Greenhouse Gas (GHG) Inventory Starter Workbook (Scopes 1-3)

Introduction & Guide

This workbook is a template designed to help your organization collect the necessary activity data to calculate its annual Greenhouse Gas (GHG) emissions, following the framework established by the **GHG Protocol**.
Reporting Period: (e.g., January 1, 2024 – December 31, 2024) **Organizational Boundary:** (e.g., Entire company operations, including all owned and leased facilities) **Responsible Team/Individual:** (Name, Contact)

1. Scope 1: Direct Emissions (From Sources Owned or Controlled by the Company)

Scope 1 covers emissions released directly from your facilities or vehicles.

1.1 Stationary Combustion (e.g., Furnaces, Boilers, Generators)

Required Data: Fuel type, Volume/Mass consumed, and the reporting period.

Fuel Type	Unit (Liters, m³, gal, etc.)	Volume Consumed	Emission Factor Source (e.g., EPA, DEFRA)	Notes/Location
Natural Gas	\text{m}^3 or Therms			
Diesel (for generators)	Liters			
Propane	Liters			
Total Scope 1 (Stationary)		**[Calculated Total]**		

1.2 Mobile Combustion (Company-Owned Vehicles)

Required Data: Fuel type and Volume consumed by the company's fleet.
| Vehicle/Fleet Description | Fuel Type | Unit (Liters/Gallons) | Volume Consumed | Emission Factor Source | Notes | | :--- | :--- | :--- | :--- | :--- | | Company Car Fleet | Gasoline | Liters | | | | | Delivery Trucks | Diesel | Liters | | | | | **Total Scope 1 (Mobile)** | | **[Calculated Total]** | | | |

1.3 Fugitive Emissions (Refrigerants and Air Conditioning)

Required Data: Refrigerant type, volume added/leakage, and capacity of the cooling units.

Refrigerant Type (e.g., R-410A, R-134a)	Unit (kg)	Volume Topped Up / Lost	Capacity of Unit (kg)	Location/Unit ID
	kg			
	kg			
Total Scope 1 (Fugitive)		**[Calculated Total]**		

2. Scope 2: Energy Indirect Emissions (Purchased Energy)

Scope 2 covers emissions from the generation of purchased electricity, steam, heat, or cooling consumed by your organization.

2.1 Purchased Electricity

Required Data: Total consumption in \text{kWh}, location, and supplier information.

Facility Location	Grid Region/Supplier Name	Unit (\text{kWh})	\text{kWh} Consumed	Location-Based EF (kg \text{CO}_2\text{e}/\text{kWh})	Market-Based Data (e.g., RECs, Contract)
Headquarters Office		\text{kWh}			
Warehouse 1		\text{kWh}			
Total Scope 2		**[Calculated Total]**			

3. Scope 3: Other Indirect Emissions (Value Chain)

Scope 3 is complex and covers all other indirect emissions that occur in the company's value chain. For a *starter* inventory, we focus on the most material and accessible categories.

3.1 Upstream: Most Common Starter Categories

Scope 3 Category	Activity Data Needed	Unit	Total Activity	Key Emission Factor (EF) Type
1. Purchased Goods & Services	Total spend on goods or services (Non-utility, Non-fuel).	USD/Local Currency		Spend-based EF (kg \text{CO}_2\text{e}/USD)
4. Upstream Transportation & Distribution	Spend/Distance/Mass moved for inbound logistics.	\text{km} \times \text{ton} or USD		Distance-based or Spend-based EF
5. Waste Generated in Operations	Mass of waste sent to landfill or recycling.	Tonnes		Waste Type EF (kg \text{CO}_2\text{e}/tonne)

3.2 Travel & Employee-Related Emissions

Scope 3 Category	Activity Data Needed	Unit	Total Activity	Key Emission Factor (EF) Type
6. Business Travel (Air)	Flight Class and Distance traveled (\text{km}) or Spend.	\text{km}		Flight Distance EF (kg \text{CO}_2\text{e} /\text{km})
6. Business Travel (Ground)	Rail/Taxi/Rental Car distance or spend.	\text{km} or USD		Vehicle/Distance EF
7. Employee Commuting	Average round-trip distance, mode of transport, and employee count.	Employee \times \text{km}		Mode of Transport EF

3.3 Downstream & Product Use (If Applicable)

Scope 3 Category	Activity Data Needed	Unit	Total Activity	Key Emission Factor (EF) Type
9. Downstream Transportation & Distribution	Spend/Distance/Mass moved for outbound logistics.	\text{km} \times \text{ton} or USD		Distance-based or Spend-based EF
11. Use of Sold Products	Total products sold and average energy consumption per product.	Units Sold \times \text{kWh}		Product Lifetime Usage EF

4. Next Steps & Summary

Once all the "Volume Consumed" or "Total Activity" columns are filled, the data must be multiplied by the appropriate **Emission Factor (EF)** to calculate the \text{CO}_2\text{e} (Carbon Dioxide Equivalent) emissions for each category.

Scope	Description	**Total \text{CO}_2\text{e} (Tonnes)**
Scope 1	Direct emissions (Fuel, Refrigerants, Fleet)	
Scope 2	Energy indirect (Purchased Electricity, Heat, Cooling)	
Scope 3	Other indirect (Value Chain - Travel, Goods, Waste)	
Total GHG Inventory		**[Grand Total]**

Action Items:

1. Assign responsibility for collecting data for each section.
2. Identify a reliable source for your **Emission Factors** (e.g., U.S. EPA, UK DEFRA, specific industry factors).
3. Begin the data calculation process.

4. Plan for external verification or assurance of the final results.

Common Emission Factor Sources

- **Government/National Agencies:** U.S. Environmental Protection Agency (EPA), U.K. Department for Environment, Food & Rural Affairs (DEFRA).
- **IEA:** International Energy Agency (for global energy/electricity factors).
- **Industry Associations:** Specific factors for niche industries (e.g., cement, aviation).