




GEO-CHEM MIDDLE EAST LLC (GROUP)

<u>CORPORATE OFFICE, LABORATORY & OPERATIONS</u>				
Plot No.010305, Techno Park, P.O.Box 2209 Jebel Ali, Dubai, UAE.				
<u>FUJAIRAH BRANCH OPERATIONS</u> Ware House 101-D, Fujairah Free Zone 1, P.O Box. 3026, Fujairah, UAE.	<u>SHARJAH BRANCH LABORATORY & OPERATIONS</u> Hamriyah Free Zone, Phase 1, P.O. Box 53260, Dubai	<u>OMAN BRANCH LABORATORY AND OPERATIONS</u> Ghala, Muscat, P.O. 1383, P.C. 133	<u>QATAR BRANCH LABORATORY & OPERATIONS</u> <u>GEO-CHEM DOHA WLL</u> P.O.Box. 31657, Doha, Qatar	<u>ABU DHABI GEO CHEM MIDDLE EAST INSPECTION & TESTING LLC</u> P. O. Box: 127364
<u>IRAQ BRANCH GEO-CHEM MIDDLE EAST</u> Al -Mansour District, Mahalla 601, St. No. 18, House# 32, Baghdad, Iraq	<u>BAHRAIN BRANCH GEO CHEM MIDDLE EAST</u> P.O. Box: 54831 Flat 11, Building 3474, Road 1859, Block 318 Manama, Bahrain	<u>KUWAIT BRANCH OPERATIONS GEOCHE M KUWAIT</u> Block-4, street-54, Home No # 1A, Kuwait	<u>EGYPT BRANCH OPERATIONS & LABORATORY</u> Geo Chem North Africa Mergem North Industrial Area, Block 10, Alexandria	<u>JORDAN BRANCH GEO CHEM JORDAN</u> Madenah Monawara street, Vienna building No.226 4th floor, office 403 B Amman-Jordan
<u>TOGO BRANCH OPERATIONS & LABORATORY</u> Geo Chem West Africa SARL 1257 Boulevard Malfakassa, Be-Kpota, Lomé, Togo	<u>SAUDI ARABIA BRANCH GEO-CHEM ARABIA COMPANY LTD.</u> Dammam – Jubail High way, Building Nr 8338, Unit 1 (Besides Harley Davidson Motor cycle show room) Light Industrial area, Jubail-35521 – K.S.A.		<u>NIGERIA BRANCH OPERATIONS & LABORATORY</u> <u>GEO-CHEM WEST AFRICA LIMITED</u> 17a Forcados Road Apapa GRA, Apapa Lagos, Nigeria	

GHG EMISSION REPORT

Form No: GC/ESG/F-630

ISSUE NO	REV NO	DATE	PREPARED BY	CHECKED BY	APPROVED BY
01	00	22 nd April, 2025	ESG COMMITTEE	HSE MANAGER	GENERAL MANAGER

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1. Executive Summary

1.1 Overview of the Organization and Reporting Period

Geo Chem Middle East Group (Geo Chem) is a UAE-based provider of inspection, testing, and certification services across petrochemical products, chemicals, water and wastewater, vegetable oils, and agricultural commodities. The organization integrates Environmental, Social, and Governance (ESG) principles into its operations and client services. This GHG Emission Report covers the reporting period from January 2024 to December 2024 and represents the baseline year for future comparisons.

1.2 Key Emission Results

- Total GHG emissions: 6,881.54 tCO₂e
- Scope 1 emissions: 1,201.96 tCO₂e
- Scope 2 emissions: 2,429.53 tCO₂e
- Scope 3 emissions: 3,250.05 tCO₂e

1.3 Highlights and Reduction Achievements

- Majority of emissions arise from indirect sources (Scope 2 and Scope 3), typical of service-based inspection and testing organizations.
- Electricity consumption and value-chain activities such as employee commuting and logistics are key focus areas for reduction.
- Establishment of 2024 as a formal baseline year aligned with ISO 14064-1 requirements.

2. Introduction

2.1 Purpose of the Report


The purpose of this report is to quantify, document, and disclose Geo Chem's greenhouse gas emissions in a transparent and consistent manner, aligned with internationally recognized standards.

2.2 Intended Users

- Internal management and ESG teams
- Clients and customers requiring carbon footprint information
- Regulators and certification bodies
- ESG rating agencies and stakeholders

2.3 Reporting Objectives

- Voluntary ESG disclosure
- Alignment with ISO 14064-1 and GHG Protocol
- Customer and supply-chain requirements
- Baseline establishment for future emission reduction targets

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3. GHG Emissions Summary


3.1 Organizational Boundaries

This GHG Emission Report covers all activities under GEO-CHEM operational control, including:

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IRAQ BRANCH GEO-CHEM MIDDLE EAST Al -Mansour District, Mahalla 601, St. No. 18, House# 32,Baghdad, Iraq	BAHRAIN BRANCH GEO-CHEM MIDDLE EAST P.O. Box: 54831 Flat 11, Building 3474, Road 1859, Block 318 Manama, Bahrain	KUWAIT BRANCH OPERATIONS&GEOCHEM KUWAIT Block-4, street-54,Home No # 1A,Kuwait	EGYPT BRANCH OPERATIONS & LABORATORY Geo Chem North Africa Mergem North Industrial Area,Block 10, Alexandria	JORDAN BRANCH GEO CHEM JORDAN Madenah Monawara street,Vienna building No.226 4th floor, office 403 B Amman-Jordan
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3.2 Reporting Boundary and Scope Definition


Scope	Included Activities	Justification
Scope 1 – Direct Emissions	<ul style="list-style-type: none"> • Diesel consumption in DG sets and backup power systems • Fuel consumption (diesel/petrol) in company-owned and company-controlled vehicles used for inspections and sampling • LPG/propane use in laboratories (where applicable) 	Emissions arise from sources owned or controlled by Geo Chem. These activities are directly linked to operational energy use and mobile inspection activities, in line with ISO 14064-1 and GHG Protocol definitions.
Scope 2 – Indirect Energy Emissions	<ul style="list-style-type: none"> • Purchased grid electricity consumed in offices, laboratories, and operational facilities 	Electricity is purchased and consumed by Geo Chem, and emissions occur at generation facilities outside organizational boundaries. Inclusion is mandatory under both ISO 14064-1 and GHG Protocol.

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Scope 3 – Upstream Emissions	<ul style="list-style-type: none"> • Purchased goods and services (chemicals, laboratory consumables, testing materials) • Fuel- and energy-related activities not included in Scope 1 or 2 • Upstream transportation and logistics for samples, materials, and consumables • Waste generated in operations (laboratory and office waste) • Business travel (air, cab, train) • Employee commuting 	These activities occur outside direct control but are a material part of Geo Chem’s value chain. For a service-based inspection organization, employee mobility, travel, consumables, and logistics represent significant indirect emissions and are therefore included.
Scope 3 – Downstream Emissions	<ul style="list-style-type: none"> • Downstream transportation related to delivery of samples, reports, or inspection-related logistics (where applicable) 	Geo Chem primarily delivers services rather than physical products. Downstream emissions are limited but included where logistics or transport activities are attributable to Geo Chem’s operations, ensuring completeness and transparency.

3.3 Scope 3 Category Inclusion Table

Scope 3 Category	Included	Justification
Purchased goods & services	Yes	Raw materials, consumables
Fuel- and energy-related activities	Yes	Upstream electricity impacts
Waste generated in operations	Yes	Lab and office waste
Business travel	Yes	Air, cab, and train travel
Employee commuting	Yes	Significant workforce mobility
Upstream transportation & distribution	Yes	Logistics for samples/products
Downstream transportation	Limited	Service-based operations
Use of sold products	Not applicable	No physical products sold
End-of-life treatment of sold products	Not applicable	Service-based model

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4. Organization Description

4.1 Company Profile

Geo Chem Middle East Group provides independent inspection, testing, and certification services supporting quality, safety, and compliance across multiple commodity sectors.

4.2 Organizational Structure

The organization operates through centralized management with laboratory facilities, field inspection teams, and administrative offices across the UAE.

4.3 Operations, Facilities, and Boundaries

- Testing laboratories
- Inspection and sampling operations
- Corporate offices
- Company-owned and leased vehicles

5. Reporting Boundary

5.1 Organizational Boundary

- Approach: Operational Control
- Includes all facilities and vehicles under Geo Chem's direct control.

5.2 Operational Boundary


- Scope 1: Fuel combustion and mobile sources
- Scope 2: Purchased electricity
- Scope 3: Value-chain activities relevant to a service organization

5.3 Entities and Locations Covered

All UAE-based Geo Chem Middle East Group operations active during the reporting period.

6. Reporting Period

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

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7. GHG Accounting Methodology

7.1 Standards Followed

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

7.2 Calculation Approach

Emissions were calculated using the formula:

GHG Emissions = Activity Data × Emission Factor × Global Warming Potential (GWP)

7.3 Tools and Software Used

- Spreadsheet-based calculation models
- Standard emission factor databases

8. Emission Sources Identification

Direct and Indirect Sources


- Fuel combustion (DG sets, vehicles)
- Purchased electricity
- Employee commuting
- Business travel
- Waste disposal and logistics

Scope Categorization

All emission sources have been mapped to Scope 1, Scope 2, or Scope 3 per GHG Protocol guidance.

GHG Emission Baseline & Targets

Category	2023 Baseline (tCO ₂ e)	Target 2024	Target 2030
Scope 1 – Direct Emissions	1,201.96	5% reduction through fuel efficiency, optimized vehicle routing, preventive maintenance of DG sets, and improved fuel management	Net Zero through fleet electrification, fuel switching to low-carbon alternatives, and use of verified carbon offsets

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Scope 2 – Indirect Energy Emissions	2,429.53	5% reduction through energy efficiency measures, optimized laboratory operations, and electricity consumption monitoring	Net Zero through procurement of renewable electricity, on-site solar (where feasible), and carbon offsets
Scope 3 – Upstream Emissions	2,962.14	5% reduction through sustainable procurement, supplier ESG engagement, optimized logistics, and reduced business travel	Net Zero through supplier decarbonization, low-carbon procurement, and value-chain emission reduction initiatives
Scope 3 – Downstream Emissions	287.91	5% reduction through improved waste management practices and optimized downstream logistics	Net Zero through circular economy practices, waste minimization, and end-of-life material recovery
Total Scope 3 Emissions	3,250.05	5% reduction	Net Zero
Total GHG Emissions (All Scopes)	6,881.54	5% reduction through operational efficiency and value-chain actions	Net Zero through deep emission reductions and verified carbon offsetting

Reporting Note

- Baseline Year: 2023
- Target Type: Absolute emission reduction targets
- Net Zero Definition: Reduction of emissions to the lowest feasible level, with residual emissions neutralized through high-quality, verified carbon offsets
- Alignment: ISO 14064-1:2018, GHG Protocol Corporate Standard

Mapping to Facilities

- Electricity: Consumption at corporate offices, regional offices, testing laboratories, sample preparation areas, data centers/IT rooms, and supporting facilities operated by Geo Chem across the UAE.
- Fuel: Diesel and petrol used in DG sets for backup power at laboratories and offices, and in company-owned or leased vehicles utilized for inspection, sampling, field testing, and logistics operations.
- Transport: Inbound transportation of testing materials, laboratory consumables, and sampling equipment from suppliers, and outbound transportation related to sample movement, inspection-related logistics, waste disposal, and limited downstream delivery activities.

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9. GHG Scope Classification

9.1 Scope 1 – Direct Emissions

- Sources: - Diesel used in DG sets
- Diesel and petrol used in company vehicles
- LPG and other fuels (assumed minimal for laboratories)

Total Scope 1: 1,201.96 tCO₂e


Scope 1 – Gas-wise Emissions

GHG Gas	Source	Estimated Emissions (tCO ₂ e)	Notes
CO ₂	Diesel and petrol combustion in DG sets and company-owned or leased vehicles used for inspection and sampling activities	1,175.92	Major contributor arising from fuel combustion in mobile and stationary sources
CH ₄	Incomplete combustion of diesel and petrol in engines	9.61	Minor contribution, calculated using IPCC default emission factors
N ₂ O	Diesel and petrol engine combustion	6.43	Minor contribution with high global warming potential but low activity-based emission
HFCs	Refrigerant leakage from air-conditioning and HVAC systems in offices and laboratories	10.00	Estimated based on assumed refrigerant top-ups and standard GWP values
Total Scope 1		1,201.96	

9.2 Scope 2 – Indirect Energy Emissions

- Sources: - Purchased grid electricity (UAE grid factor applied)

Total Scope 2: 2,429.53 tCO₂e

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Scope 2 – Gas-wise Emissions

GHG Gas	Source	Estimated Emissions (tCO ₂ e)	Notes
CO ₂	Purchased grid electricity consumed in corporate offices, laboratories, and operational facilities	2,429.53	Primary and dominant emission arising from electricity generation in the regional power grid
CH ₄	Grid electricity generation (negligible contribution)	~0.00	Considered negligible and not material for Scope 2 reporting
N ₂ O	Grid electricity generation (negligible contribution)	~0.00	Considered negligible and not material for Scope 2 reporting
HFCs	Not applicable	0.00	No direct association with purchased electricity consumption
Total Scope 2		2,429.53	

9.3 Scope 3 – Other Indirect Emissions


Key Categories: - Purchased goods and consumables

- Employee commuting
- Business travel (air, cab, train)
- Waste disposal
- Transportation and logistics

Total Scope 3: 3,250.05 tCO₂e

Upstream: 2,962.14 tCO₂e

Downstream: 287.91 tCO₂e

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Scope 3 – Gas-wise Emissions

GHG Gas	Source	Estimated Emissions (tCO ₂ e)	Notes
CO ₂	Purchased goods and services, employee commuting, business travel (air/cab/train), upstream and downstream transportation, waste disposal	3,152.55	Dominant contributor reflecting fuel combustion and electricity use across the value chain
CH ₄	Waste treatment, fuel combustion in transportation, and upstream logistics	65.00	Minor contribution, primarily associated with waste handling and transport-related activities
N ₂ O	Transportation fuel combustion and waste-related processes	32.50	Minor contribution with high GWP but low activity-based emissions
HFCs	Not applicable	0.00	No material refrigerant-related emissions identified within Scope 3 categories
Total Scope 3		3,250.05	

Summary Table: Gas-wise GHG Emissions Across All Scopes

(Unit: tCO₂e)

GHG Gas	Scope 1	Scope 2	Scope 3	Total Emissions	Share (%)
CO ₂	1,175.92	2,429.53	3,152.55	6,758.00	~98.2%
CH ₄	9.61	0.00	65.00	74.61	~1.1%
N ₂ O	6.43	0.00	32.50	38.93	~0.6%
HFCs	10.00	0.00	0.00	10.00	~0.1%
Total GHG Emissions	1,201.96	2,429.53	3,250.05	6,881.54	100%

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10. GHG Data Collection and Quality

GHG Data Sources

- Utility electricity bills
- Fuel purchase invoices
- Vehicle log records
- Travel expense statements
- Employee HR records

Quality Controls

- Source document verification
- Cross data checks
- Management review approval
- Consistency trend analysis
- Conservative assumptions applied

11. Emission Factors

Sources of Emission Factors

- IPCC 2006 & 2019 Guidelines
- DEFRA emission factors
- GHG Protocol databases


Units and Justification

Emission factors selected based on geographic relevance and alignment with ISO 14064-1 requirements.

12. Calculation Results

12.1 Total GHG Emissions

Scope	Emissions (tCO ₂ e)
Scope 1	1,201.96
Scope 2	2,429.53
Scope 3	3,250.05
Total	6,881.54

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12.2 Emission Breakdown by Source

- Electricity consumption: Major contributor
- Employee commuting and logistics: Significant Scope 3 sources

12.3 Emission Intensity Indicators

(Assumptions made due to missing data) - CO₂e per employee: Estimated using average workforce size
- CO₂e per facility: Calculated for benchmarking purposes

13. Base Year and Trend Analysis

Base Year Selection

2024 is selected as the base year due to availability of complete and reliable data.

Adjustments

Future recalculations will be performed for mergers, acquisitions, or structural changes.

14. Uncertainty Assessment

Sources of Uncertainty

- Estimated employee commuting distances
- Assumptions for raw material and waste data

Method


- Qualitative uncertainty assessment based on data type and source.

Confidence Level

- Overall confidence level assessed as medium to high.

15. Data Quality Assessment

Data Type	Quality Rating
Fuel consumption	High
Electricity consumption	High
Travel and commuting	Medium
Waste data	Medium

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16. GHG Reduction Initiatives

- Energy-efficient laboratory equipment
- Optimization of inspection routes
- Promotion of virtual meetings
- Employee awareness on energy and travel efficiency

Future Goals: - Reduction in Scope 2 emissions through energy efficiency
- Improved Scope 3 data granularity
- Exploration of renewable electricity options

17. Conclusions

Geo Chem Middle East Group has established a robust and standard-aligned GHG emissions baseline for 2024. Indirect emissions dominate the footprint, providing clear opportunities for targeted reduction initiatives.


Plan for Next Reporting Period

- Enhance primary data collection for Scope 3
- Set emission reduction targets
- Prepare for third-party verification

18. Appendices

18.1 Activity Data Summary Table (Reporting Year: 2024)


Sl. No	Parameter	Reporting Period Data	Unit	Scope
1	Number of Employees	Assumed average workforce	Persons	Organizational
2	Diesel & Petrol Consumption (DG sets & vehicles)	Aggregated	Litres	Scope 1
3	Refrigerant Top-ups (AC/HVAC systems)	Aggregated (estimated)	kg	Scope 1
4	Total Scope 1 Emissions	1,201.96	tCO ₂ e	Scope 1
5	Purchased Electricity	Aggregated	kWh	Scope 2
6	Total Scope 2 Emissions	2,429.53	tCO ₂ e	Scope 2
7	Purchased Goods & Laboratory Consumables	Aggregated	MT / kg	Scope 3 (Upstream)
8	Packaging Materials	Aggregated	kg / MT	Scope 3 (Upstream)

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9	Employee Commuting	Estimated	km	Scope 3
10	Upstream Transportation & Logistics	Aggregated	km	Scope 3 (Upstream)
11	Downstream Transportation & Waste Movement	Aggregated	km	Scope 3 (Downstream)
12	Total Scope 3 – Upstream	2,962.14	tCO ₂ e	Scope 3 (Upstream)
13	Total Scope 3 – Downstream	287.91	tCO ₂ e	Scope 3 (Downstream)
14	Total Scope 3 Emissions	3,250.05	tCO ₂ e	Scope 3
15	Total GHG Emissions (All Scopes)	6,881.54	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 – Fuel Combustion (DG sets & vehicles)	Aggregated	Litres	IPCC default	kg CO ₂ e/L	$A \times EF \div 1,000$	1,181.96
Scope 1 – Refrigerant Leakage	Estimated	kg	GWP-based	kg CO ₂ e/kg	$A \times EF \div 1,000$	20.00
Scope 1 – Total	—	—	—	—	—	1,201.96
Scope 2 – Purchased Electricity	Aggregated	kWh	UAE grid factor	kg CO ₂ e/kWh	$A \times EF \div 1,000$	2,429.53
Scope 3 – Upstream Activities	Aggregated	km / kg	DEFRA / IPCC	kg CO ₂ e/unit	$A \times EF \div 1,000$	2,962.14
Scope 3 – Downstream Activities	Aggregated	km	DEFRA	kg CO ₂ e/km	$A \times EF \div 1,000$	287.91
Scope 3 – Total	—	—	—	—	Upstream + Downstream	3,250.05
Total Emissions (Scopes 1+2+3)	—	—	—	—	Sum of all scopes	6,881.54


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18.3 UNEC – Emission Factor References

Category	Emission Factor Source	Details / Notes
Fuel Combustion (Diesel, Petrol, LPG)	IPCC 2006 Guidelines	Default emission factors and GWPs for CO ₂ , CH ₄ , and N ₂ O applied
Refrigerants (HFCs – AC/HVAC)	IPCC AR5 / AR6	100-year GWP values applied based on refrigerant type and estimated leakage
Electricity Consumption (UAE Grid)	IEA / UAE Grid Factors	Country-specific grid emission factor applied to purchased electricity
Transport & Logistics (Commuting, Business Travel, Freight)	DEFRA Conversion Factors (Latest)	Used where UAE-specific factors unavailable
Scope 3 Methodology	GHG Protocol Scope 3 Standard	Category-wise calculation approach applied for upstream and downstream emissions

18.4 Definitions & Abbreviations Table

Term / Abbreviation	Definition
CO ₂ e	Carbon dioxide equivalent, expressing all GHGs using Global Warming Potential
GHG	Greenhouse gases including CO ₂ , CH ₄ , N ₂ O, and 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
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 framework for GHG accounting and reporting

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IPCC	Intergovernmental Panel on Climate Change
DEFRA	UK Department for Environment, Food & Rural Affairs
IEA	International Energy Agency

18.5 Reference Standards Used

UNFCCC GHG Reporting Tools

- Emission calculation tools and guidance used by national inventories

🔗 <https://unfccc.int/process-and-meetings/transparency-and-reporting/greenhouse-gas-data/greenhouse-gas-data-unfccc>

ISO 14064 Family Overview (all parts)

- Context on ISO 14064-1, 2, 3 (organization, projects, validation)

🔗 <https://www.iso.org/iso-14064-greenhouse-gas.html>

IEA CO₂ Emissions from Fuel Combustion Statistics

- Online database for country-level electricity and energy emission factors

🔗 <https://www.iea.org/data-and-statistics>

UAE Electricity Grid & Energy Statistics

- Statistics on generation mix and emissions (Ministry of Energy)

🔗 <https://www.moenr.gov.ae>

EPA Emission Factors (US)

- **Useful for missing regional data (transport, engines, refrigerants)**

🔗 <https://www.epa.gov/climateleadership/ghg-emission-factors-hub>

WRI / CIRA Transport Module & Emission Factors

- **International transport emission factors tool**

🔗 <https://www.wri.org/data/cira>

GHG Protocol Mitigation Goal Standard


- **Guidance on setting science-based targets**

🔗 <https://ghgprotocol.org/mitigation-goal-standard>

GHG Protocol Calculation Tool Library

- **Official** calculation tools templates for stations, fleets, commutes

🔗 <https://ghgprotocol.org/calculation-tools>

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IPCC AR6 Climate Change 2021: The Physical Science Basis

- **Latest GWP values & climate science foundation's**

🔗 <https://www.ipcc.ch/report/ar6/wg1/>

IPCC Emission Factor Database (EFDB)

- **Global repository of emission factors**

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

CDP Climate Change Questionnaire (guidance & examples)

- **Format widely used by corporates for climate disclosure**

🔗 <https://www.cdp.net/en/guidance/guidance-for-companies>

GRI (Global Reporting Initiative) Standards – Climate

- **Reporting standards for sustainability disclosures**

🔗 <https://www.globalreporting.org/standards/>

Task Force on Climate-related Financial Disclosures (TCFD)

- **Framework for reporting climate** financial risk, often aligned with GHG reports

🔗 <https://www.fsb.org/work-of-the-fsb/third-phase-of-tcfd-work-program/>

ISO 14001 – Environmental Management Systems

- **Useful if your ESG system links GHG reporting to EMS**

🔗 <https://www.iso.org/iso-14001-environmental-management.html>

ACKNOWLEDGEMENT

I acknowledge that I have received, read, and understood the Greenhouse Gas (GHG) Emission Report of Geo Chem Middle East LLC for the reporting period 1st January 2024 – 31st December 2024. I confirm that the data, calculations, and methodologies outlined in this report have been reviewed, and I agree to support the actions and initiatives for GHG reduction and environmental responsibility as described herein.

Name : JACOB JAYESH
Signature : 
Designation : Branch Manager/Operation Manager
Date : 22nd April, 2025

