



PATCHAM FZC

LOCATIONS COVERED

HEAD OFFICE & MANUFACTURING UNIT

P.O. Box : 7753, SAIF Zone, Sharjah, United Arab Emirates.

PATCHAM USA LLC

10 Commerce Road Fairfield, New Jersey – 07004. USA.

PATCHAM SALES OFFICE INDIA

B-52, Pravasi Industrial Estate Vishweshwar Nagar, Off Aarey Road, Goregoan (E) Mumbai-400 063 (India).


GHG EMISSION REPORT

Form No : PATCHAM-PAT/ESG/F-630

Issue No : 02

Rev No : 00

Date : 22nd August, 2025

	PATCHAM FZC			GHG Emission Report
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Prepared by: ESG Committee	Approved by: Managing Director			Description of changes.

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1. EXECUTIVE SUMMARY

Overview


PATCHAM FZC is a UAE-based organization engaged in the design, manufacture, and supply of chemical additives. The company integrates Environmental, Social, and Governance (ESG) principles into its operations and has prepared this Greenhouse Gas (GHG) Emission Report for the 2024 calendar year to support transparency, sustainability management, customer requirements, and future emission reduction planning.

Key Emission Results (2024)

Scope	Emissions (tCO ₂ e)
Scope 1 – Direct	283.38
Scope 2 – Indirect Energy	473.60
Scope 3 – Other Indirect	4,660.20
Total GHG Emissions	5,417.18 tCO₂e

Highlights & Reduction Achievements

- First organizational **GHG baseline established** in line with ISO 14064-1
- Identification of **Scope 3 emissions as the dominant contributor (87%)**
- Integration of GHG inventory into PATCHAM FZC’s ESG framework
- Initial supplier and logistics data captured for upstream and downstream emissions

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2. INTRODUCTION

2.1 Purpose

To quantify, document, and report PATCHAM FZC's greenhouse gas emissions for the reporting year 2024 in accordance with **ISO 14064-1** and the **GHG Protocol Corporate Standard**.

2.2 Intended Users

Management, customers, ESG rating agencies (e.g., EcoVadis), auditors, lenders, and sustainability stakeholders.

2.3 Reporting Objectives

Voluntary reporting aligned with customer requirements, ESG commitments, supply-chain transparency, and ISO 14064-1 compliance.

3. GHG EMISSIONS SUMMARY

3.1 Organizational Boundaries

This GHG Emission Report covers all activities under PATCHAM FZC's operational control, including:

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3.2 Reporting Boundary & Scope Definition


Scope	Included Activities	Justification
Scope 1	Direct GHG emissions from PATCHAM-owned diesel generators (DG sets), company vehicles used for operations and sales, and refrigerant leakage from HVAC and process cooling systems	PATCHAM FZC has full operational control over fuel consumption and refrigerant management within its manufacturing and administrative facilities
Scope 2	Indirect GHG emissions from purchased electricity used for manufacturing processes, laboratories, utilities, warehouses, offices, and HVAC systems	Chemical additive manufacturing and facility operations rely heavily on grid electricity for production, storage, and climate control
Scope 3	Upstream and downstream indirect GHG emissions including procurement of chemical raw materials, packaging materials, logistics, employee commuting, business travel, and waste disposal	These activities occur outside PATCHAM FZC's direct control but represent significant emissions across the chemical manufacturing value chain
Scope 3 – Upstream	Purchased chemical raw materials, packaging materials, supplier operations, inbound transportation of raw materials, and third-party logistics	Raw material sourcing and inbound logistics are the largest contributors to PATCHAM's upstream emissions due to energy-intensive chemical production and transportation
Scope 3 – Downstream	Outbound transportation of finished chemical additives, product distribution to customers, and end-of-life treatment of packaging and containers	Downstream logistics and packaging disposal generate emissions beyond PATCHAM's operational boundary but remain material to the product life cycle

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3.3 Scope 3 Category Inclusion Table

Sl. No	Scope 3 Category	Included (Yes/No)	Justification
1	Purchased Goods & Services	Yes	Procurement of chemical raw materials, additives, solvents, and packaging materials sourced locally and internationally contributes significantly to upstream GHG emissions.
2	Capital Goods	No	No major capital equipment, reactors, or production machinery were procured during the reporting year.
3	Fuel & Energy-Related Activities (not in Scope 1 & 2)	Yes	Includes upstream emissions from fuel extraction, refining, and electricity transmission and distribution losses associated with purchased energy.
4	Upstream Transportation & Distribution	Yes	Transportation of chemical raw materials and packaging materials from suppliers to PATCHAM FZC's manufacturing facility in SAIF Zone, Sharjah contributes to Scope 3 emissions.
5	Waste Generated in Operations	Yes	Generation and disposal of chemical packaging waste, drums, containers, process residues, and general office waste contribute to indirect emissions.
6	Business Travel	Yes	Business travel undertaken by management, technical, and sales teams for customer engagement, supplier coordination, audits, and overseas business development activities.
7	Employee Commuting	Yes	Daily commuting of approximately 120 employees using private vehicles, buses, and shared transport contributes to Scope 3 emissions.

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8	Upstream Leased Assets	No	PATCHAM FZC operates using owned or directly controlled facilities and assets; no upstream leased assets outside the operational boundary are applicable.
9	Downstream Transportation & Distribution	Yes	Distribution of finished chemical additives to domestic and international customers contributes to downstream emissions.
10	Processing of Sold Products	No	Chemical additives supplied by PATCHAM FZC are finished products and do not require further processing by customers.
11	Use of Sold Products	No	The use phase of sold chemical additives does not generate direct GHG emissions attributable to PATCHAM FZC.
12	End-of-Life Treatment of Sold Products	Yes	Disposal and treatment of packaging materials, containers, and drums at the end of product life contribute to indirect emissions.
13	Downstream Leased Assets	No	PATCHAM FZC does not own or operate downstream leased assets.
14	Franchises	No	PATCHAM FZC does not operate under a franchise model.
15	Investments	No	No investment-related activities applicable for GHG accounting during the reporting period.


4. ORGANIZATION DESCRIPTION

4.1 Company Profile

PATCHAM FZC operates from SAIF Zone, Sharjah, UAE, specializing in **chemical additive formulation, manufacturing, and supply** for industrial applications.

4.2 Organizational Structure

Operations are centrally managed with integrated functions covering manufacturing, quality, procurement, logistics, EHS, and administration.

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4.3 Operations, Facilities & Boundaries

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5. REPORTING BOUNDARY

Organizational Boundary

Operational Control approach adopted.


Operational Boundary

Included:

- Scope 1: Direct emissions from fuel and refrigerants
- Scope 2: Electricity consumption
- Scope 3: Upstream and downstream indirect emissions

Entities Covered

PATCHAM FZC – UAE operations.

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6. REPORTING PERIOD

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

7. GHG ACCOUNTING METHODOLOGY

7.1 Standards Followed

- ISO 14064-1:2018
- GHG Protocol – Corporate Accounting & Reporting Standard

7.2 Calculation Formula

$$\text{GHG Emissions (tCO}_2\text{e)} = \text{Activity Data} \times \text{Emission Factor} \div 1,000$$


7.3 Tools Used

Spreadsheet-based calculations using IPCC, DEFRA, and UAE grid emission factors.

8. EMISSION SOURCES IDENTIFICATION

8.1 Direct & Indirect Sources

Scope	Sources Included
Scope 1	Diesel combustion (DG sets & vehicles), refrigerant leakage
Scope 2	Purchased electricity
Scope 3	Raw materials, packaging, transport, commuting, distribution

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8.2 GHG Emission Baseline & Targets

Category	BASELINE (2023)	Current Year 2024 (tCO ₂ e)	Target 2030	Target 2050
Scope 1 – Direct Emissions	289.17	283.38	5% Reduction	Net Zero
Scope 2 – Indirect Energy Emissions	384.24	473.60	5% Reduction	Net Zero
Scope 3 – Upstream Emissions	1780	1,936.20	5% Reduction	Net Zero
Scope 3 – Downstream Emissions	2780	2,724.00	5% Reduction	Net Zero
Total Scope 3 Emissions	4560	4,660.20	5% Reduction	Net Zero
Total GHG Emissions (All Scopes)	5233.41 MT CO₂e	5,417.18	5% Reduction	Net Zero

8.3 Mapping to Facilities

- Electricity: Manufacturing plant, laboratories, offices
- Fuel: DG sets and company vehicles
- Transport: Supplier logistics & customer deliveries


9. GHG SCOPE CLASSIFICATION

9.1 Scope 1 – Direct Emissions

Sources included

- Diesel combustion in DG sets and company vehicles
- Refrigerant top-ups from AC/HVAC systems
- No process emissions identified for chemical additive manufacturing during the reporting period

Total Scope 1 Emissions: 283.38 tCO₂e

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Scope 1 – Gas wise

GHG Gas	Source	Estimated Emissions (tCO ₂ e)	Notes
CO ₂	Diesel combustion (DG sets & vehicles)	260.10	Major contributor from fuel combustion
CH ₄	Incomplete combustion of diesel	6.40	Minor contribution
N ₂ O	Diesel engine combustion	4.20	Minor contribution
HFCs	Refrigerant leakage (AC/HVAC systems)	12.68	Based on refrigerant top-ups and GWP
Total Scope 1		283.38	

9.2 Scope 2 – Indirect Energy Emissions


Source included

- Purchased electricity from UAE national grid for manufacturing and office operations

Total Scope 2 Emissions: 473.60 tCO₂e

Scope 2 – Gas wise

GHG Gas	Source	Estimated Emissions (tCO ₂ e)	Notes
CO ₂	Purchased grid electricity	439.09	Majority contribution from grid electricity
CH ₄	Electricity generation (grid)	17.25	Minor thermal power contribution
N ₂ O	Electricity generation (grid)	17.26	Minor contribution
Total Scope 2		473.60	

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9.3 Scope 3 – Other Indirect Emissions

Sources included

- Purchased raw materials and packaging
- Upstream transportation & logistics
- Downstream distribution of finished products
- Employee commuting
- Business travel (where applicable)


Total Scope 3 Emissions: 4,660.20 tCO₂e

Scope 3 – Gas wise

GHG Gas	Source	Estimated Emissions (tCO ₂ e)	Notes
CO ₂	Raw materials, transport, commuting, distribution	4,460.00	Dominant contributor
CH ₄	Transport activities & waste handling	85.00	Minor
N ₂ O	Transport and logistics	60.00	Minor
HFCs / Others	Packaging & minor supply-chain fugitive emissions	55.20	Includes indirect refrigerant impacts
Total Scope 3		4,660.20	

9.4 Summary Table – Gas-wise Emissions Across All Scopes

Scope	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	260.10	6.40	4.20	12.68	283.38
Scope 2	439.09	17.25	17.26	–	473.60
Scope 3	4,460.00	85.00	60.00	55.20	4,660.20
Total	5,100.30	106.50	79.33	67.88	5,417.18

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10. GHG DATA COLLECTION & QUALITY

10.1 Data Sources

- GHG emission data collection checklist
- Operational estimates and procurement records

10.2 Data Quality

- Accuracy: Medium
- Completeness: Medium
- Reliability: Medium–High

10.3 Data Controls

- Internal review by ESG/EHS team
- Arithmetic consistency checks
- Management validation

11. EMISSION FACTORS


Emission factors sourced from:

- IPCC Guidelines
- DEFRA conversion factors
- UAE grid electricity emission factors
- GHG Protocol Scope 3 guidance

12. CALCULATION RESULTS

12.1 Total GHG Emissions

Scope	Emissions (tCO ₂ e)
Scope 1	283.38
Scope 2	473.60
Scope 3	4,660.20
Total	5,417.18

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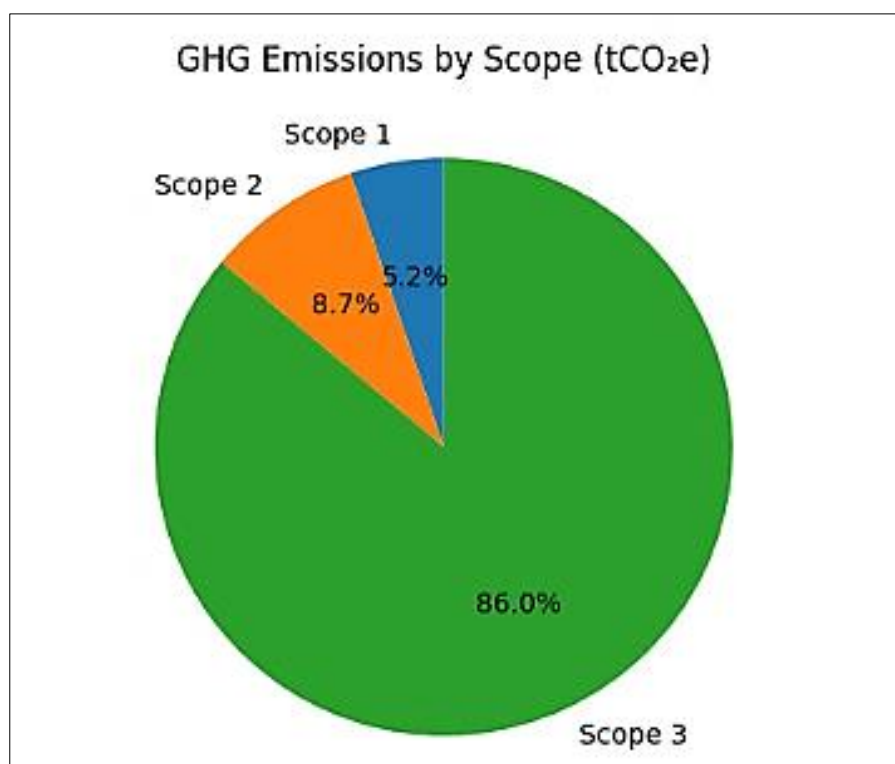
12.2 Emission Intensity Indicators


Total GHG emissions per employee:

45.14 tCO₂e / employee / year - Emissions of 5,417.18 tCO₂e and total workforce of 120 employees.

12.3 Emission Breakdown by Source

Scope	Emissions (tCO ₂ e)
Scope 1	283.38
Scope 2	473.60
Scope 3	4,660.20
Total	5,417.18



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13. BASE YEAR & TREND ANALYSIS

- 2023 selected as PATCHAM FZC's base year
- No historical data available for comparison
- Future recalculation to follow ISO 14064-1 rules

14. UNCERTAINTY ASSESSMENT

Sources of Uncertainty

- Aggregated Scope 3 estimates
- Absence of supplier-specific emission factors

Confidence Level

- High for Scope 1 & 2
- Medium for Scope 3

15. DATA QUALITY ASSESSMENT

Parameter	Rating
Activity Data	Medium
Emission Factors	High
Calculations	High
Overall	Medium–High


16. GHG REDUCTION INITIATIVES

Ongoing Initiatives

- Energy efficiency improvements
- Fuel monitoring and preventive maintenance
- Logistics optimization

Planned Initiatives

- Renewable electricity sourcing
- Supplier emission data engagement
- Low-carbon procurement practices

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17. CONCLUSIONS

- Total GHG emissions (2024): **5,354.01 tCO₂e**
- Major contributors: Scope 3 logistics and materials
- Robust baseline established for future reductions
- Clear opportunities exist for decarbonization

18. APPENDICES

18.1 Activity Data Summary Table (Reporting Year: 2024)

Sl. No	Parameter	Reporting Period Data	Unit	Scope
1	Number of Employees	120	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
6	Total Scope 2 Emissions	410.43	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	1,936.20	tCO ₂ e	Scope 3
13	Total Scope 3 – Downstream	2,724.00	tCO ₂ e	Scope 3
14	Total Scope 3 Emissions	4,660.20	tCO₂e	Scope 3
15	Total GHG Emissions (All Scopes)	5,354.01	tCO₂e	Scope 1+2+3

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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	Derived from fuel use	Litres	2.68	kg CO ₂ e/L	$A \times EF \div 1,000$	Included in total
Scope 1 – Refrigerant Leakage	Aggregated	kg	GWP-based	kg CO ₂ e/kg	$A \times EF \div 1,000$	Included in total
Scope 2 – Electricity	Aggregated	kWh	UAE grid factor	kg CO ₂ e/kWh	$A \times EF \div 1,000$	410.43
Scope 3 – Upstream Transport	Aggregated	km	DEFRA factor	kg CO ₂ e/km	$A \times EF \div 1,000$	1,936.20
Scope 3 – Downstream Transport	Aggregated	km	DEFRA factor	kg CO ₂ e/km	$A \times EF \div 1,000$	2,724.00
TOTAL EMISSIONS	—	—	—	—	Scope 1 + 2 + 3	5,354.01

18.3 Emission Factor References Table

Category	Emission Factor Source	Details / Notes
Fuel Combustion (Diesel, LPG, etc.)	IPCC 2006 Guidelines	Default fuel emission factors and GWP values
Refrigerants (HFCs)	IPCC AR5 / AR6	100-year GWP values
Electricity Consumption (UAE Grid)	IEA / UAE Grid Factors	Country-level electricity emission factor
Transport & Logistics	DEFRA Conversion Factors (Latest)	Used where UAE-specific factors unavailable
Scope 3 Methodology	GHG Protocol Scope 3 Standard	Category classification and calculation guidance

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18.4 Definitions & Abbreviations Table

Term / Abbreviation	Definition
CO ₂ e	Carbon dioxide equivalent – common unit expressing all GHGs based on GWP
GHG	Greenhouse Gases including CO ₂ , CH ₄ , N ₂ O, HFCs
Scope 1	Direct emissions from owned or controlled sources
Scope 2	Indirect emissions from purchased electricity
Scope 3	Other indirect emissions across the value chain
GWP	Global Warming Potential over a 100-year time horizon
tCO ₂ e	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
DEFRA	UK Department for Environment, Food & Rural Affairs
IEA	International Energy Agency

18.5 Reference Standards Used

Core GHG Accounting Standards

ISO 14064-1:2018 – Greenhouse Gases Standard


ISO official page (summary and purchase/license info):

<https://www.iso.org/standard/66453.html>

GHG Protocol – Corporate Accounting and Reporting Standard

Official GHG Protocol Corporate Standard page with downloads provided:

<https://ghgprotocol.org/corporate-standard>

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GHG Protocol – Corporate Value Chain (Scope 3) Standard

Download the official Scope 3 Standard (PDF):

https://ghgprotocol.org/sites/default/files/standards/Corporate-Value-Chain-Accounting-Reporting-Standard_041613_2.pdf

IPCC Standards & GWP Guidance

IPCC 2006 Guidelines for National Greenhouse Gas Inventories

Official repository of the full 2006 Guidelines:

<https://www.ipcc-nggip.iges.or.jp/public/2006gl/>

IPCC GWP Values (AR5 referenced materials)

IPCC AR5 GWP values references (via GHG Protocol guidance PDF):

<https://ghgprotocol.org/sites/default/files/2024-08/Global-Warming-Potential-Values%20%28August%202024%29.pdf>

IPCC Emission Factor Database (EFDB)

IPCC's searchable emission factors database:

<https://www.ipcc-nggip.iges.or.jp/EFDB/main.php>

Emission Factors & Energy Data

IEA Emission Factors Database (Annual Grid & Fuel Factors)

IEA annual emission factors and methodology (2024 edition):

<https://www.iea.org/data-and-statistics/data-product/emissions-factors-2024>

Supplementary Global Data

World Bank ESG GHG Indicator (with AR5-aligned CO₂ data)

World Bank indicator showing GHG emissions standardized with IPCC AR5 GWP:

<https://esgdata.worldbank.org/data/indicators?ind=EN.GHG.CO2.MT.CE.AR5&lang=en>

ACKNOWLEDGEMENT OF RECEIPT

I confirm that I have received and reviewed this GHG Emission Report and understand my responsibility to comply with applicable requirements.

Name :

Signature :

Designation :

Date :