IIMB GREENHOUSE GAS INVENTORY - EXECUTIVE SUMMARY

Indian Institute of Management - Bangalore is the top B-School in India spread over a lush 100-acre campus. The premier institution prides itself on its esteemed faculty, students & distinguished alumni. The campus itself is no stranger to fame with sustainable stone architecture, 66 acres of green cover, long-standing trees, enriched biodiversity delighting visitors' eye.

SUSTAINABILITY INITIATIVES:

Since 2010, IIM-B has implemented several sustainable waste management practices on campus. This includes 100% segregation of waste, with dry waste being sorted into 15 to 17 categories and sent to authorized end-recyclers. Wet waste is effectively composted using microbial culture, while the biogas plant installed on campus converts food waste to biogas, which is utilized for cooking purposes. Additionally, garden waste also undergoes composting, enriching the soil nutrient levels across the campus.

Furthermore, IIMB has adopted rainwater harvesting measures, collecting rainwater from rooftops and open wells. This harvested rainwater is subsequently utilized for activities such as washing and flushing. To augment the groundwater table in and around the campus, 57 artificial recharge pits have been strategically excavated. These pits play a crucial role in facilitating water recharge and increase groundwater resources.

These initiatives have not only contributed to significant reduction in Institution's carbon footprint, but also enhanced water recycling and availability of freshwater resources.

Installation of solar panels at various building rooftops has directly contributed towards a 13% reduction in emissions.

INVENTORY METHODOLOGY:

To augment the initiatives that have shaped the campus so instinctively sustainable, IIMB has chosen to determine their 'Institutional Greenhouse Gas Inventory & Carbon stocks assessment'.

EcoMorphosys Consultants are engaged to carry out Greenhouse Gas Inventory. The studies are in line with guidelines set by Greenhouse Gas Protocol – Corporate Accounting & Reporting Standard; ISO 14064 1:2018 - Specification with guidance at the organizational level for quantification and reporting of greenhouse gas emissions and removals; complemented by Global Reporting Initiative (GRI) & World Business Council for Sustainable Development (WBCSD).

BOUNDARY & SCOPE:

IIM-B has extensively studied their organizational structure, operational boundaries & operational context while choosing the inventory boundary across all three Scopes of emissions.

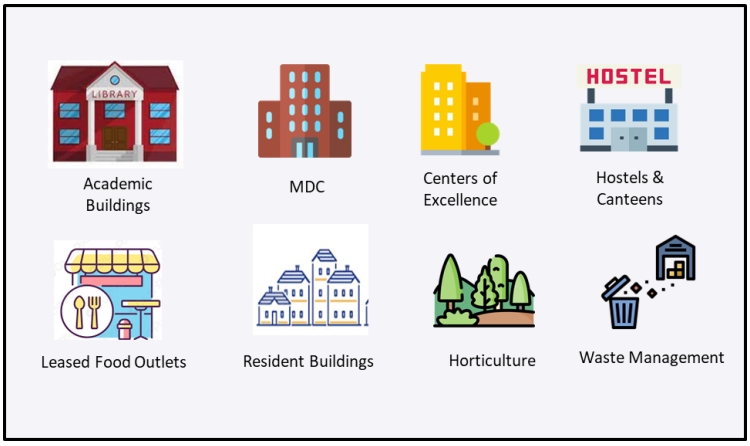


Fig.: Inclusions under Organizational Boundary

As represented, the boundary includes academic buildings, hostels, Centers of Excellence, resident quarters, all leased food outlets, horticulture & all categories of waste generated during operations at IIM-B Bannerghatta campus.

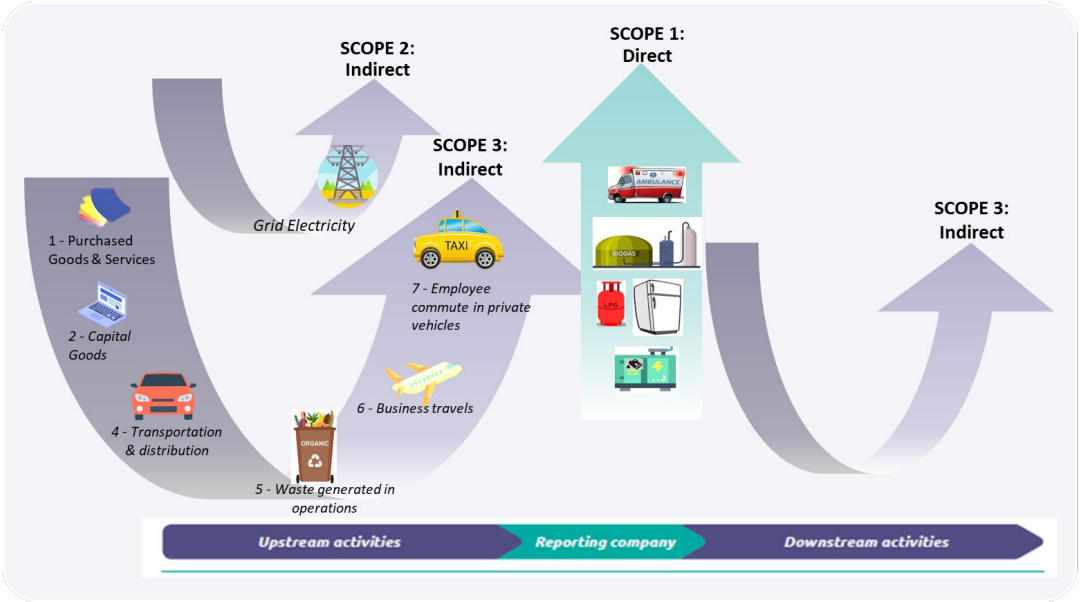


Fig.: IIM-B's Emission sources categorized as per GHG Protocol

While various Institutions & Global Corporations typically focus on quantifying their Scope 1 & 2 emissions alone, IIMB has gone a step further by delving into Scope 3 emissions to enhance relevance & completeness. Under Scope 3 emissions, we have quantified emissions from every vehicle entering our campus – guests, employees, students, delivery; We have also accounted for emissions resulting from our waste generation and the goods we purchase, among other factors.

CARBON SEQUESTRATION:

Beyond the bounds, this study has estimated the 66 acres of tranquil green cover at IIMB that stocks carbon. The carbon sequestration study was carried out in identified carbon pools in trees and shrubs. Carbon is stored through – Above ground biomass carbon (trees, trunk, leaves), below ground biomass carbon (roots), litter and deadwood biomass carbon, and soil organic carbon.

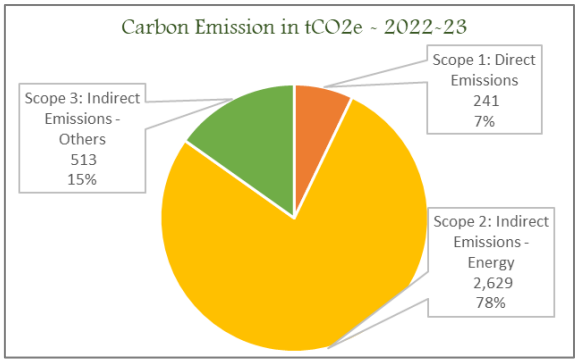
Apart from advantages of Carbon Stock potential, the green cover in IIMB campus contributes to their surrounding environment and ecosystem services such as nutrient recycling, climate amelioration, providing oxygen, conserving water resources, improving air quality, preserving soil, and supporting wildlife habitat.

RESULT:

<u>Greenhouse Gas Inventory:</u>

The report reveals that IIMB's total carbon emissions, which includes scope 1, scope 2 and scope 3 emissions, for the reporting period 2022-23 were estimated at **3382 metric tons of CO2 equivalent per annum** which equals to about **1.44 metric tons of CO_2 equivalent per capita**.

IIM-B Green House Gas Inventory Summary & Sources, as per GHG Protocol scopes, are included in the annex. The primary contributors to the carbon emissions are energy consumption, purchased & capital goods, followed by transportation.



Installation of solar panels within the campus has directly contributed towards 13% reduction in Scope 2 emissions. Various integral Sustainability initiatives have already contributed to the reduction in carbon footprint of the campus.

Carbon Stocks Assessment:

A total of **12,529 metric tons of Carbon** is sequestered by the tranquil **65.94 acres** of green cover. The carbon sequestration study identifies **137 species** across **13,000 plantations**, exhibiting varying girth sizes.

Notably, the two largest trees in size & sequestration capacity are *Ficus benghalensis* (Banyan tree) with girth diameter of 478 cm & 332 cm; storing 4.9 tons & 1.8 tons of carbon, respectively.

CONCLUSION:

The publication of the Carbon Inventory Report marks a significant milestone for IIM Bangalore, symbolizing its unwavering dedication to comprehensive development, academic excellence, and environmental stewardship. The revealed findings not only serve as a baseline for monitoring progress but also shape the evolution of strategies in pursuit of the Institute's enduring sustainability objectives.

By embracing the principles of sustainable growth, IIMB endeavors to foster innovation, contribute significantly to the national & global climate agenda and inspire the internal & external community of stakeholders, positively and sustainably.

Assessment & Report crafted by **EcoMorphosys**

ANNEXURE 1

IIM-B GREENHOUSE GAS INVENTORY - SUMMARY

		Unit	2022-23
Energy Consumption	Electricity	MWh	3,225
	Solar generation	MWh	415
	Gas for cooking - LPG & Biogas	kgs	39,807
	Diesel for DG	Lts	20,898
Inventory Emissions	**SCOPE WISE**	**Unit**	**2022-23**
	Scope 1: Direct Emissions	tCO2e	241
	Scope 2: Indirect Emissions - Energy	tCO2e	2,629
	Scope 3: Indirect Emissions - Others	tCO2e	513
	Total	tCO2e	3,382
	SOURCE WISE		
	Energy - electricity, gas, biogas,	tCO2e	2,793
	Transportation & Mobility	tCO2e	219
	Purchased & Capital Goods	tCO2e	294
	Waste generated & Fugitive Emissions	tCO2e	76
	Total	tCO2e	3,382
Carbon stock in Plants	Above Ground Biomass Carbon	t of Carbon	10,550
	Below Ground Biomass Carbon	t of Carbon	1,663
	Litter & Dead Biomass Carbon	t of Carbon	122
	Soil Organic Carbon	t of Carbon	195
	Total	t of Carbon	12,529
Generic Info	Total acres under green spaces	Hectares	26.68
	Population - Students, Professors, Residents, Employees including contract	Nos	2,350

SUMMARY OF GHG INVENTORY		
Gross Campus Emissions	*tCO2e/yr*	***3,721***
Gross Carbon Emission per capita	*tCO2e/capita*	*1.58*
On-campus Solar offsets	*tCO2e/yr*	***339***
Net Campus Emissions with Solar Offset	*tCO2e/yr*	***3,382***
Net Carbon Emission per capita	*tCO2e/capita*	*1.44*
Carbon sequestered through plantation within campus until Jan '23	*tCO2e*	*12529.45*
Carbon sequestered per hectare (B/C)	*tCO2e/hectare*	*469.53*

Data Source: *Respective process owners through meter readings, standard log books, invoices & ERP*
Reporting Period *: Academic year coincides with Financial year thus FY is considered for all cases*
IIMB GHG Inventory is carried out by EcoMorphosys

ANNEXURE 2

IIM-B GREENHOUSE GAS INVENTORY - EMISSION SOURCE LIST

Eco Morphosys — Evolve Sustainably

Scope	Sl. No.	Sources
SCOPE 1 EMISSIONS	1	**Stationary Combustion**
		Diesel fuel for DG back-up
		Biogas
		Cooking gas (LPG)
		Petrol consumption for horticulture machineries
	2	**Mobile Combustion**
		Fuel consumption of IIM-B owned vehicles
	3	**Fugitive Emissions**
		Refrigerants & coolants
		Oils for transformer, DG & STP
		Chemical for water & wastewater treatment
		Garden maintenance related manure, fertilisers & pesticides
	4	**Waste Gases**
		Biogas flared
SCOPE 2	1	**Electricity consumption**
		Grid based electricity
SCOPE 3 EMISSIONS	1	**Category 1 - Purchased Goods & Services**
		Paper - Printing paper, box files, note pads, answer scripts, Course books, etc.
		Water consumed
		Utility chemicals
		Food raw material - 3 food staples
	2	**Category 2 - Capital Goods**
		Electrical items - fridges, AC, laptops, projectors, etc.
	3	**Category 4 & 7 - Transportation & distribution; & Employee commutation in private vehicles**
		External vehicles entering from IIMB Main gate - 2, 3 & 4 wheelers of guests, students, faculty, employees, delivery, including tractors used for horticulture maintenance
		Student out bound activities
	4	**Category 5 - Waste generated in operations - (dept/building wise)**
		14 classifications of domestic waste
		Wastewater generated
	5	**Category 6 - Business travels**
		Business travels of Faculty members - Air, Rail, Bus & 4 wheeler vehicles