Campus Users	7,231.75	5,392.00	5,290.50	5,430.50
GHG/Weighted Campus Users	1.91	2.51	2.56	2.54
GHG/Campus Area	0.0643	0.063	0.063	0.064

Table 11. GHG Emissions and Metrics.

The Weighted Campus Users (WCU) metric, developed by the Association for the Advancement of Sustainability in Higher Education, measures how intensively an institution's population utilizes campus resources, particularly for residential institutions. Institutions with a high percentage of on-campus residents typically have higher GHG emissions, electricity and water consumption, and waste generation compared to non-residential institutions.

The metric, GHG per Weighted Campus User (GHG/WCU), is calculated based on Scope 1 and Scope 2 emissions, total full-time employee and student equivalents, and the number of students residing in institution-owned housing.

A decrease in GHG/WCU from a baseline year to a performance year reflects the effectiveness of the institution's emissions reduction efforts.

In the table above, the GHG/WCU value in the performance year is higher than in the baseline year, indicating that further actions are required to reduce total Scope 1 and 2 emissions.

⁸ Source: Axosomatic (www.axosomatic.com).

⁹ FTEE (Full-Time Employee Equivalent) and FTSE (Full-Time Student Equivalent), based on CHEDS formula.

3. SCIENCE-BASED TARGETS

The Science-Based Targets initiative (SBTi) provides organizations with a structured approach for setting greenhouse gas emissions-reduction targets aligned with the level of decarbonization required to limit global warming. It offers criteria, guidance, and validation mechanisms for developing near-term and long-term targets across Scope 1, Scope 2, and relevant Scope 3 emissions.

Applying an SBTi-aligned pathway enables AU to translate its baseline inventory into measurable annual reduction milestones and to assess progress toward a credible low-carbon transition.

The recommended SBTi annual reductions are listed in the following table, based on the 2021-2022 baseline GHG emissions for Scope 1, Scope 2, and Scope 3:

SBTi Recommended Annual Reduction									
	2022	2023	2024	2025	2026	2027	2028	2029	2030
Scope 1 (tCO ₂ e)	1,240	1,175	1,110	1,045	980	915	850	785	719
Scope 2 (tCO ₂ e)	12,576	11,916	11,256	10,596	9,935	9,275	8,615	7,955	7,294
Scope 3 (tCO ₂ e)	11,654.99	11,043.10	10,431.22	9,819.33	9,207.44	8,595.56	7,983.67	7,371.78	6,759.90
Total	25,470.99	24,134	22,797	21,460	20,122	18,786	17,449	16,112	14,773
Annual Reduction		5.25%	5.54%	5.87%	6.23%	6.65%	7.12%	7.66%	8.30%

Table 12. SBTi recommended annual reductions.

3.1 AU Performance Against SBTi Targets

The following two tables describe AU performance against annual targets and total emissions trajectory:

Performance against the annual targets				
Scope	2022–2023 variance from target	2023–2024 variance from target	2024–2025 variance from target	2024–2025 status
Scope 1	–208.36 tCO ₂ e, 17.73% below target	–19.77 tCO ₂ e, 1.78% below target	–63.35 tCO ₂ e, 6.06% below target	Target exceeded
Scope 2	+670.35 tCO ₂ e, 5.63% above target	+1,213.78 tCO ₂ e, 10.78% above target	+2,205.41 tCO ₂ e, 20.81% above target	Materially behind target
Scope 3	+6,189.05 tCO ₂ e, 56.04% above target	+1,275.36 tCO ₂ e, 12.23% above target	+3,078.17 tCO ₂ e, 31.35% above target	Significantly behind target
Total emissions	+6,651.14 tCO ₂ e, 27.56% above target	+2,469.59 tCO ₂ e, 10.83% above target	+5,220.56 tCO ₂ e, 24.33% above target	Overall target not achieved

Table 13. AU performance against SBTi targets.

Negative variances indicate performance below the emissions ceiling and therefore better than target; positive variances indicate emissions above the annual target.

3.2 Total Emissions Trajectory

The following table shows the AU emissions trajectory with respect to the SBTi targets:

Total Emissions Trajectory				
Academic year	Target Emissions	Actual Emissions	Variance	Assessment
2021–2022 baseline	25,470.99	25,471.74	0.75	Aligned with baseline
2022–2023	24,134.00	30,785.14	6,651.14	Significantly behind pathway
2023–2024	22,797.00	25,266.59	2,469.59	Significantly behind pathway, although improved from the preceding year
2024–2025 performance year	21,460.00	26,680.56	5,220.56	Significantly behind pathway; performance gap widened

Table 14. Total emissions trajectory.

3.3 Key SBTi Summary Points

1. AU's total GHG emissions increased moderately by 4.75%, from 25,471.74 tCO₂e in the 2021–2022 baseline year to 26,680.56 tCO₂e in the 2024–2025 performance year.
2. Total emissions in 2024–2025 were 5,220.56 tCO₂e, or 24.33%, above the annual SBTi-aligned target of 21,460.00 tCO₂e, highlighting opportunities for further alignment with the planned reduction pathway.
3. Scope 1 recorded strong performance, ending 20.86% below the baseline and 6.06% below the 2024–2025 annual target. This reflects measurable progress in managing direct emissions.
4. Scope 2 emissions remained broadly stable over the reporting period, increasing by only 1.79% from the baseline. In 2024–2025, Scope 2 emissions were 2,205.41 tCO₂e, or 20.81%, above the annual target.
5. Scope 3 emissions increased by 10.66% from the baseline and were 3,078.17 tCO₂e, or 31.35%, above the 2024–2025 target, reflecting the influence of commuting, business travel, procurement, and other indirect activities.
6. Scope 3 emissions increased by 10.17% from 2023–2024 to 2024–2025 following the substantial reduction achieved in the preceding year. This indicates some year-to-year variability in indirect emissions.
7. Scope 3 represented approximately 59% of the total 2024–2025 variance from the consolidated target, while Scope 2 represented approximately 42%. Scope 1 emissions provided a positive offset by remaining 63.35 tCO₂e below target.
8. The highest total emissions were recorded in 2022–2023 at 30,785.14 tCO₂e. Total emissions subsequently declined substantially in 2023–2024 and, despite increasing by 5.60% in 2024–2025, remained 4,104.58 tCO₂e below the 2022–2023 peak.
9. The target pathway represented an intended reduction of approximately 15.75% from the baseline by 2024–2025. Actual emissions remained relatively close to the baseline, increasing by 4.75%, providing a clear basis for prioritizing future reduction initiatives.
10. Continued progress can be supported through energy-efficiency measures, renewable-electricity opportunities, sustainable procurement, capital-expenditure planning, commuting management, business-travel measures, waste reduction, and strengthened emissions monitoring.

3.4 Overall Performance

11. AU demonstrated particularly positive performance in Scope 1, with 2024–2025 emissions remaining below both the baseline and the annual target. Total emissions also remained substantially below the peak recorded in 2022–2023.
12. The 2024–2025 results show that total emissions remained relatively close to the baseline despite the full resumption of campus activities. Scope 2 remained broadly stable, while Scope 3 reflected the increased level of indirect activities associated with normal campus operations.
13. The overall performance can therefore be assessed as follows:
14. AU achieved strong Scope 1 performance and maintained total emissions below the 2022–2023 peak. Further opportunities remain to progressively align Scope 2 and Scope 3 emissions with the planned reduction pathway.

4. REDUCTION PLAN AND TARGETS

A carbon reduction target covering Scope 1 and 2 emissions by at least 2050 refers to Ajman University's commitment to reduce greenhouse gas (GHG) emissions that are directly produced by its own activities (Scope 1 emissions) and the emissions associated with the energy it consumes (Scope 2 emissions) by the year 2050.

4.1 AU Reduction Plan

Ajman University is committed to setting ambitious carbon reduction targets covering Scope 1 and 2 emissions in alignment with the urgency to combat climate change. These targets vary in terms of their specific emission reduction goals, timelines, and strategies, but they all share a common aim of transitioning to a low-carbon economy and reducing dependence on fossil fuels.

The targets set are as follows:

1. Net Zero Emissions by 2050: where Ajman University aims to balance its emissions with equivalent carbon removal or offsetting activities.
2. Percentage Reduction Targets: to reduce emissions by 50% by 2030 and 100% by 2050 compared to the baseline year of 2021-2022.
3. Renewable Energy Transition: Ajman University plans to transition to 100% renewable energy sources for electricity consumption (Scope 2) by 2040.
4. Energy Efficiency Improvement: to improve the energy efficiency of buildings by aiming for a 25% reduction in energy consumption over the next 2 years.
5. Fleet Electrification Targets: to transition to electric vehicles (EVs) or other low-carbon alternatives, by aiming for a 50% of fleet to be electric by 2030.

4.2 Axosomatic Reduction Strategy

Following an in-depth benchmarking analysis and drawing upon the industry-leading practices of renowned institutions, and based on this consolidated four-year GHG inventory, Axosomatic recommends adopting a prioritized emissions-reduction strategy covering the period from 2025 to 2030. The strategy focuses institutional resources on the emission sources that have the greatest contribution to AU's carbon footprint, the highest reduction potential, and the strongest level of operational influence.

The strategy retains 2021–2022 as the formal baseline for continuity in institutional reporting. However, because this period was affected by partial COVID-19 lockdown conditions, AU will also use a validated post-lockdown operational reference year or normalized performance indicators when setting internal operational targets, evaluating projects, and comparing commuting, travel, procurement, and campus-use performance.

The detailed priorities, objectives, actions, key performance indicators, governance requirements, and implementation arrangements are provided in the separate document entitled **“Axosomatic Emissions Reduction Strategy 2025–2030.”** This document should be read in conjunction with the GHG Inventory Report and used as the principal implementation framework for translating the inventory findings into prioritized emissions-reduction initiatives, annual action plans, assigned responsibilities, performance monitoring, and periodic management review.

5. SCOPE I: DIRECT GHG EMISSIONS

Scope I direct GHG emissions attributed to Ajman University occurred from stationary combustion of LPG, refrigerant leakage, and mobile combustion of petrol- and diesel operated cars, buses, pickups, trucks, and mobile dental clinic owned by AU.

5.1 Scope I Data Provided by AU

The below table lists the consumption data provided by AU for LPG, Refrigerant Leakage, petrol, and diesel. AU does not use stationary energy sources such as diesel and heating oil.

Summary of Scope 1 Data Provided by AU				
Source	2021 - 2022	2022 - 2023	2023 - 2024	2024 - 2025
Stationary Combustion				
Diesel	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Heating Oil	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Propane/LPG (m ³)	504	342	324.48	294.84
Nitrous Oxide	NA	NA	NA	37.50
Refrigerant Leakage ¹⁰ (Kg)	167	167	174.5	85.68
Mobile Combustion¹¹				
Petrol (liters)	22,339.20	17,920.99	33,491.52	40,210.28
Diesel (liters)	41,203.20	38,400.96	74,172.48	100,151.92

Table 15. Summary of Scope I data provided by AU.

5.2 Scope I GHG Emissions

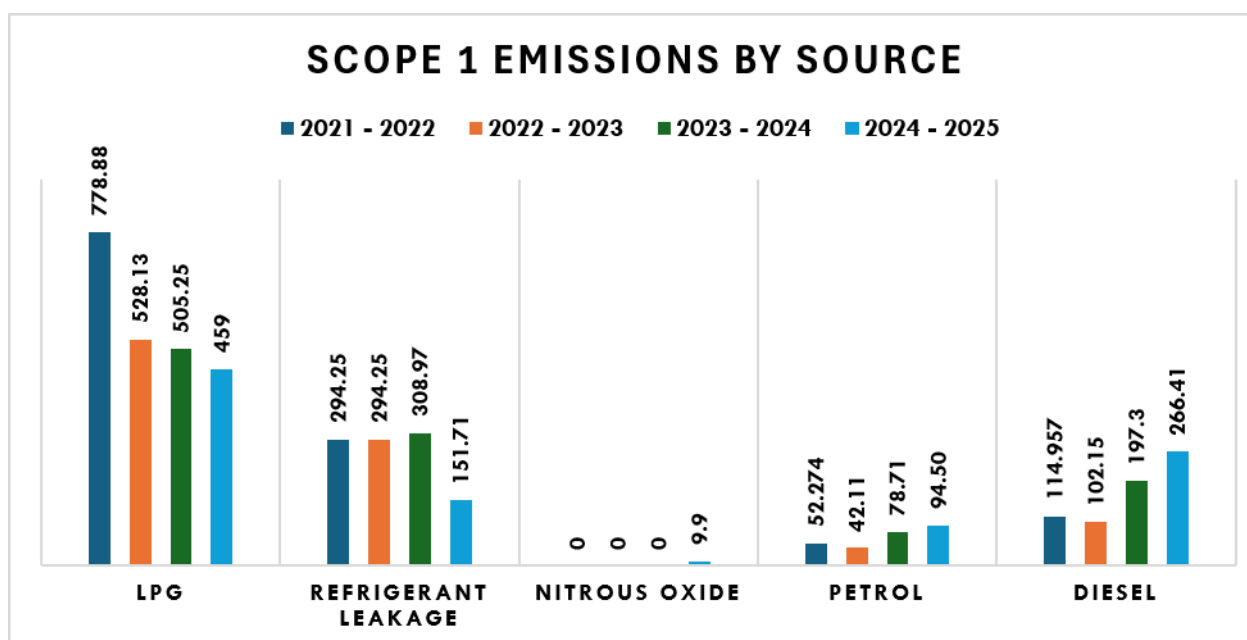
The table below lists the GHG emissions attributed to stationary and mobile sources listed in the above table:

Summary of Scope I GHG Emissions (tCO ₂ e)					
Source	2021 – 2022 Baseline	2022 - 2023	2023 - 2024	2024 – 2025 Performance	% Performance vs. Baseline
GHG Emissions - Stationary Consumption					
Diesel	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Heating Oil	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Propane (LPG)	778.88	528.13	505.25	459	-41.06%
Nitrous Oxide	NA	NA	NA	9.94	NA
Refrigerant Leakage	294.25	294.25	308.97	151.71	-48.44%
Sub-Total	1,073.13	822.38	814.23	620.74	-42.16%
GHG Emissions - Mobile Consumption					
Petrol (Liters)	52.274	42.11	78.71	94.50	80.78%
Diesel (Liters)	114.957	102.15	197.3	266.41	131.74%
Sub-Total	167.231	144.26	276	360.91	115.81%
Total Scope I Emissions	1,240.36	966.64	1,090.23	981.65	-20.86%

Table 16. Scope I GHG emissions from stationary and mobile consumptions.

¹⁰ Refrigerant leakage from air-conditioning system (R22+R410A).

¹¹ Ajman University owns cars, buses, pickup and truck vehicles, some petrol operated, and some diesel operated.

Figure I. Scope I emissions by source (tCO₂e)

Year-on-Year Emissions Summary			
Source	2022–2023 vs. 2021–2022	2023–2024 vs. 2022–2023	2024–2025 vs. 2023–2024
LPG	-32.19%	-4.33%	-9.13%
Refrigerant Leakage	0.00%	5.00%	-50.90%
Nitrous Oxide	NA	NA	NA
Petrol	-19.44%	86.92%	20.06%
Diesel	-11.14%	93.15%	35.03%
Total	-22.07%	12.79%	-9.96%

Table 17. Year-on-Year emissions summary 2021 – 2025.

Year-over-Year Absolute Emissions Change			
Source	2022–2023 vs. 2021–2022	2023–2024 vs. 2022–2023	2024–2025 vs. 2023–2024
LPG	-250.75	-22.88	-46.15
Refrigerant Leakage	0.00	14.72	-157.26
Nitrous Oxide	0.00	0.00	9.94
Petrol	-10.16	36.60	15.79
Diesel	-12.81	95.15	69.11
Total	-273.72	123.59	-108.58

Table 18. Year-over-Year absolute emissions change 2021 - 2025.

Percentage Difference Baseline Year			
Source	2022–2023 vs. Baseline	2023–2024 vs. Baseline	2024–2025 vs. Baseline
LPG	-32.19%	-35.13%	-41.06%
Refrigerant Leakage	0.00%	5.00%	-48.44%
Nitrous Oxide	NA	NA	NA
Petrol	-19.44%	50.57%	80.78%
Diesel	-11.14%	71.63%	131.74%
Total	-22.07%	-12.10%	-20.86%

Table 19. Percentage difference vs. baseline.

5.3 Summary of Scope I Direct GHG Emissions

The following summary presents the key trends in AU's Scope I emissions from the 2021–2022 baseline year to the 2024–2025 performance year, as shown in the table and chart above. It highlights the main changes in stationary, fugitive, and mobile emission sources over the four years:

1. Total Scope I emissions decreased by 20.86%, from 1,240.36 tCO₂e in 2021–2022 to 981.65 tCO₂e in 2024–2025, despite fluctuations during the comparative years.
2. Stationary-combustion and fugitive emissions declined by 42.16%, from 1,073.13 tCO₂e to 620.74 tCO₂e, and remained the largest component of Scope I emissions.
3. LPG emissions recorded a sustained reduction of 41.06%, falling from 778.88 tCO₂e in the baseline year to 459.00 tCO₂e in the performance year.
4. Refrigerant-leakage emissions decreased by 48.44% to 151.71 tCO₂e, while 9.90 tCO₂e of nitrous oxide emissions were reported for the first time in 2024–2025. Stationary diesel and heating oil were not applicable.
5. Mobile-combustion emissions increased by 115.81%, from 167.23 tCO₂e to 360.91 tCO₂e, driven by increases of 80.78% in petrol emissions and 131.74% in diesel emissions compared with the baseline.

6. SCOPE 2: INDIRECT GHG EMISSIONS

Scope 2 indirect GHG emissions are attributed to Ajman University from the consumption of purchased electricity.

6.1 Electricity & Water Consumption

There are 13 buildings at AU; electricity and water consumption were provided for all buildings, as demonstrated below. The GHG emissions associated with water consumption will be included in Scope 3.

The following table compares electricity consumption and GHG emissions, expressed in metric tons of CO₂ equivalent, in AU during the periods 2021 – 2022 to 2024 – 2025.

	2021 - 2022	2022 - 2023	2023 - 2024	2024 - 2025	Performance vs Baseline
Electricity (MWh)	21,754.69	21,771.93	21,570.28	22,143.94	1.79%
GHG Emissions (tCO₂e)	12,576.39	12,586.35	12,469.78	12,801.41	1.79%

Table 20. Year-on-Year electricity consumption and scope 2 GHG emissions.

Electricity Consumption (MWh)					
Building	2021 – 2022 Baseline	2022 - 2023	2023 - 2024	2024 – 2025 Performance	Performance vs Baseline
1. SZC	2,254.18	2,289.66	1898.73	2,347.71	4.15%
2. 4088 J2	1,197.16	1,231.48	1061.513	1,018.15	-14.95%
3. 4089 J2	1,403.48	1,368.07	1213.287	1,135.39	-19.10%
4. 4083 J2	2,973.14	2,534.47	2352.288	2,221.15	-25.29%
5. J2+S.FIELD	2,311.15	2,276.71	2333.057	2,389.12	3.37%
6. J1+LABOR CAMP	1,347.00	1,364.07	1355.117	1,415.86	5.11%
7. 4085 J1	1,972.75	1,965.98	2029.815	1,844.35	-6.51%
8. 4086 J1	1,764.42	1,919.64	2072.698	2,155.79	22.18%
9. S. COMPLEX	603.46	811.89	831.196	710.51	17.74%
10. 4092 F. HOSTEL	2,716.91	2,642.07	2815.479	2,848.37	4.84%
11. 0508 F. HOSTEL	---	---	---	---	---
12. 4091 F. HOSTEL	817.13	807.42	821.895	849.36	3.94%
13. 5614 S. HUB	2,393.91	2,560.47	2785.201	3,208.19	34.01%
Total AU	21,754.69	21,771.93	21,570.28	22,143.94	1.79%

Table 21. Year-on-Year electricity consumption by building.

From the above data, we observe that AU's total electricity consumption increased modestly by 1.79%, from 21,754.69 MWh in 2021–2022 to 22,143.94 MWh in 2024–2025; reductions at 4083 J2 (–25.29%), 4089 J2 (–19.10%), and 4088 J2 (–14.95%) were offset mainly by increases at 5614 S. Hub (+34.01%) and 4086 J1 (+22.18%). The associated Scope 2 GHG emissions are given in the table on the subsequent page.

Year-on-Year Scope 2 Emissions (tCO ₂ e)					
Building	2021 – 2022 Baseline	2022 - 2023	2023 - 2024	2024 – 2025 Performance	Performance vs. Baseline
1. SZC	1,303.14	1,323.65	1,097.66	1,357.21	4.15%
2. 4088 J2	692.08	711.92	613.66	588.59	-14.95%
3. 4089 J2	811.35	790.88	701.4	656.37	-19.10%
4. 4083 J2	1,718.77	1,465.18	1,359.86	1,284.05	-25.29%
5. J2+S.FIELD	1,336.08	1,316.17	1,348.74	1,381.15	3.37%
6. J1+LABOR CAMP	778.7	788.57	783.39	818.51	5.11%
7. 4085 J1	1,140.45	1,136.53	1,173.44	1,066.22	-6.51%
8. 4086 J1	1,020.01	1,109.74	1,198.23	1,246.26	22.18%
9. S. COMPLEX	348.86	469.35	480.51	410.74	17.74%
10. 4092 F. HOSTEL	1,570.65	1,527.38	1,627.63	1,646.64	4.84%
11. 0508 F. HOSTEL	---	---	---	---	---
12. 4091 F. HOSTEL	472.38	466.77	475.14	491.01	3.94%
13. 5614 S. HUB	1,383.92	1,480.21	1,610.12	1,854.65	34.01%
Total AU	12,576.39	12,586.35	12,469.78	12,801.41	1.79%

Table 22. Year-on-Year Scope 2 GHG emissions by building.

Year-on-Year Emissions Summary			
Source	2022–2023 vs. 2021–2022	2023–2024 vs. 2022–2023	2024–2025 vs. 2023–2024
Purchased Electricity	0.08%	-0.93%	2.66%

Table 23. Year-on-Year emissions change 2021 – 2025.

Year-over-Year Absolute Emissions Change			
Source	2022–2023 vs. 2021–2022	2023–2024 vs. 2022–2023	2024–2025 vs. 2023–2024
Purchased Electricity	9.96	-116.57	331.63

Table 24. Year-over-Year absolute emissions change.

Percentage Difference Baseline Year			
Source	2022–2023 vs. Baseline	2023–2024 vs. Baseline	2024–2025 vs. Baseline
Purchased Electricity	0.08%	-0.85%	1.79%

Table 25. Percentage difference vs. baseline year.

6.1.1 Scope 2 Emissions Summary

1. Total Scope 2 emissions increased slightly from 12,576.39 tCO₂e in 2021–2022 to 12,801.41 tCO₂e in 2024–2025, representing a recalculated increase of approximately 1.79% from the baseline.
2. Annual emissions were relatively stable during the first three years, increasing by only 0.08% in 2022–2023 and decreasing by 0.93% in 2023–2024, before rising by 2.66% in 2024–2025.
3. The largest reductions from the baseline occurred at 4083 J2, 4089 J2, and 4088 J2, where emissions declined by approximately 25.29%, 19.10%, and 14.95%, respectively.
4. The largest increase occurred at 5614 S. Hub, where emissions rose from 1,383.92 tCO₂e to 1,854.65 tCO₂e, an increase of approximately 34.01%. Emissions at 4086 J1 also increased

materially by approximately 22.18%.

5. SZC, J2 + S. Field, J1 + Labor Camp, both female hostels, and the Sports Complex recorded moderate increases, indicating that energy-efficiency gains were not consistent across all buildings.
6. In 2024–2025, 5614 S. Hub was the largest individual Scope 2 source, followed by 4092 Female Hostel, J2 + S. Field, SZC, 4083 J2, and 4086 J1.
7. The overall result indicates limited progress in reducing electricity-related emissions, as reductions in several buildings were insufficient to offset rising emissions in the highest-consuming facilities. Priority attention may therefore be directed toward 5614 S. Hub, 4086 J1, 4092 Female Hostel, SZC, and J2 + S. Field.

7. SCOPE 3: INDIRECT GHG EMISSIONS

Scope 3 indirect GHG emissions attributed to Ajman University occurred from the consumption of Upstream Activities (categories 1 to 7), listed in the following table:

Category	Emission Sources	Status
1. Purchased goods and services	Food & Beverages, Printing Papers, Toilet Papers, Tissue Papers, Water, and Cloud Services.	Included
2. Capital goods	IT Equipment, Office Furniture, Medical Equipment	Included
3. Fuel- and energy-related activities	Upstream LPG, Petrol, Diesel and Purchased-Electricity emissions, including electricity T&D losses.	Included
4. Upstream T&D	T&D of Purchased Good.	Included
5. Waste generated in operations	Wastewater, General Waste, Medical Waste, Food Waste, Paper Waste.	Included
6. Business travel	Travel and accommodation of employees/contractors.	Included
7. Employee commuting	Employee commuting from and to AU.	Included
8. Upstream leased assets	Operation of assets leased by AU (lessee) in the reporting year and not included in scopes 1 or 2.	Not applicable
9. Downstream T&D	T&D of products sold by the organization.	Not applicable
10. Processing of sold products	Processing of intermediate products sold by the organization.	Not applicable
11. Use of sold products	Use of sold goods that require energy to operate.	Not applicable
12. End-of-life treatment of sold products	Waste disposal and treatment of sold products.	Not applicable
13. Downstream Leased Assets	Emissions from the operation of assets that are owned by AU company and leased to other entities.	Not applicable
14. Franchises	Emissions from the operation of franchises to sell or distribute another company's goods or services within a certain location.	Not applicable
15. Investments	Emissions associated with AU's investments.	Not applicable

Table 26. List of Scope 3 Categories.

7.1 Axosomatic Comments

AU provided all Upstream data (categories 1-7) related to scope 3. AU does not lease any assets and does not have any Downstream operations.

Employee commuting includes commuting data of faculty, staff, and students. To obtain commuting data, Axosomatic designed a survey questionnaire and submitted it to the AU Office of Sustainability (AUOS), which the AUOS then sent to their employees and students.

7.2 Key Factors that Lead to an Increase in Scope 3 Emissions

The following factors are not related to AU activities; rather, they are generic observations in most organizations.

1. Increased Business Travel and Commuting

- More frequent staff or student commuting (e.g., return to in-person work/learning post-COVID).

- Greater use of air and land travel, taxis, or ride-sharing for conferences, fieldwork, or operations.

2. Higher Procurement Volumes

- Increased purchasing of goods, equipment, construction materials, and services.
- Sourcing from high-emission suppliers or countries with carbon-intensive production.

3. Growth in Outsourced Services

- Expanded reliance on third-party services (e.g., cleaning, food, IT).
- Outsourced manufacturing, logistics, or operational support.

4. Waste Generation and Disposal

- Higher generations of waste, electronic waste, or hazardous materials.
- Poor recycling rates or disposal via landfill/incineration without energy recovery.

5. Student and Visitor Transportation (for universities/schools)

- Larger student populations and events increasing travel to/from campus.
- Low adoption of low-carbon or public transportation modes.

6. Upstream Transportation and Distribution

- Greater freight movement, especially via air or road rather than sea/rail.
- Inefficient supply chains with multiple international stages.

7. Downstream Use and Disposal of Sold Products

- In product-based organizations: emissions from how products are used and disposed of
- Energy-intensive use by end-users or non-recyclable packaging.

8. Capital Goods and Infrastructure Development

- Construction of new buildings, facilities, or laboratories.
- Equipment upgrades with high embodied carbon.

9. Financed or Invested Emissions (for financial institutions and large universities)

- Emissions from investments, endowments, or pension funds in carbon-intensive sectors.

7.3 How to Control or Mitigate Scope 3 Emissions

Controlling Scope 3 emissions requires a strategic, value-chain-wide approach. Organizations should begin by mapping and prioritizing emission hotspots, then engage suppliers and service providers to adopt lower-carbon practices through procurement standards and sustainability criteria. Promoting sustainable commuting and reducing business travel, by encouraging remote collaboration and low-emission transport, can significantly cut emissions. Institutions should also improve waste management, invest in digital solutions to monitor supply chain impacts, and educate stakeholders to foster a culture of accountability and climate responsibility across all indirect activities.

7.4 Contextual Note

The 2021–2022 baseline year coincided with COVID-19 lockdown conditions, during which Ajman University operated predominantly online. As a result, campus-based activities, purchased-goods movements, electricity-related losses, and transportation and distribution requirements were significantly lower than under normal operations. Consequently, percentage increases against the 2021–2022 baseline should be interpreted with caution, as they partly reflect the resumption of on-campus operations rather than a deterioration in emissions performance alone.

7.5 Scope 3 Emissions by Category

Scope 3 emissions are presented by category for the period from 2021–2022 to 2024–2025. The analysis covers purchased goods and services, capital goods, fuel- and energy-related activities, upstream transportation and distribution, waste generated in operations, business travel, and employee commuting. The table below presents the emissions reported for each category across the four reporting periods, together with the performance of the 2024–2025 reporting year against the 2021–2022 baseline.:

Scope 3 Emissions Summary (tCO ₂ e)					
Category	2021 – 2022 Baseline	2022 - 2023	2023 - 2024	2024 – 2025 Performance	Performance vs. Baseline
1. Purchased goods and services	827.11	978.51	1101.44	919.72	11.20%
2. Capital goods	6414.70	6005.72	660.10	584.97	-90.88%
3. Fuel- and energy- related activities	3352.01	3350.15	3319.17	3419.02	2.00%
4. Upstream T&D	1.53	6.78	6.97	6.62	332.25%
5. Waste generated in operations	11.17	14.20	14.14	14.62	30.84%
6. Business Travel	59.09	236.12	236.62	334.04	465.29%
7. Employee commuting	989.38	6640.67	6368.08	7618.52	670.03%
Total	11,654.99	17,232.15	11,706.53	12,897.50	10.66%

Table 27. Scope 3 emissions summary 2021 - 2025.

Scope 3 Year-on-Year Emissions Summary			
Category	2022–2023 vs. 2021–2022	2023–2024 vs. 2022–2023	2024–2025 vs. 2023–2024
1. Purchased goods and services	18.31%	12.56%	-16.50%
2. Capital goods	-6.38%	-89.01%	-11.38%
3. Fuel- and energy-related activities	-0.06%	-0.92%	3.01%
4. Upstream transportation and distribution	342.69%	2.73%	-4.95%
5. Waste generated in operations	27.08%	-0.373%	3.35%
6. Business travel	299.58%	0.21%	41.17%
7. Employee commuting	571.20%	-4.10%	19.64%
Total Scope 3 emissions	47.85%	-32.07%	10.17%

Table 28. Scope Year-on-Year emissions summary 2021 - 2025.

Scope 3 Year-over-Year Absolute Changes (tCO ₂ e)			
Category	2022–2023 vs. 2021–2022	2023–2024 vs. 2022–2023	2024–2025 vs. 2023–2024
1. Purchased goods and services	151.40	122.92	-181.72
2. Capital goods	-408.97	-5345.62	-75.13
3. Fuel- and energy-related activities	-1.87	-30.98	99.84
4. Upstream transportation and distribution	5.25	0.19	-0.35
5. Waste generated in operations	3.02	-0.05	0.47
6. Business travel	177.03	0.51	97.42
7. Employee commuting	5,651.29	-272.59	1250.43
Total Scope 3	5,577.16	-5525.62	1190.97

Table 29. Scope 3 Year-over-Year absolute changes 2021 - 2025.

Percentage Difference vs. Baseline			
Category	2022–2023 vs. Baseline	2023–2024 vs. Baseline	2024–2025 vs. Baseline
1. Purchased goods and services	18.31%	33.17%	11.20%
2. Capital goods	-6.38%	-89.71%	-90.88%
3. Fuel- and energy-related activities	-0.06%	-0.98%	2.00%
4. Upstream T&D	342.69%	354.77%	332.25%
5. Waste generated in operations	27.08%	26.60%	30.84%
6. Business travel	299.58%	300.43%	465.29%
7. Employee commuting	571.20%	543.64%	670.03%
Total Scope 3 emissions	47.85%	0.44%	10.66%

Table 30. Percentage difference vs. baseline.

7.5.1 Scope 3 Emissions Summary

- Total Scope 3 emissions reached **12,897.50 tCO₂e in 2024–2025**, representing an increase of **1,242.51 tCO₂e, or 10.66%**, compared with the 2021–2022 baseline of 11,654.99 tCO₂e. Compared with 2023–2024, Scope 3 emissions increased by **10.17%**.
- Scope 3 emissions increased by **47.85% in 2022–2023**, decreased by **32.07% in 2023–2024**, and increased by **10.17% in 2024–2025**, reflecting variations in commuting, capital purchases, business travel, and purchased goods and services across the reporting period.
- Employee and student commuting was the largest Scope 3 category in 2024–2025, contributing **7,618.52 tCO₂e**, or approximately **59.07%** of total Scope 3 emissions.
- Fuel- and energy-related activities were the second-largest category, contributing **3,419.02 tCO₂e**, or approximately **26.51%** of Scope 3 emissions. Together, commuting and fuel- and energy-related activities accounted for approximately **85.58%** of the Scope 3 total.
- Commuting emissions increased by **19.64%** from 6,368.08 tCO₂e in 2023–2024 to 7,618.52 tCO₂e in 2024–2025. Compared with the partial-lockdown baseline, commuting emissions were **670.03% higher**, reflecting the resumption and expansion of regular campus attendance.
- Fuel- and energy-related emissions increased by **3.01%** from the preceding year and by **2.00%** from the baseline. Upstream emissions associated with purchased electricity remained the principal component of this category.
- Purchased-goods and services emissions decreased by **16.50%**, from 1,101.44 tCO₂e in 2023–2024 to 919.72 tCO₂e in 2024–2025. The performance-year result was **11.20% above the baseline**.
- Capital-goods emissions decreased to **584.97 tCO₂e in 2024–2025**, representing an annual reduction of **11.38%** and a reduction of **90.88% from the baseline**. This was the largest long-term reduction among the Scope 3 categories.
- Business-travel emissions reached **334.04 tCO₂e in 2024–2025**, increasing by **41.17%** from the preceding year. The increase relative to the baseline reflects the resumption of travel following the restricted baseline period.
- Waste-generated-in-operations emissions totaled **14.62 tCO₂e**, increasing by **3.35%** from 2023–2024 and by **30.84%** from the baseline. Upstream transportation and distribution emissions totaled **6.62 tCO₂e**, decreasing by **4.95%** from the preceding year.
- Overall, the 2024–2025 increase in Scope 3 emissions was primarily associated with commuting, fuel- and energy-related activities, and business travel. These increases were partly balanced by reductions in purchased goods and services, capital goods, and upstream transportation and distribution.

12. Comparisons with the 2021–2022 baseline should be interpreted in the context of the partial COVID-19 lockdown. Commuting and business-travel activity was unusually limited during that year, while capital-goods emissions were comparatively high, influencing the baseline comparison for subsequent periods

7.6 Category I: Purchased Goods

The following tables describe Category I consumption and emissions from 2021 to 2025:

Category I Annual Consumption by Source					
Source	Unit	2021 - 2022	2022 - 2023	2023 - 2024	2024 - 2025
Food & Beverages	USD	53,280.00	64,302.00	163,674.07	175,655.34
Food & Beverages	ton	5.15	21.87	63.83	4.89
Printing Papers	ton	8.30	7.50	9.45	4.10
Toilet Papers	ton	1.10	14.50	4.50	1.16
Tissue Papers	ton	7.50	3.75	19.83	21.37
Water (Drinking Water)	m3	3.83	3.83	2.64	5.01
Water supply	m3	60,815.38	23,469.70	24,389.45	21,358.25
Municipal Treated Water	m3	110.53	110.53	110.53	110.53
On-Site RO (Chemicals)	kg	275.00	275.00	275.00	275.00
Microsoft Azure	AED	197,750.27	329,512.75	289,239.72	193,963.98
Dynamics 365	AED	367,250.00	561,585.00	23,920.00	317,267.63
CRM Recruit	AED	449,036.00	76.41	-	-
Office 365	AED	812,160.80	726,998.00	807,607.50	766,815.00
Other Software	AED	820,057.20	2,761,901.40	2,428,271.69	3,380,124.00
Books	AED	365,961.54	304,967.95	243,974.36	182,980.77
Online Advertising	AED	1,502,005.60	1,433,732.62	1,365,459.64	1,297,186.66

Table 31. Category I annual consumption 2021-2025.

Category I Emissions by Source (tCO ₂ e)					
Source	2021–2022 Baseline	2022–2023	2023–2024	2024–2025 Performance	Performance vs Baseline
Food & Beverages-catering	22.08	27.92	70.09	73.57	233.16%
Food & Beverages-cafeteria	20.78	88.23	257.52	19.73	-5.04%
Printing Papers	11.15	10.08	12.70	5.51	-50.60%
Toilet Papers	1.42	18.66	5.79	1.49	5.44%
Tissue Papers	9.65	4.83	25.52	27.50	184.93%
Drinking Water	0.921	1.228	0.85	1.61	74.64%
Water Supply	164.20	63.37	65.85	57.67	-64.88%
Municipal Treated Water	71.85	71.85	71.85	71.85	0.00%
On-Site RO Chemicals	9.40	9.40	9.40	9.40	0.00%
Microsoft Azure	17.36	30.30	26.24	17.21	-0.88%
Dynamics 365	32.24	51.64	2.17	28.15	-12.70%
CRM Recruit	39.42	0.01	0.00	0.00	-100.00%
Office 365	71.30	66.86	73.26	68.03	-4.59%
Other Software	71.99	253.98	220.27	299.86	316.52%
Books	24.86	21.70	17.13	12.56	-49.47%
Online Advertising	258.49	258.46	242.81	225.59	-12.73%
Total	827.11	978.51	1101.44	919.72	11.20%

Table 32. Category I emissions by source 2021-2025.

7.6.1 Category I Emissions Summary

1. Category I emissions totaled 919.72 tCO₂e in 2024–2025, representing an increase of 11.20% compared with the 2021–2022 baseline of 827.11 tCO₂e. However, the 2024–2025 total remained below the 2023–2024 level of 1,101.44 tCO₂e.
2. Food and beverage emissions showed differing trends. Catering emissions increased to 73.57 tCO₂e, while cafeteria emissions declined to 19.73 tCO₂e, which was 5.04% below the baseline.
3. Emissions from printing paper decreased by 50.60% from the baseline, while toilet paper emissions remained close to the baseline level. Tissue paper emissions increased to 27.50 tCO₂e in 2024–2025.
4. Drinking-water emissions increased to 1.61 tCO₂e, whereas water-supply emissions declined by 64.88% to 57.67 tCO₂e. Municipal treated water and on-site RO chemical emissions remained unchanged throughout the reporting period.
5. Cloud and software-related emissions showed mixed patterns. Microsoft Azure, Dynamics 365, CRM Recruit, and Office 365 emissions were below their respective baseline levels in 2024–2025.
6. Other software emissions increased to 299.86 tCO₂e and recorded the largest increase within the category compared with the baseline.
7. Books emissions declined by 49.47%, from 24.86 tCO₂e to 12.56 tCO₂e, while online-advertising emissions decreased by 12.73% to 225.59 tCO₂e. Overall, Category I emissions reflected a combination of reductions in water supply, paper, books, online advertising, and several software services, alongside increases in catering, tissue paper, drinking water, and other software.
8. Baseline context: The 2021–2022 baseline coincided with COVID-19 lockdown conditions, during which Ajman University operated predominantly online. Comparisons with the baseline should therefore be interpreted cautiously, as increases in operational waste may partly reflect the subsequent resumption of normal on-campus activities.

7.7 Category 2: Capital Assets

The following tables describe Category 2 consumption and emissions from 2021 to 2025:

Category 2 Annual Consumption by Source					
Source	Unit	2021-2022 Baseline	2022-2023	2023-2024	2024-2025 Performance
Furniture	Euros	2,750,118.00	2,648,783.30	239,206.73	179,405.05
Medical Equipment	Euros	3,749,545.67	3,187,113.82	579,125.43	647,778.45
UPS	AED	12,193.40	150,000.00	0	2,558.85
IT Equipment	AED	475,781.47	173,668.00	115,504.40	177,098.55

Table 33. Category 2 annual consumption 2021 - 2025.

Category 2 Emissions by Source (tCO ₂ e)					
Sources	2021–2022 Baseline	2022–2023	2023–2024	2024–2025 Performance	Performance vs. Baseline
Furniture	4,990.64	4,806.75	434.09	325.57	-93.48%
Medical Equipment	1,356.96	1,153.42	209.59	234.43	-82.72%
UPS	1.59	20.52	-	0.34	-78.77%
IT Equipment	65.50	25.05	6.43	24.64	-62.38%
Total	6,414.70	6,005.72	660.10	584.97	-90.88%

Table 34. Category 2 emissions by source 2021 – 2025.

7.7.1 Category 2 Emissions Summary

1. Category 2 emissions totaled approximately 584.97 tCO₂e in 2024–2025, representing a reduction of 5,829.73 tCO₂e, or 90.88%, compared with the 2021–2022 baseline of 6,414.70 tCO₂e. This substantial decline was primarily attributable to significantly lower emissions from furniture and medical equipment.
2. Furniture remained the largest source of Category 2 emissions, contributing 325.57 tCO₂e, or approximately 55.66%, of the 2024–2025 total. Furniture emissions decreased by 108.52 tCO₂e, or 25.00%, compared with 2023–2024 and were 93.48% below the baseline.
3. Medical equipment was the second-largest source, accounting for 234.43 tCO₂e, or approximately 40.08%, of Category 2 emissions. Although emissions increased by 24.84 tCO₂e, or 11.85%, compared with 2023–2024, they remained 82.72% below the baseline.
4. Together, furniture and medical equipment accounted for approximately 95.74% of Category 2 emissions in 2024–2025, indicating that changes in these two sources largely determine the category's overall performance.
5. IT equipment emissions increased from 6.43 tCO₂e in 2023–2024 to 24.64 tCO₂e in 2024–2025, representing an absolute increase of 18.21 tCO₂e, or approximately 283.20%. Despite this increase, IT equipment emissions remained 62.38% below the baseline.
6. UPS emissions were limited to 0.34 tCO₂e in 2024–2025 and remained 78.77% below the baseline. Because no UPS emissions were reported in 2023–2024, a meaningful year-on-year percentage change cannot be calculated.
7. Overall, Category 2 maintained a significant reduction against the baseline. However, the latest-year increases in medical equipment and IT equipment partially offset the continued reduction in furniture emissions.
8. Baseline context: The 2021–2022 baseline coincided with COVID-19 lockdown conditions, during which Ajman University operated predominantly online. Comparisons with the baseline should therefore be interpreted cautiously, as increases in operational waste may partly reflect the subsequent resumption of normal on-campus activities.

7.8 Category 3: Fuel and Energy- Related Activities

Fuel- and energy-related activities include indirect emissions arising from the extraction, production, transportation, and distribution of fuels and purchased electricity that are not already accounted for under Scope 1 or Scope 2.

In previous reports, Category 3 was combined with Category 4, while Well-to-Tank (WTT) emissions were presented in a separate section. In this consolidated and restated report, Category 3 and Category 4 are reported separately, with the applicable WTT emissions incorporated within each category in accordance with the GHG Protocol. Accordingly, the separate WTT section has been omitted.

The following tables show the data related to Categories 3&4 from 2021 to 2025:

Category Emissions Summary by Source					
Sources	2021–2022 Baseline	2022–2023	2023–2024	2024–2025	Performance vs. Baseline
LPG WTT	92.65	92.65	59.649	54.2	-41.50%
Petrol WTT	13.467	10.803	20.19	24.24	80.00%
Diesel WTT	25.906	24.144	46.635	62.97	143.07%
Upstream emissions of purchased electricity	3,219.69	3,222.25	3,192.40	3,277.30	1.79%
T&D losses — purchased electricity	0.300	0.300	0.297	0.305	1.67%
Total Category 3	3,352.01	3,350.15	3,319.17	3,419.02	2.00%

Table 35. Category 3 emissions summary by source 2021 - 2025.

7.8.1 Category 3 Emissions Summary

1. Total Category 3 emissions reached 3,419.02 tCO₂e in 2024–2025, representing a moderate increase of 2.00% compared with the 2021–2022 baseline.
2. Upstream emissions from purchased electricity remained the dominant component, increasing slightly from 3,219.69 tCO₂e to 3,277.30 tCO₂e, or 1.79% above the baseline.
3. LPG WTT emissions declined substantially, decreasing from 92.65 tCO₂e in the baseline year to 54.20 tCO₂e in 2024–2025, representing a 41.50% reduction.
4. Petrol WTT emissions increased to 24.24 tCO₂e, which was 80.00% above the baseline of 13.47 tCO₂e.
5. Diesel WTT emissions increased from 25.91 tCO₂e to 62.97 tCO₂e, representing a 143.07% increase over the reporting period.
6. Transmission and distribution losses associated with purchased electricity remained minimal and broadly stable, increasing slightly from 0.300 tCO₂e to 0.305 tCO₂e.
7. Baseline context: The 2021–2022 baseline coincided with COVID-19 lockdown conditions, during which Ajman University operated predominantly online. Comparisons with the baseline should therefore be interpreted cautiously, as increases in operational waste may partly reflect the subsequent resumption of normal on-campus activities.

7.9 Category 4: Upstream T&D

Upstream Transportation and Distribution include indirect emissions arising from the transportation and distribution of purchased goods between suppliers and AU's operations using vehicles and facilities not owned or controlled by the University.

The following table shows the emissions related to Category 4:

Category 4 Emissions Summary					
Category 4 component	2021–2022 Baseline	2022–2023	2023–2024	2024–2025	Performance vs. Baseline
T&D — Purchased Goods	1.532	6.782	6.967	6.622	332.25%

Table 36. Category 4 emissions summary 2021 – 2025.

7.9.1 Category 4 Emissions Summary

1. Category 4 emissions increased from 1.532 tCO₂e in the 2021–2022 baseline year to 6.622 tCO₂e in 2024–2025, representing an increase of 332.25%. Emissions rose to 6.782 tCO₂e in 2022–2023 and reached 6.967 tCO₂e in 2023–2024 before declining slightly in the performance year.
2. Baseline context: The 2021–2022 baseline coincided with COVID-19 lockdown conditions, during which Ajman University operated predominantly online. Comparisons with the baseline should therefore be interpreted cautiously, as increases in operational waste may partly reflect the subsequent resumption of normal on-campus activities.

7.10 Category 5: Waste Generated in Operation

The following tables describe Category 5 consumption and emissions from 2021 to 2025:

Category 5 Consumption by Source					
Source	Unit	2021-2022 Baseline	2022-2023	2023-2024	2024-2025 Performance
Treated Greywater	m ³	18,800	18,800	18,800	18,800
Wastewater	m ³	42,015.38	4,669.70	5,589.45	2,558.25
General Waste	ton	41.6	204.38	211.45	220.00
Plastic Waste	ton	4.7	11.88	5	4.00
Medical Waste	ton	19.24	12.25	11.404	25.58
Food Waste	ton	1.4	8.47	7.135	6.92

Table 37. Category 5 consumption by source 2021 - 2025.

Category 5 Emissions by Source (tCO ₂ e)					
Source	2021 – 2022 Baseline	2022 – 2023	2023 – 2024	2024 – 2025	% Baseline Performance
Wastewater	0.66	0.69	0.68	0.70	5.30%
Wastewater (On-Site RO)	8.46	8.46	8.46	8.46	0.00%
General Waste	0.97	4.35	4.50	4.68	384.58%
Plastic Waste	0.17	0.25	0.11	0.09	-49.46%
Medical Waste	0.87	0.26	0.24	0.55	-37.71%
Food Waste	0.04	0.18	0.15	0.15	267.50%
Total	11.17	14.20	14.14	14.62	30.84%

Table 38. Category 5 emissions by source 2021 - 2025.

7.10.1 Category 5 Emissions Summary

1. Category 5 emissions totaled 14.616 tCO₂e in 2024–2025, representing an increase of 0.474 tCO₂e, or 3.35%, compared with 14.142 tCO₂e in 2023–2024. Compared with the 2021–2022 baseline of 11.171 tCO₂e, emissions increased by 3.446 tCO₂e, or 30.84%.
2. Across the reporting period, Category 5 emissions increased by 27.08% in 2022–2023, decreased marginally by 0.37% in 2023–2024, and increased by 3.35% in 2024–2025. Emissions remained within a relatively narrow range of approximately 14.1–14.6 tCO₂e during the latest three years.
3. Wastewater associated with the on-site reverse-osmosis system was the largest source, contributing 8.460 tCO₂e, or approximately 57.88%, of Category 5 emissions in 2024–2025. These emissions remained unchanged throughout the four reporting years.
4. General-waste emissions reached 4.683 tCO₂e in 2024–2025, accounting for approximately 32.04% of the category total. This represented an increase of 4.04% from 2023–2024 and 384.58% from the relatively low baseline.
5. Together, on-site reverse-osmosis wastewater and general waste accounted for approximately 89.92% of total Category 5 emissions in 2024–2025.
6. Medical-waste emissions increased from 0.243 tCO₂e in 2023–2024 to 0.545 tCO₂e in 2024–2025, while remaining 37.71% below the baseline.
7. Wastewater emissions increased slightly from 0.680 tCO₂e to 0.696 tCO₂e, representing an annual increase of approximately 2.35% and a baseline increase of 5.30%.
8. Plastic-waste emissions declined from 0.106 tCO₂e in 2023–2024 to 0.085 tCO₂e in 2024–2025, representing a reduction of approximately 19.81%. They remained 49.46% below the baseline.

9. Food-waste emissions decreased slightly from 0.152 tCO₂e to 0.147 tCO₂e during the latest year. Although this was 267.50% above the baseline, the corresponding absolute increase from the baseline was limited to approximately 0.107 tCO₂e.
10. Overall, Category 5 emissions remained relatively stable during the latest three reporting periods. The 2024–2025 change reflected increases in medical waste, general waste, and wastewater, accompanied by reductions in plastic- and food-waste emissions.
11. The baseline comparison should be interpreted in the context of the partial COVID-19 lockdown, during which campus attendance and associated waste generation were below normal operational levels.

7.11 Category 6: Business Travel

Business travel emissions were calculated for air travel, land travel, and associated hotel stays. Air travel emissions were based on passenger-kilometres using complete well-to-wake factors, including well-to-tank emissions and radiative forcing, with flights classified as short-haul or long-haul and adjusted by cabin class where available. Land travel emissions were calculated using complete well-to-wheel factors, including well-to-tank emissions, while hotel emissions were based on room-nights. As no business travel data were available for 2021–2022, emissions were estimated at 25% of the average emissions for 2022–2023 and 2023–2024 to reflect the limited travel activity during the lockdown-affected year. The following tables show Category 6 emissions from 2021 to 2025:

Business Travel 2021 - 2022		
Component	Estimated activity	Estimated emissions (tCO ₂ e)
Air travel	170,917 passenger-km	54.11
Hotel stays linked to air travel	81.6 room-nights	3.17
Air travel including hotel stays	—	57.28
Land travel	2,536 vehicle-km	0.53
Hotel stays - land travel	20.1 room-nights	1.28
Land travel including hotel stays	—	1.82
Total		59.09

Table 39. Business travel emissions 2021 - 2022.

Business Travel 2022-2023			
Category	Activity	Unit	Emissions tCO ₂ e
Air travel fuel	760,690.61	passenger-km	215.35
Land travel fuel	11,240.00	vehicle-km	2.36
Hotel stays - air trips	374.00	room-nights	15.34
Hotel stays - land trips	48.00	room-nights	3.06
Total			236.12

Table 40. Business travel emissions 2022 - 2023.

Business Travel 2023-2024			
Category	Activity	Unit	Emissions tCO ₂ e
Air travel fuel	606,644.61	passenger-km	217.50
Land travel fuel	9,050.00	vehicle-km	1.90
Hotel stays - air trips	279.00	room-nights	10.01
Hotel stays - land trips	113.00	room-nights	7.21
Total			236.62

Table 41. Business travel emissions 2023 - 2024.

Business Travel 2024-2025			
Category	Activity	Unit	Complete Emissions tCO ₂ e
Air travel fuel	1,087,230.00	passenger-km	306.04
Land travel fuel	18,878.00	vehicle-km	3.97
Hotel stays - air trips	332.00	room-nights	15.23
Hotel stays - land trips	138.00	room-nights	8.80
Total			334.04

Table 42. Business travel emissions 2024 - 2025.

7.11.1 Category 6 Emissions Summary

1. Total business travel emissions were estimated at 59.093 tCO₂e in 2021–2022, reflecting limited travel during the lockdown-affected year. This value is a high-uncertainty proxy based on 25% of the average emissions for 2022–2023 and 2023–2024.
2. Emissions increased to 236.117 tCO₂e in 2022–2023 as business travel resumed, then remained broadly stable at 236.624 tCO₂e in 2023–2024, representing an increase of only 0.21%.
3. Business travel emissions rose significantly to 334.040 tCO₂e in 2024–2025, an increase of 97.416 tCO₂e, or 41.17%, compared with 2023–2024.
4. Air travel, including associated hotel stays, was the dominant source, accounting for approximately 96%–98% of total business travel emissions across the reporting periods.
5. Air travel fuel emissions alone consistently represented approximately 91%–92% of total Category 6 emissions, making flight activity, distance, and cabin class the principal drivers of performance.
6. Land travel and associated hotel stays remained comparatively small, although their combined emissions increased from 5.426 tCO₂e in 2022–2023 to 12.774 tCO₂e in 2024–2025.
7. The calculations include complete fuel lifecycle emissions: well-to-wake factors including radiative forcing for air travel, well-to-wheel factors for land travel, and destination-based emission factors for hotel room-nights.
8. Baseline context: The 2021–2022 baseline coincided with COVID-19 lockdown conditions, during which Ajman University operated predominantly online. Comparisons with the baseline should therefore be interpreted cautiously, as increases in operational waste may partly reflect the subsequent resumption of normal on-campus activities.

7.12 Category 7: Employee & Students Commuting

7.12.1 Estimating Commuting Distance

Axosomatic designed a commuting survey to capture the main mode of transport used by students, staff, and faculty, together with their approximate one-way distance to Ajman University. Ajman University distributed the survey to its students, staff, and faculty and provided the collected responses for analysis.

Commuting distances for 2022–2023, 2023–2024, and 2024–2025 were estimated from these survey responses. Distance ranges were converted to representative midpoint values and doubled to determine the daily round-trip distance.

The calculations were completed separately for own vehicles, carpools, public transportation, university transportation, and taxis. Walking, cycling, and electric-scooter responses were included in determining the population distribution but were assigned a motorized commuting distance of 0.

Survey results were extrapolated separately for students, staff, and faculty based on the total population for each reporting period. The extrapolation factor was calculated by dividing the total population of each group by the number of survey respondents in that group. Both commuter numbers and travel distances were extrapolated by transport mode.

Annual commuting distance was calculated using 180 commuting days for students and faculty and 220 days for staff. The staff assumption was based on approximately 260 weekdays per year, less annual leave, public holidays, university closures, and other non-campus working days.

The 2021–2022 period was estimated separately because teaching was primarily online and staff and faculty attendance was restricted during the partial-lockdown period. In the absence of a commuting survey for that year, population-weighted transport-mode shares and average distances were derived from the three subsequent reporting periods and applied to the 2021–2022 populations of 5,430 students, 530 staff, and 284 faculty.

To reflect reduced campus attendance during 2021–2022, effective commuting days were estimated at 18 days for students, 110 days for staff, and 54 days for faculty, representing 10%, 50%, and 30% of their normal annual commuting days, respectively.

The 2021–2022 annual commuting distance was calculated independently for each transport mode using the estimated number of commuters, the average daily round-trip distance associated with that mode, and the applicable lockdown-adjusted campus attendance days. The tables below summarize the estimated distances for 2021–2022, 2022–2023, 2023–2024, and 2024–2025.

Estimated Commuting Distance 2021 - 2022				
Mode of Transport	Students (km/year)	Staff (km/year)	Faculty (km/year)	Total (km/year)
Own Vehicle - KM	1,944,281.80	1,439,665.70	426,000.20	3,809,947.70
Own Vehicle - Carpool	126,601.70	8,039.30	2,658.70	137,299.70
Public Transportation	270,711.30	20,230.20	4,370.10	295,311.70
University Transportation	545,804.60	22,134.60	857.2	568,796.40
Taxi	199,538.40	44,224.70	13,610.10	257,373.10
Total Distance	3,086,937.80	1,534,294.50	447,496.30	5,068,728.60

Table 43. Estimated commuting distance 2021 - 2022.

Estimated Commuting Distance 2022 - 2023				
Mode of Transport	Students (km/year)	Staff (km/year)	Faculty (km/year)	Total (km/year)
Own Vehicle - KM	20,648,007.72	3,052,466.04	1,369,310.40	25,069,784.16
Own Vehicle - Carpool	1,412,199.08	11,782.55	25,682.40	1,449,664.03
Public Transportation	2,255,195.47	23,565.10	-	2,278,760.57
University Transportation	3,933,983.15	55,770.74	3,132.00	3,992,885.89
Taxi	2,132,708.81	55,770.74	69,530.40	2,258,009.95
Total Distance	30,382,094.23	3,199,355.17	1,467,655.20	35,049,104.60

Table 44. Estimated commuting distance 2022 – 2023.

Estimated Commuting Distance 2023 - 2024				
Mode of Transport	Students (km/year)	Staff (km/year)	Faculty (km/year)	Total (km/year)
Own Vehicle - KM	20,188,246.47	1,825,120.00	1,333,080.00	23,346,446.47
Own Vehicle - Carpool	1,059,619.42	28,050.00	-	1,087,669.42
Public Transportation	2,278,274.22	76,670.00	-	2,354,944.22
University Transportation	4,706,337.57	37,400.00	-	4,743,737.57
Taxi	1,943,560.23	28,050.00	31,050.00	2,002,660.23
Total Distance	30,176,037.92	1,995,290.00	1,364,130.00	33,535,457.92

Table 45. Estimated commuting distance 2023 - 2024.

Estimated Commuting Distance 2024 - 2025				
Mode of Transport	Students (km/year)	Staff (km/year)	Faculty (km/year)	Total (km/year)
Own Vehicle - KM	21,395,087.50	2,255,550.00	1,412,611.20	25,063,248.70
Own Vehicle - Carpool	1,580,367.80	-	-	1,580,367.80
Public Transportation	4,131,287.50	-	42,213.60	4,173,501.10
University Transportation	8,829,446.00	16,500.00	5,148.00	8,851,094.00
Taxi	2,310,429.00	135,300.00	30,888.00	2,476,617.00
Total Distance	38,246,617.80	2,407,350.00	1,490,860.80	42,144,828.60

Table 46. Estimated commuting distance 2024 - 2025.

7.12.2 Commuting Emissions

The following tables present the commuting emissions for 2021 – 2022, 2022 – 2023, 2023 – 2024, and 2024 – 2025:

2021–2022 Commuting Emissions (tCO ₂ e)				
Mode of Commuting	Students	Staff	Faculty	Total
Own Vehicle - KM	419.479	310.608	91.910	821.996
Own Vehicle - Carpool	13.658	0.867	0.287	14.812
Public Transportation	32.875	2.457	0.531	35.863
University Transportation	66.283	2.688	0.104	69.075
Taxi	36.931	8.185	2.519	47.635
Total	569.225	324.805	95.350	989.380

Table 47. Commuting emissions 2021 - 2022.

2022–2023 Commuting Emissions (tCO ₂ e)				
Mode of Commuting	Students	Staff	Faculty	Total
Own Vehicle - KM	4,342.276	641.934	287.966	5,272.176
Own Vehicle - Carpool	148.493	1.239	2.701	152.432
Public Transportation	286.590	2.995	0.000	289.585
University Transportation	499.931	7.087	0.398	507.416
Taxi	395.809	10.350	12.904	419.064
Total	5,673.099	663.605	303.969	6,640.673

Table 48. Commuting emissions 2022 - 2023.

2023–2024 Commuting Emissions (tCO ₂ e)				
Mode of Commuting	Students	Staff	Faculty	Total
Own Vehicle - KM	4,257.701	384.918	281.147	4,923.766
Own Vehicle - Carpool	111.737	2.958	0.000	114.695
Public Transportation	307.453	10.347	0.000	317.800
University Transportation	635.120	5.047	0.000	640.167
Taxi	360.686	5.206	5.762	371.654
Total	5,672.697	408.475	286.909	6,368.081

Table 49. Commuting emissions 2023 - 2024.

2024–2025 Commuting Emissions (tCO ₂ e)				
Mode of Commuting	Students	Staff	Faculty	Total
Own Vehicle - KM	4,519.498	476.462	298.400	5,294.361
Own Vehicle - Carpool	166.918	0.000	0.000	166.918
Public Transportation	538.472	0.000	5.502	543.974
University Transportation	1,150.830	2.151	0.671	1,153.652
Taxi	428.769	25.109	5.732	459.611
Total	6,804.488	503.722	310.305	7,618.515

Table 50. Commuting emissions 2024 - 2025.

Year-on-Year Commuting Emissions Summary							
Reporting Period	Students (tCO ₂ e)	Staff (tCO ₂ e)	Faculty (tCO ₂ e)	Total (tCO ₂ e)	YoY Change (tCO ₂ e)	YoY Change (%)	Performance vs. 2021–2022
2021–2022	569.225	324.805	95.350	989.380	Baseline	Baseline	Baseline
2022–2023	5,673.099	663.605	303.969	6,640.673	5,651.293	571.20%	571.20%
2023–2024	5,672.697	408.475	286.909	6,368.081	-272.592	-4.10%	543.64%
2024–2025	6,804.488	503.722	310.305	7,618.515	1,250.434	19.64%	670.03%

Table 51. Year-on-Year commuting emissions.

Emissions by Commuting Mode (tCO ₂ e)						
Reporting Period	Own Vehicle - KM	Own Vehicle - Carpool	Public Transportation	University Transportation	Taxi	Total
2021–2022	821.996	14.812	35.863	69.075	47.635	989.380
2022–2023	5,272.176	152.432	289.585	507.416	419.064	6,640.673
2023–2024	4,923.766	114.695	317.800	640.167	371.654	6,368.081
2024–2025	5,294.361	166.918	543.974	1,153.652	459.611	7,618.515

Table 52. Emissions by commuting mode.

7.12.3 Commuting Emissions Key Summary Points

1. Total commuting emissions were estimated at 989.38 tCO₂e in 2021–2022, 6,640.67 tCO₂e in 2022–2023, 6,368.08 tCO₂e in 2023–2024, and 7,618.52 tCO₂e in 2024–2025.
2. The comparatively low 2021–2022 result reflects the partial-lockdown conditions, online teaching, and reduced campus attendance by students, staff, and faculty. It should therefore be interpreted as an exceptional operational year rather than a normal commuting baseline.
3. Emissions increased by 571.20% in 2022–2023 as regular campus operations and face-to-face teaching resumed. They then decreased slightly by 4.10% in 2023–2024, before rising by 19.64% in 2024–2025 to the highest level recorded during the four-year period.
4. Students were the principal source of commuting emissions. In 2024–2025, student commuting generated 6,804.49 tCO₂e, representing approximately 89.3% of total commuting emissions. Staff and faculty accounted for approximately 6.6% and 4.1%, respectively.
5. Travel by own vehicle was the dominant source across all reporting periods. In 2024–2025, own-vehicle commuting generated 5,294.36 tCO₂e, equivalent to approximately 69.5% of total commuting emissions.
6. University transportation was the second-largest commuting source in 2024–2025, producing 1,153.65 tCO₂e, or approximately 15.1% of the total. Its emissions increased substantially from 640.17 tCO₂e in 2023–2024, reflecting the higher estimated distance travelled through university transportation.

7. Public transportation, taxis, and carpooling contributed smaller shares of the 2024–2025 total, accounting for approximately **7.1%**, **6.0%**, and **2.2%**, respectively.
8. The overall increase in 2024–2025 was driven mainly by higher student commuting distances and increased travel through own vehicles, university transportation, public transportation, taxis, and carpools.
9. Despite the availability of shared and public transport options, the continued dominance of private vehicles indicates that initiatives promoting carpooling, university transportation, and lower-carbon travel modes could provide the greatest opportunity for reducing commuting emissions.
10. Baseline context: The 2021–2022 baseline coincided with COVID-19 lockdown conditions, during which Ajman University operated predominantly online. Comparisons with the baseline should therefore be interpreted cautiously, as increases in operational waste may partly reflect the subsequent resumption of normal on-campus activities.

8. Summary and Recommendations

This consolidated and restated GHG Inventory Report presents Ajman University's Scope 1, Scope 2, and Scope 3 emissions for the four academic years from 2021–2022 to 2024–2025. The 2021–2022 academic year is maintained as the baseline, while 2024–2025 represents the performance year. Comparisons with the baseline should be interpreted in the context of the partial COVID-19 lockdown, during which teaching was primarily delivered online and campus attendance, commuting, travel, and other operational activities were below normal levels.

8.1 Key Observations

1. Overall GHG emissions

Total GHG emissions amounted to **26,680.56 tCO₂e in 2024–2025**, representing an increase of **1,208.82 tCO₂e, or 4.75%**, compared with the 2021–2022 baseline of 25,471.74 tCO₂e. Emissions increased by **5.60%** from 2023–2024 but remained **4,104.58 tCO₂e below** the peak of 30,785.14 tCO₂e recorded in 2022–2023. The overall results show that emissions remained relatively close to the partial-lockdown baseline despite the full resumption of campus activities.

2. Strong Scope 1 performance

Scope 1 emissions decreased from 1,240.36 tCO₂e in the baseline year to **981.65 tCO₂e in 2024–2025**, representing a reduction of **258.71 tCO₂e, or 20.86%**. This improvement was supported by reductions of 41.06% in LPG emissions and 48.44% in refrigerant-leakage emissions. Scope 1 emissions were also **63.35 tCO₂e, or 6.06%, below** the applicable 2024–2025 annual target.

3. Changes in mobile-combustion emissions

Mobile-combustion emissions increased from 167.23 tCO₂e in the baseline year to **360.91 tCO₂e in 2024–2025**, representing an increase of 115.81%. Petrol emissions increased by 80.78% and diesel emissions by 131.74% from the baseline. These results provide a clear basis for continuing vehicle-level fuel monitoring, route planning, preventive maintenance, and the gradual adoption of lower-emission fleet options.

4. Stable Scope 2 emissions

Scope 2 emissions remained broadly stable across the reporting period, increasing by **1.79%**, from 12,576.39 tCO₂e in the baseline year to **12,801.41 tCO₂e in 2024–2025**. Scope 2 accounted for approximately **48.0% of total emissions** and was 2,205.41 tCO₂e, or 20.81%, above the 2024–2025 annual target. Reductions at several buildings were balanced by increases at facilities including 5614 Student Hub, 4086 J1, 4092 Female Hostel, SZC, and J2 plus Sports Field.

5. Improvement in operational efficiency indicators

Energy consumption per capita decreased from 3,425.94 kWh in the baseline year to **3,267.19 kWh in 2024–2025**, representing an improvement of approximately 4.63%. Operational carbon intensity per FTE campus user also decreased from 2.18 to **2.03 tCO₂e**, an improvement of approximately 6.88%. These indicators show improved operational efficiency relative to the University's population despite the modest increase in absolute Scope 2 emissions.

6. Scope 3 emissions profile

Scope 3 emissions reached **12,897.50 tCO₂e in 2024–2025**, representing an increase of **10.66% from the baseline** and **10.17% from 2023–2024**. Scope 3 accounted for approximately **48.34% of AU's total GHG emissions**. The results reflected increased commuting, business travel, and other indirect activities associated with normal campus operations, moderated by substantial reductions in capital-goods emissions.

7. Commuting as the largest Scope 3 source

Employee and student commuting generated **7,618.52 tCO₂e in 2024–2025**, accounting for approximately **59.07% of Scope 3 emissions** and **28.55% of total institutional emissions**. Students contributed approximately 89.3% of commuting emissions, while travel by own vehicle accounted for approximately 69.5% of the commuting total. University transportation was the second-largest commuting mode, representing approximately 15.1%.

8. Fuel- and energy-related activities

Fuel- and energy-related activities totaled **3,419.02 tCO₂e in 2024–2025**, representing approximately **26.51% of Scope 3 emissions** and an increase of 2.00% from the baseline. Upstream emissions from purchased electricity remained the dominant component. Accordingly, energy-efficiency and renewable-electricity initiatives can contribute to reductions in both Scope 2 and the related Scope 3 emissions.

9. Performance across other Scope 3 categories

Purchased-goods and services emissions decreased by **16.50%** from 2023–2024 to 919.72 tCO₂e in 2024–2025, while remaining 11.20% above the baseline. Capital-goods emissions recorded the largest long-term reduction, decreasing by **90.88%** from the baseline to 584.97 tCO₂e. Business-travel emissions increased by 41.17% in the latest year, while waste emissions increased moderately by 3.35%. Upstream transportation and distribution emissions decreased slightly during 2024–2025.

10. Campus resource-use indicators

Water consumption per FTE campus user decreased from 9.58 m³ in the baseline year to **3.15 m³ in 2024–2025**, representing a reduction of approximately 67.09%. Waste generated per campus user increased from 10.54 kg to **37.85 kg**, partly reflecting the return to normal campus activities and possible changes in waste-data coverage. Green space remained constant at 4.00% of campus area, while the number of trees remained unchanged at 4,237.

11. Performance against the emissions-reduction pathway

AU's 2024–2025 total emissions were **5,220.56 tCO₂e, or 24.33%, above** the annual target of 21,460.00 tCO₂e. Scope 1 performed 6.06% better than its target, while Scope 2 and Scope 3 were 20.81% and 31.35% above their respective annual targets. These results identify Scope 2 and Scope 3 as the principal areas for progressively strengthening alignment with the planned reduction pathway.

12. Improvement in inventory completeness and data maturity

The consolidated inventory provides a more complete representation of AU's direct, energy-related, and value-chain emissions than the earlier annual reports. Expanded Scope 3 datasets, lifecycle-based calculations, commuting surveys, and more detailed procurement information strengthen AU's capacity to identify emissions sources, monitor performance, and make evidence-based reduction decisions.

8.2 Recommendations

1. Adopt and implement the Axosomatic Emissions Reduction Strategy

AU is recommended to adopt the separate document entitled "**Axosomatic Emissions Reduction Strategy 2025–2030**" as the principal implementation framework for translating the findings of this inventory into prioritized initiatives, annual action plans, assigned responsibilities, performance indicators, implementation schedules, budgets, and periodic management reviews.

2. Sustain the reductions achieved in Scope 1

The reductions in LPG and refrigerant-leakage emissions can be maintained through accurate consumption records, refrigerant registers, leak-detection and repair procedures, preventive maintenance, and the phased replacement of high-global-warming-potential refrigerants during planned equipment renewal.

3. Strengthen fleet efficiency and lower-emission transport

Vehicle-level records covering fuel use, mileage, maintenance, routes, and utilization should be maintained to support fleet-efficiency monitoring. AU may also continue assessing electric, hybrid, and other lower-

emission vehicle options as part of its fleet-renewal planning.

4. Advance energy efficiency and renewable-electricity opportunities

AU should continue comprehensive energy audits, building-level energy monitoring, HVAC optimization, enhanced building controls, efficient lighting, equipment scheduling, and preventive maintenance. Initial attention may be directed toward the buildings with the highest emissions and the largest increases during the reporting period. Feasible on-site renewable-energy generation and renewable-electricity procurement opportunities should also be assessed.

5. Develop an integrated sustainable-mobility programme

A sustainable-mobility programme should focus primarily on student commuting. Measures may include annual commuting surveys, transport-origin mapping, optimized university-bus routes, improved vehicle occupancy, carpooling programmes, preferred parking for shared vehicles, public-transport partnerships, EV-charging infrastructure, and awareness initiatives promoting lower-emission travel choices.

6. Coordinate Scope 2 and Scope 3 energy-reduction measures

Because upstream purchased-electricity emissions represent the largest component of Category 3, energy-efficiency and renewable-electricity initiatives should be assessed for their combined effect on Scope 2 and fuel- and energy-related Scope 3 emissions.

7. Strengthen sustainable procurement and supplier engagement

Environmental and carbon-related criteria should be incorporated into procurement policies, tender evaluations, and supplier contracts. Priority engagement may focus on software and cloud services, online advertising, catering, paper products, furniture, IT equipment, and medical equipment. Product durability, repairability, reuse, lifecycle cost, and supplier emissions information should be considered in major purchasing decisions.

8. Preserve the reduction achieved in capital-goods emissions

Lifecycle-based purchasing, asset-utilization planning, equipment maintenance, repair, reuse, and coordinated capital-expenditure planning can help AU maintain the substantial reduction achieved in capital-goods emissions while meeting institutional equipment and infrastructure requirements.

9. Introduce carbon-conscious business-travel measures

Travel-management procedures may consider trip necessity, virtual alternatives, route efficiency, travel distance, cabin class, and associated emissions. Direct routes and economy-class travel may be preferred where operationally appropriate. Centralized records should be maintained for routes, distances, passenger numbers, cabin classes, transport modes, and hotel nights.

10. Continue improving waste prevention and diversion

AU should continue strengthening waste segregation, reuse, recycling, plastic reduction, and food-waste prevention. Periodic waste-composition audits and verified contractor records covering waste weight and treatment methods would support both operational improvement and more accurate emissions calculations.

11. Maintain water-efficiency and climate-resilient landscaping measures

AU should continue leakage detection, water-efficient fixtures, irrigation optimization, treated-water use, and monitoring of high-consumption facilities. Landscaping plans may prioritize native and drought-tolerant species, shade trees, biodiversity, and efficient irrigation while maintaining the quality of campus green spaces.

12. Formalize GHG data governance and annual action planning

AU should define data owners, reporting schedules, supporting-document requirements, calculation responsibilities, review procedures, approval authority, and evidence-retention requirements for every emissions source. Each reduction initiative should include an accountable owner, implementation timeline,

required budget, anticipated emissions reduction, data source, progress status, and verification method.

13. Review targets and performance annually

AU should review its emissions trajectory annually using absolute emissions, year-on-year changes, performance against the baseline and annual targets, normalized indicators, and changes in institutional activity. The formal 2021–2022 baseline may be retained for reporting continuity, while post-lockdown reference data and normalized performance indicators may support internal operational planning.

Concluding Statement

Ajman University recorded measurable progress in several areas, including Scope I emissions, energy and carbon intensity per campus user, water efficiency, capital goods, purchased goods, paper consumption, and selected waste streams. Total emissions in 2024–2025 remained relatively close to the baseline and substantially below the 2022–2023 peak despite the full resumption of campus operations. Building on these results through the implementation of the **Axosomatic Emissions Reduction Strategy 2025–2030**, supported by clear governance, reliable data, annual action plans, and periodic performance review, will provide AU with a structured basis for progressively reducing emissions and advancing toward its long-term Net-Zero objectives.

ANNEX I: INTRODUCTION TO GHG EMISSIONS¹²

The GHG emissions consist of gases that trap heat in the atmosphere and contribute to the warming of the Earth's surface, causing climate change. The most common gases monitored are carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), and fluorinated gases (HFCs, PFCs, and SF₆).

Carbon dioxide enters the atmosphere through burning fossil fuels, solid waste, trees, and other biological materials and certain chemical reactions, and is removed from the atmosphere when it is absorbed by plants as part of the biological carbon cycle.

Methane is emitted during the production and transport of coal, natural gas, and oil, as a result from livestock and other agricultural practices, land use, and by the decay of organic waste in municipal solid waste landfills.

Nitrous oxide is emitted during agricultural, land use, and industrial activities; combustion of fossil fuels and solid waste; as well as during treatment of wastewater.

Fluorinated gases are synthetic greenhouse gases that are emitted from a variety of household, commercial, and industrial applications, and processes. The sources of fluorinated gases are:

1. HFCs gas is used in refrigeration and air conditioning systems, foam insulation, aerosols, fire protection, and solvents.
2. PFCs gas is used in semiconductor manufacturing, aluminum production; production of certain consumer products such as non-stick cookware, stain-resistant textiles, and fire-fighting foam; refrigeration and air-conditioning system.
3. SF₆ is used in magnesium and aluminum production.

I Scope 1: Direct GHG Emissions

Scope 1 emissions are direct GHG emissions that occur from sources controlled or owned by an organization, such as emissions associated with fuel combustion in boilers, furnaces, vehicles, chemical production, or during research processes.

2 Scope 2: Indirect GHG Emissions

Scope 2 accounts for GHG emissions from the generation of purchased electricity consumed by the company. Purchased electricity is defined as electricity that is purchased or otherwise brought into the organizational boundary. Scope 2 emissions physically occur at the facility where electricity is generated. In other words, the consumption of electricity by an organization constitutes Scope 2 indirect GHG emission.

3 Scope 3: Indirect GHG Emissions

Scope 3 is an optional reporting category that allows for the treatment of all other indirect emissions. It is the consequence of the activities of the company but occurs from sources not owned or controlled by the company. Some examples of scope 3 activities are extraction and production of purchased materials; transportation of purchased fuels; and use of sold products and services, business travel, and employee commuting to and from the organization's premises.

¹² [Overview of Greenhouse Gases | US EPA](#)

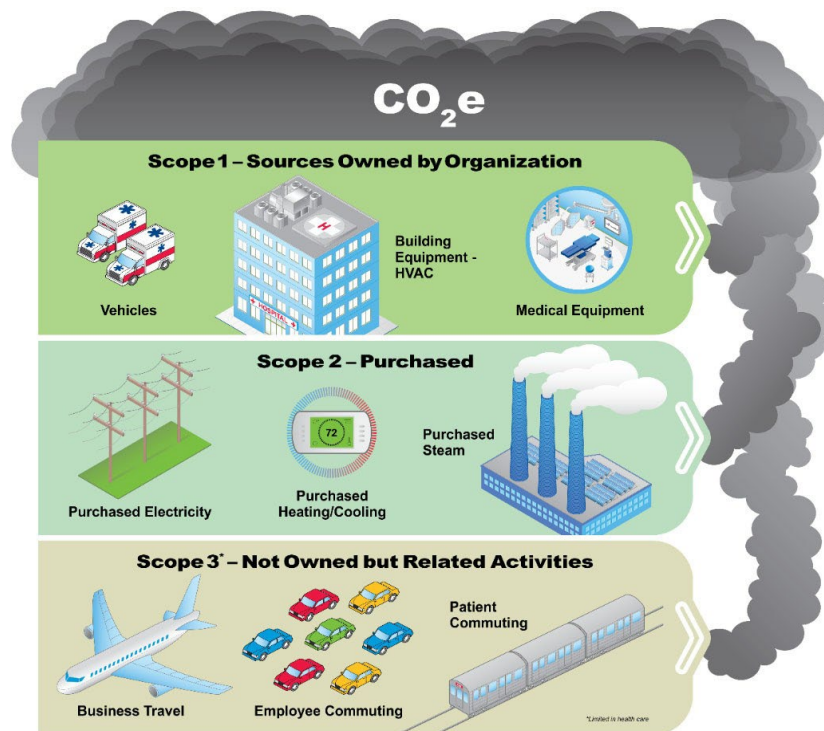
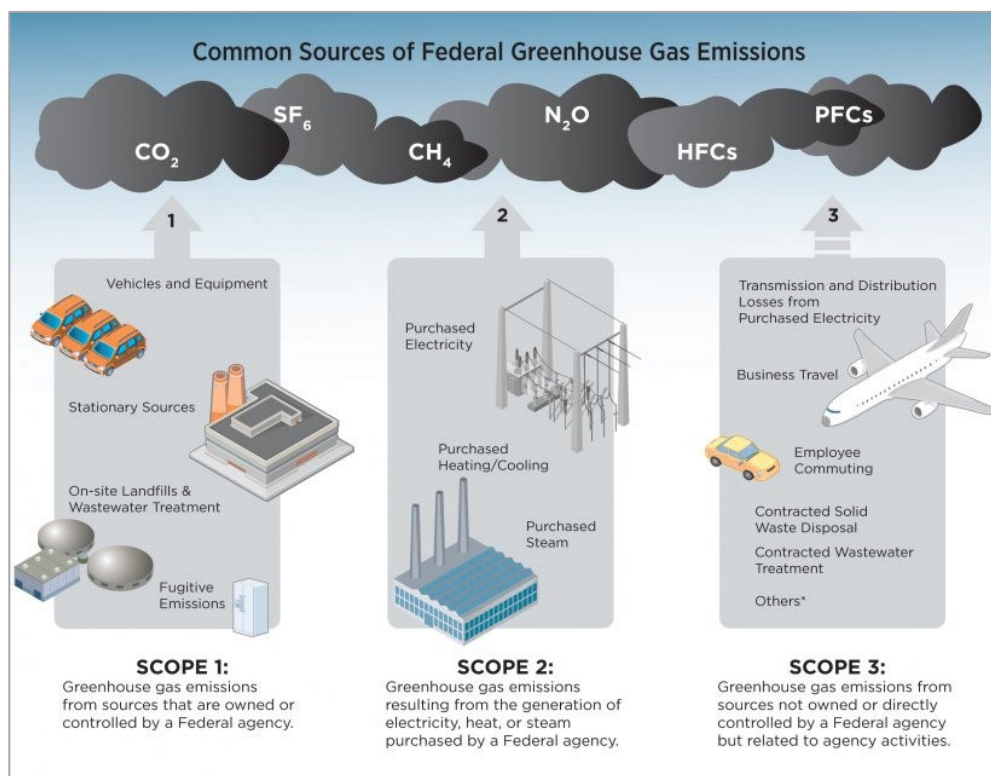
Figure 2. Illustration of CO₂e sources. Source US EPA.

Figure 3. Illustration of sources of GHG gases. Source US EPA.

4 Global Warming Potentials¹³

Global warming potential (GWP) is a measure used to compare the impact of different greenhouse gases on global warming over a specific period of time, typically 20, 100, or 500 years. It quantifies how much a particular greenhouse gas can contribute to the greenhouse effect and global warming compared to carbon dioxide (CO₂), which is often used as a reference gas with a GWP of 1.

The concept of GWP is important for understanding and addressing climate change because it allows us to assess the relative contributions of various greenhouse gases to the warming of the Earth's atmosphere. Different greenhouse gases have varying abilities to trap heat, and their lifetimes in the atmosphere also influence their warming potential.

Carbon dioxide (CO₂) is considered as the reference gas with a GWP of 1. Other greenhouse gases are compared to CO₂ in terms of their warming potential. For example, methane (CH₄) has a GWP of about 27-30 over 100 years, which means it is estimated to have an average of 28.5 times the warming effect of CO₂ over that period.

GWP values can be calculated over different time horizons, such as 20, 100, or 500 years. Shorter time horizons emphasize the short-term impact of gases that might have higher warming potential but dissipate more quickly, while longer time horizons consider the longer-term effects of gases with longer atmospheric lifetimes.

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The following table shows the GWP – 100 years for the most common gases:

GHG	GWP (100 years)
Carbon dioxide (CO ₂)	1
Methane (CH ₄)	27 - 30
Nitrous oxide (N ₂ O)	298
Hydrofluorocarbons (HFCs)	See Annex II
Perfluorocarbons (PFCs)	See Annex II
Sulphur hexafluoride (SF ₆)	22,800

Table 53. List of common gases and their GWP 100 years.

¹³ <https://www.epa.gov>

ANNEX II: GLOBAL WARMING POTENTIAL

Lifetimes, radiative efficiencies and direct (except for CH₄) GWPs relative to CO₂. For ozone-depleting substances and their replacements, data are taken from IPCC/TEAP (2005) unless otherwise indicated.

Industrial Designation Common Name (years)	Chemical Formula	Lifetime (years)	Radiative Efficiency (W m ⁻² ppb ⁻¹)	Global Warming Potential for Given Time Horizon or			
				SAR [‡] (100-yr)	20-yr	100-yr	500-yr
Carbon dioxide	CO ₂	See below ^a	1.4x10 ⁻⁵	1	1	1	1
Methane ^c	CH ₄	12 ^c	3.7x10 ⁻⁴	21	72	25	7.6
Nitrous oxide	N ₂ O	114	3.03x10 ⁻³	310	289	298	153
Substances controlled by the Montreal Protocol							
CFC-11	CCl ₃ F	45	0.25	3,800	6,730	4,750	1,620
CFC-12	CCl ₂ F ₂	100	0.32	8,100	11,000	10,900	5,200
CFC-13	CClF ₃	640	0.25		10,800	14,400	16,400
CFC-113	CCl ₂ CClF ₂	85	0.3	4,800	6,540	6,130	2,700
CFC-114	CClF ₂ CClF ₂	300	0.31		8,040	10,000	8,730
CFC-115	CClF ₂ CF ₃	1,700	0.18		5,310	7,370	9,990
Halon-1301	CBrF ₃	65	0.32	5,400	8,480	7,140	2,760
Halon-1211	CBrClF ₂	16	0.3		4,750	1,890	575
Halon-2402	CBrF ₂ CBrF ₂	20	0.33		3,680	1,640	503
Carbon tetrachloride	CCl ₄	26	0.13	1,400	2,700	1,400	435
Methyl bromide	CH ₃ Br	0.7	0.01		17	5	1
Methyl chloroform	CH ₃ CCl ₃	5	0.06		506	146	45
HCFC-22	CHClF ₂	12	0.2	1,500	5,160	1,810	549
HCFC-123	CHCl ₂ CF ₃	1.3	0.14	90	273	77	24
HCFC-124	CHClFCF ₃	5.8	0.22	470	2,070	609	185
HCFC-141b	CH ₃ CCl ₂ F	9.3	0.14		2,250	725	220
HCFC-142b	CH ₃ CClF ₂	17.9	0.2	1,800	5,490	2,310	705
HCFC-225ca	CHCl ₂ CF ₂ CF ₃	1.9	0.2		429	122	37
HCFC-225cb	CHClFCF ₂ CClF ₂	5.8	0.32		2,030	595	181
Hydrofluorocarbons							
HFC-23	CHF ₃	270	0.19	11,700	12,000	14,800	12,200
HFC-32	CH ₂ F ₂	4.9	0.11	650	2,330	675	205
HFC-125	CHF ₂ CF ₃	29	0.23	2,800	6,350	3,500	1,100
HFC-134a	CH ₂ FCF ₃	14	0.16	1,300	3,830	1,430	435
HFC-143a	CH ₃ CF ₃	52	0.13	3,800	5,890	4,470	1,590
HFC-152a	CH ₃ CHF ₂	1.4	0.09	140	437	124	38
HFC-227ea	CF ₃ CHFCF ₃	34.2	0.26	2,900	5,310	3,220	1,040
HFC-236fa	CF ₃ CH ₂ CF ₃	240	0.28	6,300	8,100	9,810	7,660
HFC-245fa	CHF ₂ CH ₂ CF ₃	7.6	0.28		3,380	1030	314
HFC-365mfc	CH ₃ CF ₂ CH ₂ CF ₃	8.6	0.21		2,520	794	241
HFC-43-10mee	CF ₃ CHFCF ₂ CF ₃	15.9	0.4	1,300	4,140	1,640	500
Perfluorinated compounds							
Sulphur hexafluoride	SF ₆	3,200	0.52	23,900	16,300	22,800	32,600
Nitrogen trifluoride	NF ₃	740	0.21		12,300	17,200	20,700
PFC-14	CF ₄	50,000	0.10	6,500	5,210	7,390	11,200
PFC-116	C ₂ F ₆	10,000	0.26	9,200	8,630	12,200	18,200

Table 54. GWP 100 years for common gases.