



# Scope 1, 2 & 3 Greenhouse Gas (GHG) Emissions Calculation

Iqra University's commitment towards protecting the environment and implementing sustainable measures in our everyday processes to reach Net Zero Emissions plays a central role in the strategic decision-making and enabler for future initiatives.

Initially, we have reported our progress through a comprehensive, annual reporting mechanism for Scope 1 & 2 emissions directly generated from the institution based on two factors; the yearly consumption of total kWh of fossil fuel generated energy and Transportation. However, with the IU Environment Strategy<sup>1</sup> In place, we have reviewed our data sources and categories for all the Scopes to present a correct measurement of total GHG Emissions from our campuses, the new factors are included in the reporting year of 2023 - 2024 (from Sept 2023 - Aug 2024) which can be viewed in the table 1.1 below. The reporting mechanism has been in place since 2018, and from that period on, we have made significant progress in reducing our GHG Emissions and further enhancing it, in line with Pakistan's National Climate Change Policy and the Paris Agreement.

## Methodology

In order to report the University GHG Emissions we have used Greenhouse Gas Protocol Calculation Tools & Guidance<sup>2</sup>. The recent revision of the tools by adding default emission factors from the IPCC 2006 Guidelines for National Greenhouse Gas Inventories<sup>3</sup> for countries "Other" than the United Kingdom (UK), United States of America (USA) & Republic of China (China) has significantly made the GHG Emissions calculator efficient & effective. Following two (2) sector specific tools are used for calculating Stationary Combustion & Mobile Combustion with respect to the data gathered from the campuses.

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<sup>1</sup> <https://sdgs.iqra.edu.pk/environment-strategy/>

<sup>2</sup> <https://ghgprotocol.org/calculation-tools-and-guidance>

<sup>3</sup> <https://www.ipcc-nggip.iges.or.jp/public/2006gl/>

- **Scope 1 & 2 - World Resources Institute (2015), GHG Protocol tool for Stationary Combustion. Version 4.1.**<sup>4</sup>
  - Natural Gas Consumption (Kitchen)
  - Fuel Consumption by University Owned Fleet
  - Fuel Consumption by University Owned Generators
  - Total Electricity Consumption
  
- **Scope 1 & 3 - World Resources Institute (2015). GHG Protocol tool for mobile combustion. Version 2.6.**<sup>5</sup>
  - Business Travel (Domestic & International)\*
  - Employee Daily Commute to Campus to & from their home\*

\* Based on the guidelines for the Category 6 & 7 - Business Travel & Employee Commuting illustrated in World Resources Institute & World Business Council for Sustainable Development, 2013<sup>6</sup>. Technical Guidance for Calculating Scope 3 Emissions. Version 1.0; a University wide survey<sup>7</sup> has been conducted among the employees of the university out of the total staff members 34% of them have responded, which is then extrapolated using Stratified Sampling to represent the total commuting patterns of all employees.

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<sup>4</sup> [https://ghgprotocol.org/sites/default/files/2023-03/Stationary\\_combustion\\_tool\\_%28Version4-1%29.xlsx](https://ghgprotocol.org/sites/default/files/2023-03/Stationary_combustion_tool_%28Version4-1%29.xlsx)

<sup>5</sup> [https://ghgprotocol.org/sites/default/files/2023-03/Transport\\_Tool\\_v2\\_6.xlsx](https://ghgprotocol.org/sites/default/files/2023-03/Transport_Tool_v2_6.xlsx)

<sup>6</sup> <https://ghgprotocol.org/scope-3-calculation-guidance-2>

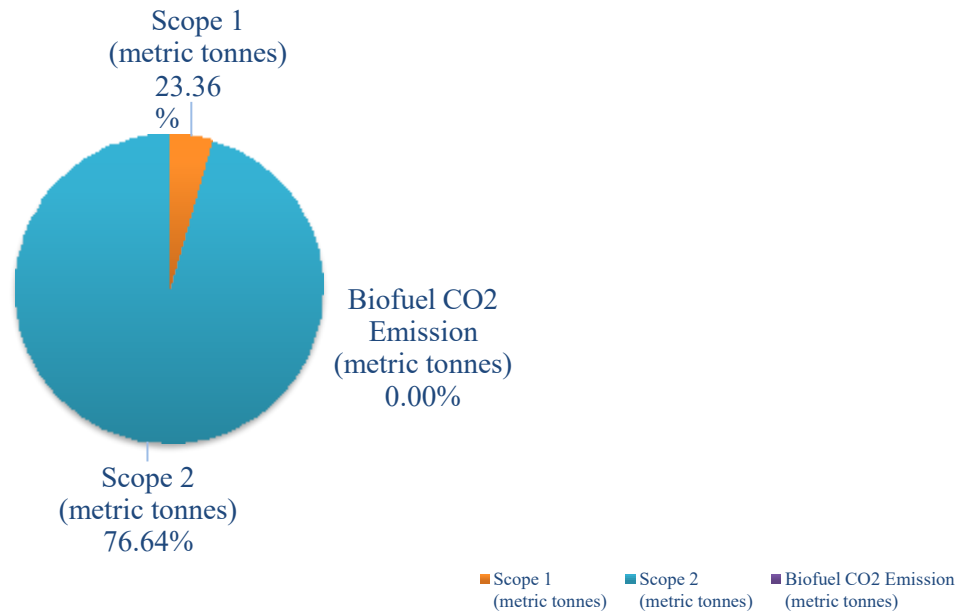
<sup>7</sup> <https://forms.gle/r9HRoLsMsfDxVTBGA>

# 2023 - 2024 Emission Calculation (Table 1.1)

Scopes	GHG Emission Source	Calculated Emissions tCO <sub>2e</sub>
Scope 1	Stationary Combustion	427.119
Scope 2	Stationary Combustion	888.470
Scope 1	Mobile Combustion	125.599
Scope 3	Mobile Combustion	404.755
<b>Sum of all Emissions Sources</b>		<b>1811.943</b>

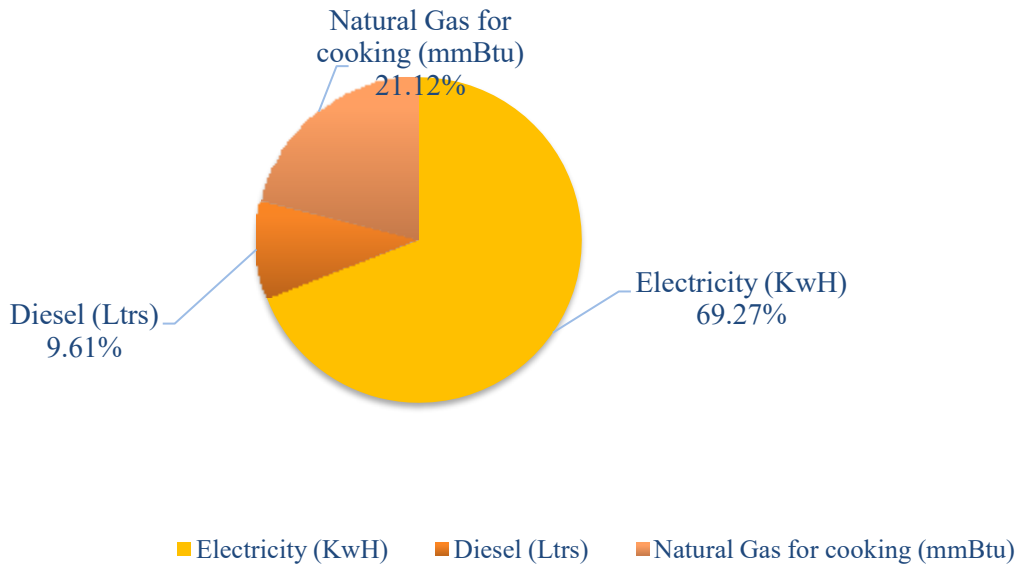
A comprehensive overview of the calculation of emissions using above mentioned tools is presented in graphical format in following sections of Summary of Stationary & Mobile Combustions respectively.

## Summary Stationary Combustion: Emissions by Scope



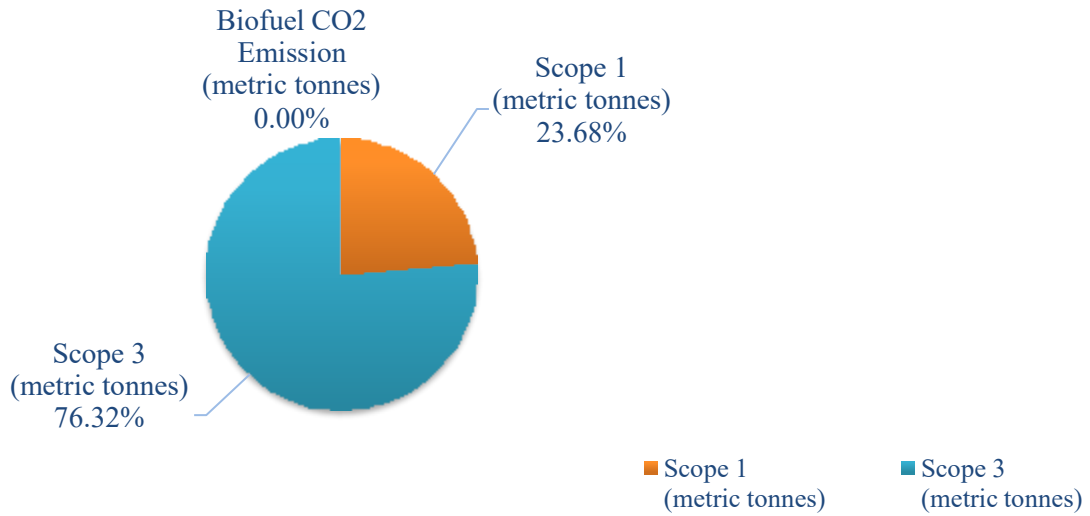
Calculation Method	Greenhouse gas	Fossil Fuel Emissions		Biofuel CO2 Emission (metric tonnes)
		Scope 1 (metric tonnes)	Scope 2 (metric tonnes)	
Energy	CO2		561.332	0
	CH4		0.0104	
	N2O		0.001E-04	
Generator	CO2	77.881		
	CH4	0.00104		
	N2O	0.001E-04		
Kitchen	CO2	171.137	0	0
	CH4	0.00312	0	
	N2O	0.003E-04	0	
<b>Total (metric tonnes CO2e)</b>		171.24	561.82	0

## Summary Stationary Combustion: Emissions by Type of Source



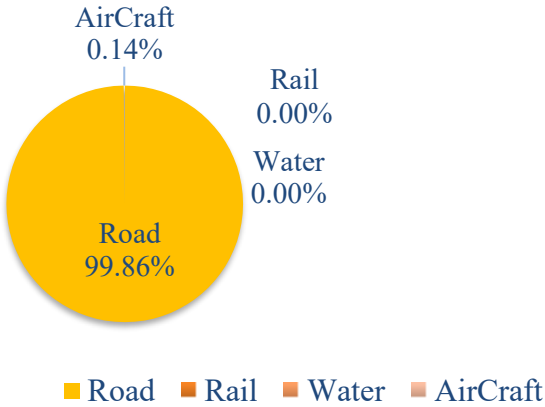
Combustion Type	Scope	Fossil Fuel Emissions			Biofuel CO2 Emission (metric tonnes)
		Fossil Fuel CO2 (metric tonnes)	CH4 (kilograms)	N2O (kilograms)	
Electricity (KwH)	Scope 1	0	0	0	0
	Scope 2	561.879	0.010	0.001E-04	
Diesel (Ltrs)	Scope 1	77.957	0.001	0.0001E-04	0
	Scope 2	0	0	0	
Natural Gas for cooking (mmBtu)	Scope 1	171.293	0.003	0.003E-04	0
	Scope 2	0	0	0	
<b>Total Emissions</b>		811.128	0.014	0.001	0
<b>Total GHG Emission (metric tonnes CO2e)</b>		811.130			

## Summary Mobile Combustion: Emissions by Scope



Calculation Method	Greenhouse gas	Fossil Fuel Emissions		Biofuel CO2 Emission (metric tonnes)
		Scope 1 (metric tonnes)	Scope 3 (metric tonnes)	
Fuel Use	CO2	137.497	0	0
	CH4	0	0	
	N2O	0	0	
Distance	CO2	0	443.100	0
	CH4	0	7.425E-05	
	N2O	0	6.188E-05	
<b>Total (metric tonnes CO2e)</b>		137.497	443.100	0

# Summary Mobile Combustion: Emissions by Mode of Transportation



Mode of Transport	Scope	Fossil Fuel Emissions			Biofuel CO2 Emission (metric tonnes)
		Fossil Fuel CO2 (metric tonnes)	CH4 (kilograms)	N2O (kilograms)	
Road	Scope 1	140.00	0	0	0
	Scope 3	410.912	0.065	0.052	
Rail	Scope 1	0	0	0	0
	Scope 3	0	0	0	
Water	Scope 1	0	0	0	0
	Scope 3	0	0	0	
AirCraft	Scope 1	0	0	0	0
	Scope 3	0.775	0	0	
<b>Total Emissions</b>		550.912	0.065	0.052	0
<b>Total GHG Emission (metric tonnes CO2e)</b>		551.687			

**The GHG Inventory for the year 2023-2024 for the data above is available online at:**  
<https://sdgs.iqra.edu.pk/ghg-emissions-report/>

In pursuance to the targets stated in IU Environment Strategy, new data and measurement strategies have been applied; in accordance to this, the relevant staff members have been trained and along with the University wide awareness session for students & staff members resulted in the implementation of efficient & effective reporting mechanism.