جـامعـة الشـارقـة
UNIVERSITY OF SHARJAH

Race to Zero Action Plan Report 2024

His Highness

Sheikh Sultan bin Ahmed Al Qasimi

Deputy Ruler of Sharjah

President of the University of Sharjah

The University of Sharjah

The University of Sharjah (UOS) was established in 1997 by its Founder, His Highness Sheikh Dr. Sultan Bin Muhammad Al-Qasimi, Ruler of Sharjah, to meet the Emirate's educational aspirations. Under his leadership, the University set its sights on becoming a leading academic institution in the Middle East and globally.

His Highness Sheikh Sultan Bin Ahmed Al-Qasimi has since taken on the role of President of the University, continuing to uphold the same visionary approach and building upon the foundation laid by the Founder. The University remains committed to embodying these directives by actively working to reduce the effects of global warming, supporting sustainability projects, and promoting sustainability in education and research. These efforts are also physically implemented throughout the campus.

In line with this vision, the UOS Sustainability Office was established in 2017. This office plays a vital role in fostering a culture of sustainability, minimizing environmental impacts, and integrating sustainability into all aspects of campus life and operations.

Aim of the Progress Report 2024

- ✓ Verifying and updating the CO2 footprint data.
- ✓ Evaluating progress since the baseline year (2021/2022).
- ✓ Making modifications based on university-owned leases.
- ✓ Noting the exclusion of water in the previous report.
- ✓ Expanding the inclusion of Scope 3 emissions in future calculations.
- ✓ Assessing progress toward the mid-term goal of reducing GHG emissions by 50% by 2030.
- ✓ Updating the action plan as needed to ensure alignment with sustainability goals.

Foreword

Professor Hamid M.K. Al Naimiy,

Chancellor of the University of Sharjah

"As Chancellor of the University of Sharjah, I am honored to present this update on our commitment to the Race to Zero initiative, a global movement addressing the pressing challenges of climate change. Our dedication to reducing the effects of global warming is reflected in our efforts to advance sustainability across all facets of our operations.

Sustainability is not just a responsibility—it is an opportunity to inspire change. Through innovative projects and the integration of sustainability into education, research, and campus life, we are fostering a culture of environmental stewardship and transforming our campus into a living laboratory for sustainable solutions.

Our vision is to position the University of Sharjah as a global benchmark for sustainability excellence in higher education, aligning with the UAE's goals of achieving net zero by 2050 and reducing emissions by 50% by 2030.

I am proud of the progress outlined in this report, showcasing the tireless efforts of our community. Together, we are advancing knowledge, cultivating sustainability leaders, and driving meaningful change"

Recognition of Sustainability Ranking Systems

The University of Sharjah (UoS) takes pride in its active participation in internationally recognized sustainability ranking systems, reaffirming our commitment to environmental stewardship and sustainable development. These rankings evaluate universities' efforts in implementing sustainability across their academic, research, and operational domains, providing an important benchmark for excellence.

FIRST Arab university to earn a **Gold Rating** in AASHE's STARS program, highlighting our commitment to sustainability in academics, engagement, operations, and planning in 2022.

FIRST place in the UAE in the UI GreenMetric World University Rankings for seven consecutive years (2017–2023).

FIRST place in the UAE for three years in row in 2022. Based on the Sustainable Development Goals (SDGs).

These achievements reflect the University of Sharjah's unwavering commitment to sustainability and its vision of becoming a global leader in sustainable higher education. Our distinguished performance in these rankings not only highlights our current efforts but also motivates us to continue driving meaningful change and fostering a culture of sustainability on a regional and global scale.

University of Sharjah's Commitment to the Race to Zero Initiative: A Strategic Path to Achieving Net Zero

The University of Sharjah is fully committed to fulfilling its pledge to achieve net zero GHG emissions as soon as possible, and by mid-century at the latest, in alignment with global efforts to limit warming to 1.5°C. This commitment supports the UAE's goal of reaching net zero by 2050.

To ensure progress toward this ambitious target, we have updated our sustainability inventory to identify key areas for improvement. This allows us to prioritize actions and set a clear path toward meeting our interim target of a 50% reduction in CO2 emissions by 2030, as outlined in the IPCC Special Report on Global Warming of 1.5°C. By taking these steps, we are maximizing our contribution to the global climate action effort.

"Because We Believe on our Role and Responsibility to Creating a Sustainable Future!"

معـاً نصنـع الفـرق
MAKING A DIFFERENCE TOGETHER

Emissions Inventory

Scope1: Source1

Source1: University fleet

Vehicles owned by the University of Sharjah (UOS):

- 46 Bus
- 34 Car
- 17 Pickup

Bus/Shuttle	
Number of shuttles operating in the university	46
Total trips of each shuttle service each day	9
Approximate travel distance of a vehicle each day inside campus only (in kilometers) – Please double check this number (4 Kms is low – The number should be realistic)	4
Number of working days per year (10 months, 4 working days a week)	160
Coefficient to calculate the emission in metric tons per 100 km for a bus (source: GreenMetric) https://www.scribd.com/document/691629007/UI-GreenMetric-Carbon-Footprint	0.01
metric tons CO_2/year	**26.49**

University Cars	
Number of cars operating in the university	34
Total trips of each vehicle each day	2
Approximate travel distance of a vehicle each day inside campus only (in kilometers)	4
Number of working days per year (10 months, 4 working days a week)	160
Coefficient to calculate the emission in metric tons per 100 km for a car (source: GreenMetric) https://www.scribd.com/document/691629007/UI-GreenMetric-Carbon-Footprint	0.02
metric tons CO_2/year	**8.7**

Pickup	
Number of shuttles operating in the university	17
Total trips of each shuttle service each day	3
Approximate travel distance of a vehicle each day inside campus only (in kilometers)	3
Number of working days per year (10 months, 4 working days a week)	160
Coefficient to calculate the emission in metric tons per 100 km for a bus (source: GreenMetric) https://www.scribd.com/document/691629007/UI-GreenMetric-Carbon-Footprint	0.01
metric tons CO_2/year	**2.45**

CO2= 26.49+8.7+2.45= 37.64 tons

Emissions Inventory

Scope1: Source2

➢ Source2: Diesel backup generators at UOS:

The University of Sharjah's diesel generators are intended for backup during power interruptions, which are rare. They are only run for approximately ten minutes as part of routine maintenance and testing.

- Average Running Time = 0.1 hr./month
- Energy (kWh) consumed by the generator: E = P (kVA or kW) x time (hr.)
- Fuel consumption of Diesel generator (as per the capacity and minimum load for testing)
- Conversion factor: 1 gallon = 3.78 L
- Emission factor: 3 kg CO2/Liter
- Total energy from all the Diesel Generators: 7572 kWh/year

CO2= Energy*Diesel*Emission Factor= 645.6 L/year x 3 kg CO2/L = 1936.8 kg CO2/year = 1.94 metric tons CO_2/year

Sl.No#	Descriptions	Quantity	Power	Energy (kwh)/year	gal/hr(factors)	Running hrs in a year	Gal per year (gal)
1	Generator at M11-B 016, P200, 250KVA	01 No.	250	300	5.7	1.2	6.84
2	Generator at M2 GR, GE150, 150KVA	01 No.	150	180	3.6	1.2	4.32
3	Generator at W2 042, GE 150 - CATER PILLER 150KVA	01 No.	150	180	3.6	1.2	4.32
4	Generator at M23-028, 150KVA - CUMMINS	01 No.	150	180	3.6	1.2	4.32
5	Generator at M24, 150KVA - CUMMINS	01 No.	150	180	3.6	1.2	4.32
6	Generator at M26, 150KVA - VOLA PENTA	01 No.	150	180	3.6	1.2	4.32
7	Generator at M27, 150KVA - CUMMINS	01 No.	150	180	3.6	1.2	4.32
8	Generator at M28, 90KVA - CUMMINS	01 No.	90	108	2.6	1.2	3.12
9	Generator at M29, 120KVA - CUMMINS	01 No.	120	144	3.1	1.2	3.72
10	Generator at M16, 320KVA - CAT	01 No.	320	384	7.4	1.2	8.88
11	Generator at W16, 320KVA - CAT	01 No.	320	384	7.4	1.2	8.88
12	Generator at Lab - W12, 100KVA - PERKINS	01 No.	100	120	2.6	1.2	3.12
13	Generator at Lab - M12, 60KVA - PERKINS	01 No.	60	72	1.8	1.2	2.16
14	Generator at Institute of Medical Research - M32, 1500KVA, PERKINS Gen 1	01 No.	1500	1800	32.2	1.2	38.64
15	Generator at Institute of Medical Research - M32, 1500KVA, PERKINS Gen 2	01 No.	1500	1800	32.2	1.2	38.64
16	Generator at M31, 250KVA - PERKINS	01 No.	250	300	5.7	1.2	6.84
17	Generator at Planetarium, 420KVA - PERKINS	01 No.	420	0	0	1.2	0
18	Generator at UDHS, 1675KVA - CUMMINS	01 No.	1675	0	0	1.2	0
19	Generator at M3A, 400KVA - PERKINS	01 No.	400	480	8.9	1.2	10.68
20	Generator at M1A, 500KVA - PERKINS	01 No.	500	600	11	1.2	13.2
			Total Energy Consumed:	**7572**		**Total Fuel Consumed (gal):**	**170.64**
						Total Fuel Consumed (L):	**645.0192**

Resource: https://www.generatorsource.com/Diesel_Fuel_Consumption.aspx

Emissions Inventory

Scope2: Source1

- **Source1: Purchased Electricity**

Total annual energy purchased from the local grid (SEWA): 59,255,365 kWh/year in 2023

Emission factor for electricity = 0.709 kg CO2/kWh

CO2 emissions: 42,012 tons/year – It is clear that most of the GHGs emissions are from the Scope 2, Source 1 (Electricity)

CO2= Energy* *Emission Factor= 59,255,365/1000*0.709= 42,012 metric tons CO_2/year

Emission Factor: https://www.epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references

Emissions Inventory

Scope2: Source1

- **Source2: Purchased Water**

Annual water consumption: 935004.94 m^3 /year

Energy needed to produce one cubic meter of water is 3.5Kwh/m^3

Emissions Factor, as per the energy needed (0.709 kg CO2/kWh)

CO2= Water Purchased * Energy* *Emission Factor= 935004.94*3.5/1000*0.709=

2,320 metric tons CO_2/year

Sources: https://www.amtaorg.com/wp-content/uploads/07_Membrane_Desalination_Power_Usage_Put_In_Perspective.pdf

Emissions Inventory

Scope3: Source1 (Downstream)

➢ Source1: Generated Waste

Total organic waste generated (non-municipal): 10,124.6 tons

Total organic waste generated (municipal): 1,772.3 tons

Total treated organic waste: 9,907.2 tons

Total landfilled organic waste: 1,989.7 tons

Assumptions:

- Biogenic carbon emissions are excluded.
- Global warming potential for methane = 28
- Methane fraction in landfill gas = 0.5

- **Methane emissions from organic waste disposed of in landfills = 91.9 tons CH_4**

CO_2= CH_4 Emissions * GWP of CH_4 = 91.9 * 28 = 2,573.8 metric tons CO_2/year

Resource: https://www.ipcc.ch/site/assets/uploads/2018/03/5_Waste-1.pdf

Emissions Inventory

Scope3: Source2 (Upstream)

- **Source2: Purchased Paper**

Amount of paper purchased: 1753 boxes of A4 paper

Amount of paper purchased: 82 boxes of A3

A4 box is 4 kg

A3 box is 12.8 kg

Emissions Factor: 1 ton of papers generate 1.5 metric tons of CO2

Total weight of papers: 7012+ 94.8= 7106.8 kg = 7.1 tons

CO2= 7.1*1.5= 10.65 metric tons CO_2/year

Emissions Inventory

Scope3: Source3 (Upstream)

- **Faculty: 783**
- **Staff: 1713**
- **Students: 19391**
- **UoS population: 21887**
- **5000 students staying in the University dorms use the buses (calculated in scope1)**
- **95% of the faculty staying in the University Housing area (744 faculty)**
- **3000 students use the shuttles provided by the city services, distance 25 km**
- **744 faculty travel in average 4 km per day in 160 working days per year**
- **16143-member, travel in average 25 km per day for 160 working days per year**

Coefficient is 0.01 for buses and shuttles in metric tons per 100 km (Source: GreenMetric)

Coefficient is 0.02 for cars in metric tons per 100 km (Source: GreenMetric)

CO2= [(744*4*160*0.02) + (3,000*25*160*0.01) + (16,143*25*160*0.02)] /100 = 14,209.63 metric tons CO_2/year

Summary

Emissions Inventory Summary in 2024

Scope	Source	Performance Year (2024) CO2 metric tons
Scope 1	Source 1	37.64
	Source 2	1.94
Scope 2	Source 1	42,012
	Source 2	2320
Scope 3	**Upstream:**	
	Source 1	10.65
	Source 2	14,209
	Downstream	
	Source 3	2,574
Total		**61,165.23**

Summary

Progress

Scope	Source	Baseline Year (2022)	Performance Year (2023)	Progress
Scope 1	Source 1	73.88	37.64	49%
	Source 2	30.59	1.94	94%
Scope 2	Source 1	48437.94	42,012	13%
	Source 2	Not measured	2320	NA
Scope 3	**Upstream:**			
	Source 1	21.42	10.65	50%
	Source 2	Not measured	14,209	NA
	Downstream			
	Source 3	3305.00	2,574	22%
Total		**51,868.83**	**61,165.23**	

The average progress for the five sources of CO_2 emissions measured in 2022 is 48%.

However, the total inventory shows an increase of 18% because the 2024 report includes new sources that were not measured in 2022.

Our Net-Zero Target is set for 2050, with an Interim Target to significantly reduce emissions by 2030 by at least 50%.

Notes:

- We improved the inventory to better capture CO_2 emissions in the performance year compared to the baseline year.
- Some sources were refined for greater accuracy, including:
  - **Upstream Source 2**: Commuting.
  - **Scope 2 Source 2**: Water
- We measured progress for each source based on the baseline year to consistently demonstrate improvements.

Findings:

- In all the calculated inventory categories, we demonstrated progress in lowering CO_2 emissions.
- However, the overall inventory shows an increase because we included the two additional sources mentioned above.