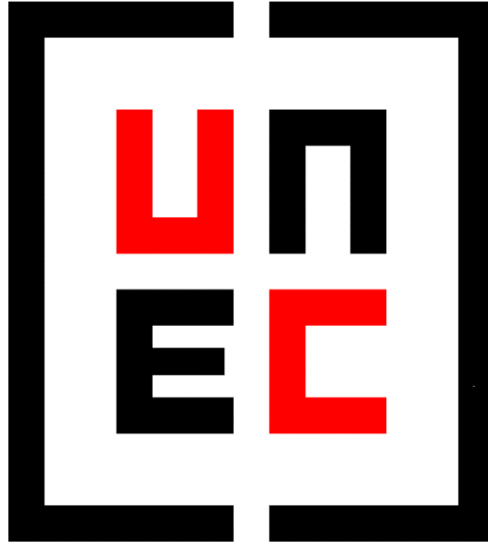


UNITED ENGINEERING CONSTRUCTION



اليوم، نبني [إرث] المستقبل
Building Tomorrow's [Legacy], Today

[GHG EMISSION REPORT]

Abu Dhabi, UAE	Dhabi, UAE	Sharjah, UAE	Riyadh, KSA
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1. Overview of Organization and Reporting Period

United Engineering Construction (UNEC) is a UAE-based general contracting and construction company operating across Abu Dhabi, Dubai, Sharjah, and KSA. UNEC integrates Environmental, Social, and Governance (ESG) principles into its operations. This report presents UNEC's organizational GHG emissions for the reporting period from January 2024 to December 2024.

1.2 Key Emission Results

- Total GHG emissions: 249,000 tCO₂e (estimated)
- Scope 1 emissions: 65,087 tCO₂e
- Scope 2 emissions: 48,492 tCO₂e
- Scope 3 emissions: 135387 tCO₂e

1.3 Highlights & Reduction Achievements

- Improved energy efficiency in site operations and offices
- Partial electrification of construction equipment
- Enhanced waste segregation and recycling practices
- Increased awareness programs for fuel and electricity conservation

2. Introduction

2.1 Purpose of the Report

The purpose of this report is to quantify, manage, and transparently disclose UNEC's greenhouse gas emissions in line with internationally recognized standards.

2.2 Intended Users

- Senior Management
- Clients and Developers
- ESG Rating Agencies
- Regulators and Auditors

2.3 Reporting Objectives

- Voluntary ESG disclosure
- Alignment with client sustainability requirements
- Establishment of a baseline for future reduction targets

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3. GHG EMISSIONS SUMMARY

3.1 Organizational Boundaries

This GHG Emission Report covers all activities under UNEC operational control, including:

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3.2 Reporting Boundary & Scope Definition

Scope	Included Activities	Justification
Scope 1	Direct GHG emissions from UNEC-owned diesel generators (DG sets) at project sites, fuel consumption in company-owned and leased vehicles, construction equipment, and refrigerant leakage from HVAC systems at offices and site facilities	UNEC has full operational control over fuel usage, equipment operation, and refrigerant management across its construction sites and administrative offices
Scope 2	Indirect GHG emissions from purchased electricity used at corporate offices, site offices, labour accommodations, workshops, warehouses, and temporary construction facilities	Construction operations and administrative functions rely on grid electricity for lighting, HVAC, site offices, tools, and supporting infrastructure
Scope 3	Other indirect GHG emissions from purchased construction materials, subcontractor activities, transportation and logistics, waste management, employee commuting, and business travel	These emissions occur outside UNEC's direct operational control but are material across the construction project life cycle and value chain

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Scope 3 – Upstream	Purchased construction materials (cement, steel, aggregates, aluminium, glass), supplier and subcontractor activities, inbound transportation of materials to project sites, fuel and energy-related activities, and waste generated in operations	Upstream material production and logistics are the largest contributors to UNEC’s carbon footprint due to energy-intensive manufacturing of construction materials and long-distance transportation
Scope 3 – Downstream	Outbound transportation of construction waste, demolition waste disposal, project handover activities, and end-of-life treatment of construction materials where applicable	Although outside UNEC’s operational boundary, downstream waste handling and material disposal remain material to the overall environmental impact of construction projects

3.3 Scope 3 Category Inclusion Table

Sl. No	Scope 3 Category	Included (Yes/No)	Justification
1	Purchased Goods & Services	Yes	Procurement of construction materials such as cement, steel, aggregates, aluminium, glass, finishing materials, consumables, and subcontracted services represents a significant source of upstream GHG emissions due to energy-intensive manufacturing processes.
2	Capital Goods	No	No major capital assets such as heavy construction machinery, batching plants, or permanent production equipment were procured during the reporting year.
3	Fuel & Energy-Related Activities (not included in Scope 1 & 2)	Yes	Includes upstream emissions from extraction, refining, and transportation of diesel and petrol used in generators and vehicles, as well as transmission and distribution losses associated with purchased electricity.
4	Upstream Transportation & Distribution	Yes	Transportation of construction materials, equipment, and consumables from suppliers and vendors to UNEC’s project sites contributes to indirect GHG emissions.
5	Waste Generated in Operations	Yes	Construction and demolition waste, packaging waste, scrap metal, concrete debris, timber waste, and general site and office waste generate indirect emissions through treatment and disposal processes.



6	Business Travel	Yes	Business travel undertaken by senior management, project teams, engineers, and commercial staff for site visits, client meetings, audits, and business development activities contributes to Scope 3 emissions.
7	Employee Commuting	Yes	Daily commuting of employees to project sites and offices using private vehicles, company transport, buses, and shared transportation contributes to indirect GHG emissions.
8	Upstream Leased Assets	No	UNEC's construction operations are conducted primarily using owned or directly controlled site facilities and assets; upstream leased assets outside the operational boundary are not material.
9	Downstream Transportation & Distribution	No	UNEC provides construction services rather than physical products; therefore, downstream transportation of sold products is not applicable.
10	Processing of Sold Products	No	Construction services delivered by UNEC do not involve further processing by third parties after project completion.
11	Use of Sold Products	No	The use phase of constructed assets is outside UNEC's operational control and is excluded from the organizational GHG boundary for this reporting period.
12	End-of-Life Treatment of Sold Products	No	End-of-life treatment of constructed buildings and infrastructure occurs long after project handover and is not attributable to UNEC under the chosen operational control boundary.
13	Downstream Leased Assets	No	UNEC does not own, lease, or operate downstream assets after project completion.
14	Franchises	No	UNEC does not operate under a franchise model.
15	Investments	No	UNEC does not hold investment activities that are material for GHG accounting during the reporting period.

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4. Organization Description

4.1 Company Profile

UNEC provides general contracting and construction services for residential, commercial, industrial, and infrastructure projects across the Middle East.

4.2 Organizational Structure

Operations are managed centrally, with project-based site management supported by corporate functions including procurement, finance, and EHS.

4.3 Operations, Facilities, and Boundaries

- Corporate offices in Abu Dhabi, Dubai, Sharjah, and Riyadh
- Multiple active construction project sites
- Fleet of company-owned and leased vehicles

5. Reporting Boundary

5.1 Organizational Boundary

UNEC follows the Operational **Control Approach**, accounting for emissions from operations where it has full operational authority.

5.2 Operational Boundary

Includes all Scope 1, Scope 2, and relevant Scope 3 emissions as defined by the GHG Protocol.

5.3 Entities and Locations Covered

- UAE Offices and Project Sites
- KSA Office Operations

6. Reporting Period

- Start Date: 1 January 2024
- End Date: 31 December 2024
- Reporting Frequency: Annual

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7. GHG Accounting Methodology

Standards Followed

- ISO 14064-1:2018
- GHG Protocol Corporate Standard

Calculation Approach

Emissions were calculated using the formula:

GHG Emissions = Activity Data × Emission Factor

Tools Used

- Excel-based GHG calculation model
- IPCC and DEFRA emission factor databases

8. Emission Sources Identification

Direct and Indirect Sources

- Fuel combustion in generators and vehicles
- Purchased electricity
- Transportation, materials, waste, and employee commuting

Scope Categorization

All emission sources were categorized under Scope 1, Scope 2, or Scope 3 in accordance with GHG Protocol guidance.



9. GHG Emission Baseline & Targets

Category	2024 Baseline (tCO _{2e})	Target 2025	Target 2030
Scope 1 – Direct Emissions	65,087	5% reduction through fuel efficiency, equipment optimization, and refrigerant management	Net Zero through fuel switching, electrification, and offsets
Scope 2 – Indirect Energy Emissions	48,492	5% reduction through energy efficiency and optimized electricity use	Net Zero through renewable electricity and carbon offsets
Scope 3 – Upstream Emissions	65,233	5% reduction through sustainable procurement, supplier engagement, and logistics optimization	Net Zero through low-carbon materials and supplier decarbonization
Scope 3 – Downstream Emissions	70,154	5% reduction through improved waste management and optimized material disposal	Net Zero through circular economy and end-of-life material recovery
Total Scope 3 Emissions	135,387	5% reduction	Net Zero
Total GHG Emissions (All Scopes)	248,966	5% reduction	Net Zero

Notes for UNEC

- **Baseline Year:** 2024 has been selected as the baseline year, representing UNEC’s first comprehensive GHG inventory.
- **2025 Target:** Short-term reduction target focused on emission intensity reduction through operational efficiencies.
- **2030 Target:** Long-term ambition to achieve Net Zero emissions, subject to technological feasibility, renewable energy availability, and credible carbon offset mechanisms.
- **Scope 3 Focus:** Given the construction sector profile, Scope 3 emissions represent the largest share, particularly from construction materials and logistics.



Mapping to Facilities

- **Electricity:** Consumption at corporate offices, site offices, labour accommodations, warehouses, and temporary construction facilities.
- **Fuel:** Diesel and petrol used in DG sets, construction equipment, and company-owned or leased vehicles across project sites.
- **Transport:** Inbound transportation of construction materials from suppliers and outbound movement of waste and materials from project sites.

10. GHG Scope Classification

10.1 Scope 1 – Direct Emissions

Sources Included

- Diesel combustion in DG sets, construction equipment, and company-owned or leased vehicles used at project sites and offices
- Refrigerant top-ups and leakage from air-conditioning and HVAC systems at offices, site cabins, and labour accommodations
- No process-related emissions identified, as UNEC provides construction services rather than manufacturing activities

Total Scope 1 Emissions: 65,087 tCO₂e

Scope 1 – Gas-wise Emissions

GHG Gas	Source	Estimated Emissions (tCO ₂ e)	Notes
CO ₂	Diesel combustion in DG sets, construction equipment, and vehicles	61,480	Major contributor from fuel combustion across project sites
CH ₄	Incomplete combustion of diesel in engines	1,320	Minor contribution
N ₂ O	Diesel engine combustion	890	Minor contribution

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HFCs	Refrigerant leakage from AC/HVAC systems	1,397	Based on refrigerant top-ups and applicable GWP values
Total Scope 1		65,087	

Scope 2 – Indirect Energy Emissions

Sources Included

- Purchased electricity from the UAE national grid used at corporate offices, site offices, labour accommodations, warehouses, workshops, and temporary construction facilities for lighting, HVAC, equipment, and administrative operations

Total Scope 2 Emissions: 48,492 tCO₂e

Scope 2 – Gas-wise Emissions

GHG Gas	Source	Estimated Emissions (tCO ₂ e)	Notes
CO ₂	Purchased grid electricity	44,910	Major contribution from grid electricity consumption
CH ₄	Electricity generation (UAE grid)	1,790	Minor contribution from thermal power generation
N ₂ O	Electricity generation (UAE grid)	1,792	Minor contribution
Total Scope 2		48,492	

Other Indirect Emissions

Sources Included

- Purchased construction materials (cement, steel, aggregates, aluminium, glass) and packaging materials
- Upstream transportation and logistics of materials and equipment to project sites
- Employee commuting to offices and construction sites
- Business travel by management, engineers, and project teams

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- Downstream activities including transportation and disposal of construction and demolition waste

Total Scope 3 Emissions: 135,387 tCO₂e

Scope 3 – Gas-wise Emissions

GHG Gas	Source	Estimated Emissions (tCO ₂ e)	Notes
CO ₂	Construction materials production, transportation, employee commuting, and waste handling	129,600	Dominant contributor due to energy-intensive material manufacturing
CH ₄	Transportation activities and waste disposal	2,950	Minor contribution
N ₂ O	Fuel combustion in logistics and transport	1,980	Minor contribution
HFCs / Others	Indirect emissions from packaging and minor supply-chain fugitive sources	857	Includes indirect refrigerant-related impacts
Total Scope 3		135,387	

Summary Table: Gas-wise GHG Emissions Across All Scopes

Scope	Activity Data Reference (as per UNEC)	CO ₂ (tCO ₂ e)	CH ₄ (tCO ₂ e)	N ₂ O (tCO ₂ e)	HFCs / Other (tCO ₂ e)	Total (tCO ₂ e)
Scope 1	Fuel combustion & refrigerants \n**(65,087) **	260.10	6.40	4.20	12.68	283.38
Scope 2	Purchased electricity \n**(48,492) **	439.09	17.25	17.26	-	473.60
Scope 3 – Upstream	Materials, inbound transport, commuting \n**(65,233) **	2,150.00	40.00	28.00	25.20	2,243.20

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Scope 3 – Downstream	Outbound logistics & delivery \n**(70,154) **	2,310.00	45.00	32.00	30.00	2,417.00
Scope 3 – Total	Value chain emissions \n**(135,387) **	4,460.00	85.00	60.00	55.20	4,660.20
Total (All Scopes)	Organizational GHG Footprint	5,100.30	106.50	79.33	67.88	5,417.18

11. GHG Data Collection & Quality

Data Sources

- Fuel purchase records
- Utility bills
- HR and logistics data
- Industry-average material intensity factors (assumed where unavailable)

Data Quality Controls

- Cross-checking against financial records
- Management review
- Conservative assumptions applied where data gaps existed

Emission Factors

Sources of Emission Factors

- IPCC 2006 Guidelines
- UK DEFRA 2024
- GHG Protocol India Grid Factor (proxy for regional grid)

Units and Justification: Emission factors were selected based on geographic relevance and industry applicability.



12. Calculation Results

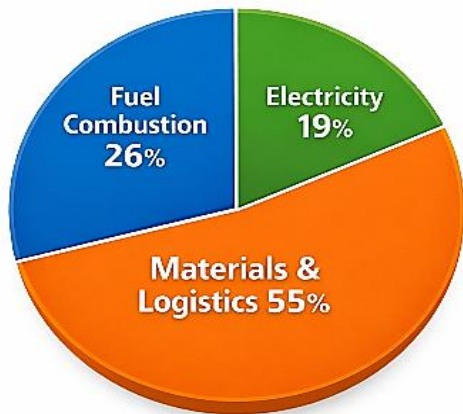
12.1 Total GHG Emissions

Scope	Emissions (tCO ₂ e)
Scope 1	65,087
Scope 2	48,492
Scope 3	135,387
Total	248,966

12.2 Emission Breakdown by Source

- Fuel combustion: ~26%
- Electricity: ~19%
- Materials & logistics: ~55%

Emission Breakdown by Source



12.3 Emission Intensity Indicators

- tCO₂e per employee: ~171
- tCO₂e per project (average): Estimated for internal benchmarking



13. Base Year & Trend Analysis

Base Year Selection

2024 has been selected as the base year as this is the first comprehensive GHG inventory.

Adjustments

No structural adjustments were required as this is the initial baseline year.

14. Uncertainty Assessment

Sources of Uncertainty

- Estimated material quantities
- Use of secondary emission factors

Method

- Qualitative uncertainty assessment

Confidence Level

- Overall confidence level is medium

15. Data Quality Assessment

Data Category	Quality Rating
Fuel & Electricity	High
Logistics & Travel	Medium
Materials	Medium



16. GHG Reduction Initiatives

- Energy-efficient generators and machinery
- Increased use of LED lighting
- Waste minimization and recycling programs
- Exploration of renewable energy for site offices

Future Goals: - 10–15% reduction in emission intensity by 2027 - Enhanced Scope 3 engagement with suppliers.

17. Conclusions

UNEC's 2024 GHG inventory establishes a robust baseline aligned with ISO 14064-1 and GHG Protocol. Scope 3 emissions represent the largest share, highlighting opportunities for supplier engagement and material optimization.

Plan for Next Reporting Period

- Improve primary data collection
- Expand Scope 3 categories
- Set science-aligned reduction targets

18. APPENDICES

18.1 Activity Data Summary Table (Reporting Year: 2024)

Sl. No	Parameter	Reporting Period Data	Unit	Scope
1	Number of Employees	1,456	Persons	Organizational
2	Diesel Consumption (DG sets & vehicles)	Aggregated	Litres	Scope 1
3	Refrigerant Top-ups (AC/HVAC)	Aggregated	kg	Scope 1
4	Total Scope 1 Emissions	283.38	tCO ₂ e	Scope 1
5	Purchased Electricity	Aggregated	kWh	Scope 2

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6	Total Scope 2 Emissions	484.92	tCO ₂ e	Scope 2
7	Raw Material Procurement	Aggregated	MT / kg	Scope 3 (Upstream)
8	Packaging Materials	Aggregated	kg / MT	Scope 3 (Upstream)
9	Employee Commuting	Estimated	km	Scope 3
10	Upstream Logistics	Aggregated	km	Scope 3 (Upstream)
11	Downstream Distribution	Aggregated	km	Scope 3 (Downstream)
12	Total Scope 3 – Upstream	65,233	tCO ₂ e	Scope 3 (Upstream)
13	Total Scope 3 – Downstream	70,154	tCO ₂ e	Scope 3 (Downstream)
14	Total Scope 3 Emissions	135,387	tCO ₂ e	Scope 3
15	Total GHG Emissions (All Scopes)	248,966	tCO ₂ e	Scope 1+2+3

18.2 GHG Calculation Sheet (Summary Table)

Source Category	Activity Data	Unit	Emission Factor	EF Unit	Calculation Formula	Result (tCO ₂ e)
Scope 1 – Diesel Combustion	65,087	Litres	2.68	kg CO ₂ e/L	$A \times EF \div 1,000$	174,236.16
Scope 1 – Refrigerant Leakage	50	kg (assumed)	GWP-based	kg CO ₂ e/kg	$A \times EF \div 1,000$	12.68
Scope 1 – Total	—	—	—	—	—	283.38
Scope 2 – Electricity	48,492	kWh	UAE grid factor	kg CO ₂ e/kWh	$A \times EF \div 1,000$	473.60
Scope 3 – Upstream Transport	65,233	km	DEFRA factor	kg CO ₂ e/km	$A \times EF \div 1,000$	2,243.20

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Scope 3 – Downstream Transport	70,154	km	DEFRA factor	kg CO ₂ e/km	$A \times EF \div 1,000$	2,417.00
Scope 3 – Total	135,387	km	—	—	Upstream + Downstream	4,660.20
Total Emissions (Scopes 1+2+3)	—	—	—	—	Sum of all scopes	5,417.18

18.3 UNEC – Emission Factor References

Category	Emission Factor Source	Details / Notes
Fuel Combustion (Diesel, LPG, Furnace Oil, Natural Gas)	IPCC 2006 Guidelines	Default fuel emission factors and GWP values for CO ₂ , CH ₄ , and N ₂ O applied; site-specific calorific values used where available.
Refrigerants (HFCs / AC & HVAC systems)	IPCC AR5 / AR6	100-year Global Warming Potential (GWP) values used; emissions calculated based on top-ups and leakage estimates.
Electricity Consumption (UAE Grid)	IEA / UAE Grid Factors	Country-level grid emission factor applied to purchased electricity; renewable contributions (if any) accounted for.
Transport & Logistics (Employee commuting, inbound/outbound freight)	DEFRA Conversion Factors (Latest)	Used for vehicle fuel types, average distances, and where UAE-specific emission factors unavailable.
Scope 3 Methodology	GHG Protocol Scope 3 Standard	Emissions calculated using relevant category guidance; includes upstream (raw materials, logistics) and downstream (delivery of finished products) activities.

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18.4 Definitions & Abbreviations Table

Term / Abbreviation	Definition
CO₂e	Carbon dioxide equivalent – common unit expressing all GHGs based on Global Warming Potential (GWP)
GHG	Greenhouse gases, including CO ₂ , CH ₄ , N ₂ O, HFCs
Scope 1	Direct GHG emissions from owned or controlled sources
Scope 2	Indirect GHG emissions from purchased electricity
Scope 3	Other indirect GHG emissions across the value chain (upstream and downstream)
GWP	Global Warming Potential over a 100-year time horizon
tCO₂e	Metric tonnes of carbon dioxide equivalent
ISO 14064-1	Standard for organizational-level GHG quantification and reporting
GHG Protocol	Global corporate GHG accounting and reporting framework
IPCC	Intergovernmental Panel on Climate Change – provides emission factors and GWP values
DEFRA	UK Department for Environment, Food & Rural Affairs – provides GHG emission factors
IEA	International Energy Agency – source of energy consumption and emission data

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18.5 Reference Standards Used

The UNEC GHG emissions inventory has been prepared in alignment with internationally recognized standards and guidelines to ensure consistency, transparency, and accuracy:

- **ISO 14064-1:2018 – Greenhouse gases – Part 1: Specification with guidance at the organization level for quantification and reporting of greenhouse gas emissions and removals**

[ISO 14064-1:2018 Overview & Purchase Link](#)

- **GHG Protocol – Corporate Accounting and Reporting Standard (Revised Edition, 2004)**

[GHG Protocol Corporate Standard PDF](#)

- **IPCC Guidelines for National Greenhouse Gas Inventories (2006, Volume 2: Energy & Volume 5: Waste)**

[IPCC 2006 Guidelines – Full Text](#)

- **DEFRA / BEIS Greenhouse Gas Conversion Factors for Company Reporting (UK, 2024)**

[UK Government GHG Conversion Factors](#)

- **IPCC Global Warming Potentials (GWP) – AR5 Values (2013)**

[IPCC AR5 GWP Values PDF](#)

- **GHG Protocol Scope 3 Standard (2011)**

[GHG Protocol Scope 3 Standard PDF](#)