IvyGreen Solutions Sdn. Bhd. GHG Emissions Report (1st Half)

Report date: 26 Jul 2024

Reported by: Lim Kee Jin
Director | Sustainability Manager

GREENHOUSE GAS PROTOCOL

Table of Contents

GHG Inventory Reporting

At IvyGreen Solutions Sdn Bhd (IGS), sustainability is integral to our mission. We are committed to reducing our greenhouse gas emissions in alignment with the 1.5-degree climate goal. Our GHG emissions have been calculated using the GHG Protocol framework, ensuring compliance with the methodology and international disclosure requirements.

Purpose and Objectives:

i. Towards establishing 2024 as the base year for GHG emission.
ii. Monitoring progress towards emission reduction goals.
iii. Enhancing transparency and accountability in environmental stewardship.

This GHG inventory report for the first half of 2024 details the emissions of IGS from January 1 to June 30, 2024. Emission sources include Scope 1, Scope 2, and Scope 3 categories. A full report will be published annually.

Part 1: Descriptive Information

Descriptive information	Company response
Company name	IvyGreen Solutions Sdn. Bhd. (IGS)
Description of the company	Founded in July 2023, IGS is specializing in ESG and sustainability consulting services. We possess internationally recognized certifications and provide HRDC training.
Chosen consolidation approach	Operational control approach
Description of the businesses and operations included in the company's organizational boundary	IGS provides end-to-end consulting services to SMEs both onsite and virtually, operating independently without any holding or subsidiary companies.
The reporting period covered	Jan – Jun 2024 (1st Half)
Report boundary	Scope 1, scope 2 and list of scope 3 below: Cat 1: Purchased goods and services Cat 2: Capital goods; Cat 6: Business travel Cat 7: Employee commuting The emission data includes all types of GHGs as per the GHG Protocol. IGS ensures that no significant GHG sources or sinks are intentionally excluded from the quantification.

A list of scope 1, scope 2, and scope 3 activities excluded from the report with justification for their exclusion	Cat 4, 5 & 9 are not applicable due to physical office will only be ready in 2025. The other categories are not relevant. A baseline emission scenario for teleworking could not be established because the office is not ready yet, making it an incomparable scenario.
The year chosen as base year and rationale for choosing the base year	2024 will be chosen for base year upon completion.
Once a base year has been established, the chosen base year emissions recalculation policy. If base year emissions have been recalculated, the context for any significant emissions changes that triggered the recalculation.	Base year shall be triggered for recalculation if: i. Structural changes in the reporting organization ii. Changes in calculation methodology iii. Improvements in the accuracy of emission factors or activity data iv. Discovery of significant errors Significant Threshold: 5%
Intended use and Users. This GHG report is intended for:	i. To support internal management in strategic decision-making and to identify potential areas for improvement. ii. To showcase our commitment to environmental stewardship to external stakeholders.
Responsibilities for GHG report preparation and establishment include:	i. Designated qualified GHG manager oversees data collection and analysis, ensuring accuracy and compliance. ii. Relevant emission data for the reporting period is provided by each department.
Frequency of GHG reporting Publication	Annually track progress by updating GHG emission data twice a year (1st Half and 2nd Half), aligning with the reporting period, publishing full report once a year.
Principles of disclosure	i. Relevance ii. Completeness iii. Consistency iv. Transparency *v.* Accuracy

Dissemination policy	IGS will ensure the availability of the latest report and is publicly sharing its GHG report information with stakeholders. This report is accessible via the IGS company website. We welcome any queries and feedback through our designated communication channel.
Person or Entity responsible	The overall responsibilities for preparing this report: - Person/Entity: Lim, Kee Jin (Mr) - Qualification: Certified professional in ISO14064-(1)(2)(3), 14067, PAS2060 - Email:keejin@ivygreensolutions.com
3rd Party Verification	This preliminary report has not been verified by a third party, but we intend to undergo third-party verification for the final report.

Part 2: Greenhouse Gas Emissions Data

Energy-related

Total Renewable Energy Certificate (RECs) = 0 MWh.

Renewable Energy		
Type		**Energy (in MWh)**
i.	Solar	0
ii.	Biomass	0
iii.	Wind	0
iv.	Hydropower	0
v.	Geothermal	0
vi.	Hydrogen	0

GHG removal in scope 2 emissions = 0 MtCO2e

GREENHOUSE GAS PROTOCOL

Emission data

Scopes and categories	Metric tons CO_2e
Scope 1: Direct emissions from owned/controlled operations	0 MtCO2e
Scope 2: Indirect emissions from the use of purchased electricity, steam, heating, and cooling	0 MtCO2e
Upstream scope 3 emissions	
Category 1: Purchased goods and services	0.0185 MtCO2e
Category 2: Capital goods	0.0000 MtCO2e
Category 3: Fuel- and energy-related activities	-
Category 4: Upstream transportation and distribution	-
Category 5: Waste generated in operations	-
Category 6: Business travel	0.2334 MtCO2e
Category 7: Employee commuting (Including homeworking)	2.2088 MtCO2e
Category 8: Upstream leased assets	-
Other: A4 paper consumption	0.0024 MtCo2e
Other: Water consumption	0 MtCO2e
Other: Waste generated from business operation	0 MtCO2e
Downstream scope 3 emissions	
Category 9: Downstream transportation and distribution	-
Category 10: Processing of sold products	-
Category 11: Use of sold products	-
Category 12: End-of-life treatment of sold products	-
Category 13: Downstream leased assets	-
Category 14: Franchises	-
Category 15: Investments	-
Other	-

Note

1. IGS has zero emissions in scopes 1 and 2 for the following reasons:
    - IGS practices a homeworking operation model, thus, it does not own any stationary or mobile combustion sources, nor does it have fugitive emissions in scope 1.
    - Electricity purchases (scope 2) are not applicable due to the homeworking operation model. Emissions from homeworking are included in scope 3, Category 7 (homeworking).
2. IGS does not purchase any capital assets in this reporting period, such as company vehicles, machinery, or building air conditioners, which would create any scope 3 indirect emissions.
3. Water consumption and waste generated from business operations amount to 0 MtCO2e, as IGS practiced 100% homeworking during the reporting period from January to June 2024.

GREENHOUSE GAS PROTOCOL

Part 2-1 : Greenhouse Gas Emissions by Category

Unit shown in kg CO2 to reflect suitability with low GHG emission scenarios.

GHG emissions	CO_2		CH_4		N_2O		HFCs		PFCs		SF_6		NF_3	
	kg CO_2	kg CO_2e	kg CH_4	kg CO_2e	kg N_2O	kg CO_2e	kg of each HFC	kg CO_2e	kg of each PFC	kg CO_2e	kg SF_6	kg CO_2e	kg NF_3	kg CO_2e
Scope 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Scope 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Scope 3	-	1690.72	-	474.00	-	421.32	0	0	0	0	0	0	0	0

Sum of GHG emissions by Scope	$MtCO_2e$
Scope 1	0 MtCO2e
Scope 2	0 MtCO2e
Scope 3	2.5860 MtCO2e

GREENHOUSE GAS PROTOCOL

Part 3: Biogenic CO_2 Emissions Data (if applicable)

Scopes and categories	Metric tons biogenic CO_2
Direct biogenic CO_2 emissions from owned/controlled operations	-
Indirect biogenic CO_2 emissions from the use of purchased electricity, steam, heating, and cooling	-
Indirect biogenic CO_2 emissions - Upstream	
Purchased goods and services	-
Capital goods	-
Fuel- and energy-related activities (not included in scope 1 or scope 2)	-
Upstream transportation and distribution	-
Waste generated in operations	-
Business travel	-
Employee commuting	-
Upstream leased assets	-
Other	-
Indirect biogenic CO_2 emissions - Downstream	
Downstream transportation and distribution	-
Processing of sold products	-
Use of sold products	-
End-of-life treatment of sold products	-
Downstream leased assets	-
Franchises	-
Investments	-
Other	-

Note

IGS's core business is providing sustainability consulting and training services to clients. Our GHG emissions resulting from business operations are not related to the natural carbon cycle. Our operations do not involve the combustion, harvest, digestion, fermentation, decomposition, or processing of biologically based materials.

Part 4: Description of Methodologies and Data Used

Scope	Methodologies used to calculate or measure emissions, providing a reference or link to any calculation tools used
Scope 1	0MtCO2e
Scope 2	0MtCO2e

Note: Zero emission due to reasons provided in page 6 in the report.

Scope and category	Description of the types and sources of data used to calculate emissions	Description of the data quality of reported emissions	Description of the methodologies, allocation methods, and assumptions used to calculate emissions	Methodologies for quantification of GHG emissions
Upstream scope 3 emissions				
Category 1: Purchased goods and services	Spend based method Economic value of each purchased item is collected and categorized according to NAICS code/title to match with relevant USEEIO emission factors.	The data taken is the exact amount spent on purchased goods or services, by product type, using market values. No sampling data or average data is taken.	Emission factor unit is in US dollars, inflation data is considered. Inflation Calculator is used to obtain the CPI rate, and the market value of the activity data has been converted accordingly.	Sum of (respective purchased goods' economic value converted to inflation value (2021) x relevant USEEIO carbon emission factor)
Category 2: Capital goods	*(0 MtCO2e. No capital goods were purchased in this reporting period)*			
Category 3: Fuel- and energy-related activities	-	-	-	-
Category 4: Upstream transportation and distribution	-	-	-	-
Category 5: Waste generated in operations	-	-	-	-

Category 6: Business travel	Distance-based method Activity data is collected on the specific type of vehicle used for travel, vehicle fuel type, the total distance traveled extracted from claim records, the number of passengers, the country, and the number of nights stayed in a hotel, and multiplying with the relevant carbon emission factor.	On road travel: The total traveled distance tracking is based on the kilometers shown in Google Maps for each employee. No average data or distance estimation is considered. Hotel activity data: The hotel location, type, and number of nights stayed are based on the actual claim record in the system.	Assumptions: - Idling is assumed to have zero emissions, though vehicles emit GHGs when stuck in traffic - Actual fuel consumption data is ideal but currently difficult to collect.	Transportation GHG Sum of (respective vehicle type or mode of transport x total travelled distance x relevant carbon emission factor x GWP) Hotel GHG emission Sum of (number of nights stayed by each employee x carbon emission factor for that specific country or location)
Category 7: Employee commuting *(Homeworking)	Homeworking emission whitepaper (EcoACT) as suggested by US EPA. Activity data including exact number of working days in Kuala Lumpur from Jan-Jun 2024; exact number of working days for each employee (FTE); WHpa and WHpcm value. Workspace A/C availability survey.	Activity data is abstracted from HRMS system, reflecting the actual FTE of each employee. Others unavailable information is conducted via survey. No average data is taken. Grid emission: 0.758GgCO2e/GWh	Assumptions: - A working day is 8 hours long. - Workstation: 140W per desk (CIBSE Guide F - 2012). - Lighting: 10W per desk. - A/C is turned on during homeworking, with energy consumption of 1.4kW/h	Homeworking Sum of (FTE of each employee x kWh used in homeworking x grid emission factor of peninsular Malaysia)
Category 8: Upstream leased assets	-	-	-	-

Other: A4 consumption	Average data method Activity data is collected based on the number of A4 paper sheets consumed as recorded in purchase records. The total consumption is then converted into weight (kg) using a paper conversion calculator.	The weight of A4 paper consumption is estimated using a conversion calculator, which may slightly differ from the actual weight. The records only specify the number of A4 paper sheets consumed, but gsm (grams per square meter) information is not available.	Assumptions: - All A4 paper consumed is 70gsm.	A4 GHG emission Sum of (A4 paper consumption each month converted to weight (kg) x carbon emission factor)
Other: Water consumption	-	-	-	-
Other: Waste generated in business operation	-	-	-	-

Scope and category	Description of the types and sources of data used to calculate emissions	Description of the data quality of reported emissions	Description of the methodologies, allocation methods, and assumptions used to calculate emissions	Methodologies for quantification of GHG emissions
Downstream scope 3 emissions				
Category 9: Downstream transportation and distribution	-	-	-	-
Category 10: Processing of sold products	-	-	-	-
Category 11: Use of sold products	-	-	-	-

Category 12: End-of-life treatment of sold products	-	-	-	-
Category 13: Downstream leased assets	-	-	-	-
Category 14: Franchises	-	-	-	-
Category 15: Investments	-	-	-	-

Note:

1. No data has been requested from suppliers or the value chain to calculate the GHG emissions.
2. IGS aims to capture the full extent of GHG emissions, including indirect emissions associated with the supply chain. Therefore, the USEEIO carbon emissions factor with margins is used.
3. Homeworking emissions have been calculated exclusively for IGS full time employees only, as no outsourcing of work occurred during the reporting period from January to June 2024.

Global Warming Potential (GWP)	Value
Carbon Dioxide, CO_2	1
Methane, CH_4 (fossil combustion)	27
Nitrous Oxide, N2O	273
Difluoromethane, HFC-32	771
Tetrafluoroethane, HFC-134a	1526
Trichlorofluoromethane, CFC-11	6226
Perfluoromethane , PFC-14	7380

The Global Warming Potential (GWP) factors used in this report are derived from the IPCC Sixth Assessment Report (AR6) and are based on a 100-year time horizon.

Part 5: Greenhouse Gas Emissions in the Base Year (if applicable)

This GHG report represents the initial GHG reporting for IGS, with no historical data applicable. It covers GHG emissions from January to June 2024. The year 2024 will be designated as the base year once the full GHG report is published in the second half of the year. Therefore, historical base year data is NOT AVAILABLE.

Scopes and categories	Metric tons CO_2e
Scope 1: Direct emissions from owned/controlled operations	-
Scope 2: Indirect emissions from the use of purchased electricity, steam, heating, and cooling	-
Upstream scope 3 emissions	
Category 1: Purchased goods and services	-
Category 2: Capital goods	-
Category 3: Fuel- and energy-related activities (not included in scope 1 or scope 2)	-
Category 4: Upstream transportation and distribution	-
Category 5: Waste generated in operations	-
Category 6: Business travel	-
Category 7: Employee commuting	-
Category 8: Upstream leased assets	-
Other: A4 paper consumption	-
Other: Water consumption	
Other: Waste generated in business operation	
Downstream scope 3 emissions	
Category 9: Downstream transportation and distribution	-
Category 10: Processing of sold products	-
Category 11: Use of sold products	-
Category 12: End-of-life treatment of sold products	-
Category 13: Downstream leased assets	-
Category 14: Franchises	-
Category 15: Investments	-
Other	-

Part 6: Other Information

6-1 GHG Inventory Quality Management

IGS has established comprehensive GHG information management procedures to ensure the integrity and accuracy of our GHG inventory, encompassing the following elements:

GHG information management procedure	
Principles Conformity and Consistency:	Adhering to the five principles of the GHG Protocol, IGS ensures that all GHG information management procedures align with the principles outlined in this document and are consistent with the intended use of the GHG inventory
Frequency of routine checks and error identification	Qualified sustainability manager will perform quarterly reviews to identify and correct any errors or omissions in the GHG inventory. Any identified discrepancies will be corrected promptly to maintain the integrity of the GHG reporting
Document and Archive Records	Sustainability Manager will document and archive all relevant GHG inventory records, including information management activities and Global Warming Potentials (GWPs), to ensure comprehensive record-keeping and support verification processes
Responsibility, Authority, and Training	Sustainability Manager is responsible for developing and overseeing the GHG inventory, ensuring clear roles, accountability, and appropriate training for all team members involved in inventory development
Review of Organizational Boundaries and GHG Sources/Sinks	Organizational boundaries are reviewed on a yearly basis or under the following circumstances: i. Changes in Organizational Structure: ii. Operational Changes iii. Regulatory requirements iv. Discovery of Errors: v. Stakeholder Feedback GHG sources and sinks within operational boundaries are also reviewed on a yearly basis to ensure accurate and comprehensive reporting

Review of quantification approaches and consistency	Review quantification methodologies in a yearly basis to align with the intended use of the GHG inventory, ensuring accuracy and consistency across multiple facilities
Measurement Equipment and Data Collection System	Maintain records and calibrate all measurement equipment, where applicable, ensuring a robust data-collection system to capture all necessary information efficiently
Internal Audits	Internal audits will be led by the Sustainability Manager. This audit, along with technical review, will be conducted on a yearly basis to: • Ensure compliance with established procedures • Identify areas for improvement • Enhance information management processes

Document retention and record keeping	
Documentation Support	All relevant records supporting the GHG inventory's design, development, and maintenance are retained for 5 years.
Format Compliance	Documentation, in paper, electronic, or other formats, is managed according to established procedures. These procedures ensure that records are maintained and readily available to facilitate verification of the GHG inventory.

6-2 GHG Uncertainty Result and Assessment

IGS adheres to "Measurement and Estimation Uncertainty of GHG emissions" guideline published by GHG Protocol. The ranking of estimated uncertainty is following the table below:

Major Emissions Category	Best Attainable Certainty Ranking
On-site fuel combustion, stationary sources	• *High* – Delivery records and bills make measurement easy and accurate; carbon content is almost standard so emissions factors are accurate. (Carbon per tonne coal varies; using an average default factor for coal may yield a Good total)
Process Emissions	• *High* - mass balance calculations combined with accurate input records can yield highly accurate totals. • *Fair or Poor* if by-products are calculated from production totals times industry average factors. Leaks of unmeasured gasses are a problem.
Directly-controlled vehicles	• *High* if complete fuel use records are tallied and multiplied by fuel factors.

	• *Fair* if distance by equipment type is multiplied by average fuel use per distance factors. • *Poor* if distance is only roughly estimated.
Electricity use	• *High* if one fuel is used for generation, or if marginal generation fuel can be matched to facility load profile. • *Fair* if annual average is used for a grid with multiple fuel sources. • *Fair or Poor* if electricity use is not metered and must be estimated from equipment and time of use.
In-bound freight, Out-bound freight	• *Good* if a few well-documented modes or routes are used, • Otherwise fair at best.
Employee job-related travel	• *Fair* if miles are accurately tallied. • *Poor* if trips are roughly categorized as short or long, etc.
Waste disposed to landfill	• *Good* if recovery systems are in place and most CH4 is collected, • Otherwise fair at best (waste amounts may be well measured but composition of waste and decomposition conditions may vary widely)

Data Accuracy rating and corresponding intervals used in the GHG Protocol uncertainty tool

Data Accuracy	Interval as Percent of Mean Value
High	+/- 5%
Good	+/- 15%
Fair	+/- 30%
Poor	More than 30%

Uncertainty Result

Uncertainty ranking is calculated using GHG Protocol's tool.

Scopes and categories	Uncertainty Ranking	Comment
Scope 1: Direct emissions	High	The uncertainty is 0% because the direct emissions are zero. There are no emissions to account for.
Scope 2: Indirect emissions	High	The uncertainty is 0% because the indirect emissions are zero. There are no emissions to account for.
Scope 3 emissions		
Category 1: Purchased goods/services	Fair	The activity data abstracted from the system is generally reliable. However, converting market economics by considering inflation rates and currency conversions may not perfectly reflect local conditions or specific supply chain activities in Malaysia, confidence interval ±15% is applied.

Category 2: Capital goods	High	The uncertainty is 0% because the direct emissions are zero. There are no emissions to account for.
Category 6: Business travel (Road)	Good	Activity data (km) collected using Google maps is highly reliable, however minor inaccuracies can occur due to route changes accordingly to real-time traffic conditions, confidence interval ±5% is applied.
Category 6: Business travel (Hotel)	Good	The activity data for the number of nights stayed in a hotel is abstracted from the historical claims made by employees in the HRMS system, ensuring high accuracy. However, minor uncertainties can still exist due to unforeseen factors, confidence interval ±5% is applied.
Category 7: Employee commuting (Homeworking)	Good	Activity data for homeworking (kWh) is estimated by following reputable sources Homeworking Emission Whitepaper (EcoACT) guideline. A confidence interval of ±10% is applied to account for potential variability and ensure accurate reporting.
Other: A4 paper consumption	Fair	The activity data is reliable as it is obtained from purchase records. However, converting the number of pieces of A4 paper consumed to weight introduces variability due to the assumption that all A4 paper consumed is 70gsm, confidence interval of ±15% is applied.
Other: Water consumption	High	The uncertainty is 0% because the indirect emissions are zero. There are no emissions to account for.
Other: Waste generated	High	The uncertainty is 0% because the indirect emissions are zero. There are no emissions to account for.

6-3 Resources Information

Related resources used to complete GHG calculation	
Global Warming Potential	IPCC Sixth Assessment Report (AR6)
Carbon Emissions Factor	i. Gov.UK conversion factor_8Jul2024 (UK) ii. Homeworking Emissions Whitepaper_2020 (EcoAct) iii. GHG emission factors for office copy paper | Environment Protection Authority Victoria_2013 iv. Supply Chain Greenhouse Gas Emission Factors v1.2 (US EPA) v. US Environmentally-Extended Input-Output (US EPA)
Calculator	i. GHG Protocol_Cross Sector Tools_Mar 17 ii. Working Days Kuala Lumpur 2024 iii. A4 Paper weight calculator iv. US Inflation Calculator_2024

6-4 Performance Indicator

Performance indicator and intensity ratios	
Ratio indicators	To be shared in the full report version.