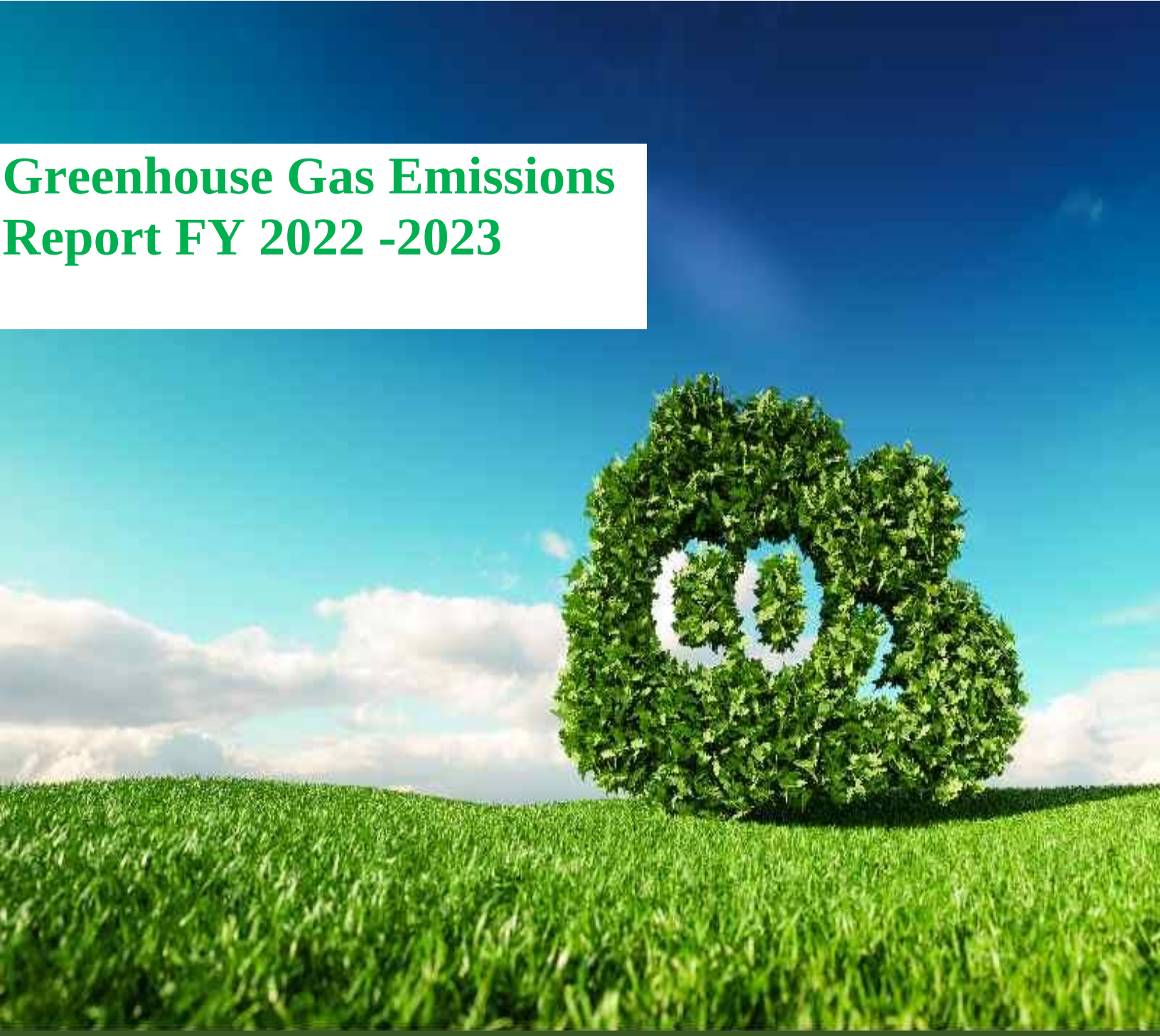
Greenhouse Gas Emissions Report FY 2022 -2023



IOL Chemicals and Pharmaceuticals Limited

Committed for Sustainable and Greener Future

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“Committed Towards Green Growth and Sustainable Future”

1. Introduction

The voluntary Greenhouse Gas (GHG) Emissions Report describes the emissions and details the verification of the inventory of greenhouse gas (GHG) for IOL Chemicals and Pharmaceuticals Limited.

Purpose of the Report

The company publishes GHG report in order to transparently disclose to its stakeholders its GHG emissions in accordance with the commitments made in the Company's EHS & S policy and strategy. Further, the report supports in measuring, monitoring, and managing the ESG performance of IOL Chemicals and Pharmaceuticals Limited. The information contained in this report discloses the inventory of GHGs and associated emissions during FY 21-22 & FY 22-23 (April 1,2021 to Mar 31, 2023). The report covers all activities which are performed under the scope of Operational boundaries.

The GHG emissions report has been prepared in accordance with the requirements described in ISO 14064-1:2018 "Greenhouse gases - Part 1: Specification with guidance at the organization level for quantification and reporting of greenhouse gas emissions and removals". It includes all required information, except those details that the standard does not consider mandatory and has not been considered relevant following the principle of relevance. This report is carried out in accordance with the GHG Accounting and Reporting Principles found within the GHG Protocol Corporate Accounting and Reporting Standard.

Frequency of the Report Publication

This report shall be reviewed in annual general meeting and published annually on IOLCP site on the weblink https://www.iolcp.com/ under the investors section.

Our Company is a leading API-based pharmaceutical company with a remarkable presence in the Specialty Chemicals market. Perceived essentially as an Ibuprofen company, we have been working towards diversifying our product portfolio. Despite the pandemic, we have showcased credible performance by generating the highest revenue this year, compared to the last five years. Regulatory approvals from USFDA, EDQM, Korean FDA, and Russian regulatory authorities, have helped us in market penetration in the export market. We believe investing in people is significant to building a capable workforce aligned with our vision and mission. We are committed to implementing policies and devising solutions to improve our environmental performance and empower our communities. Our focus has been on progressing consistently through product diversification, developing our manufacturing capabilities, and investing in R&D, showing a credible performance.

IOL Chemicals and Pharmaceuticals Limited is ISO 9001:2008 QMS Standard, ISO 14001: 2015 EMS standard, ISO 45001:2018 OHS Standard, ISO 50001 :2018 ENMS Standard and SA8000:2014 Social accountability certified Company.

Table No.1: List of Key products being manufactured at IOLCP is given below:

List of Key Products at IOLCP	
Active Pharmaceutical Ingredients (API)	**Chemicals**
Product Name	**Product Name**
Ibuprofen	Ethyl acetate
Ibuprofen	Acetyl chloride
Metformin Hydrochloride	Mono chloroacetic acid
Clopidogrel Bisulphate	Isobutyl benzene
Fenofibrate	
Pantoprazole Sodium	
Lamotrigine	
Losartan Potassium	
Gabapentin	
Levetiracetam	
Quetiapine Fumarate	
Paracetamol	

Intended User

1. Investors & Customers
2. Near by Society
3. Regulatory and Government authorities

It is considered that the Report of IOL Chemicals and Pharmaceuticals Limited, ratified by the management of the organization is substantially correct and corresponds to a faithful representation of the emissions of the activities for the scope defined by the company in conformity requirements of standard ISO 14064-1:2018 for a limited level of assurance.

Third Party Assurance

This GHG report is being verified by third party certification body BSI – British standard institute. The reporting period FY 21-22 & FY 22-23 (April 1,2021 to Mar 31, 2022 and April 1,2022 to March 2023) is being verified as per limited level of assurance and the opinion statement is published in this report on Page No. 27.

Responsibilities Matrix

Name	Designation	Responsibility
Mr. Kushal Kumar Rana	Director Works	Representation in board meeting and publishing on-site
Mr. Devender Singh	GM - EHS & S	Review and submission to Management
Mr. Gursharan Singh	Manager EHS & S	Stakeholder coordination, Inventory management, Emissions calculation & GHG report preparation
Super 15 Sustainability Champs	• Respective department GHG emission data collection, updating and submission in prescribed format. • Sustainability promotional activities initiation at site. • GHG emission reduction initiatives implementation at site. • Department level meetings & compliances.	
Email - Id	**contact@iolcp.com**	

1.1 Policies, Strategies and Collaborations

The company's commitment to its shareholders and the financial community is to provide transparent, accurate and comprehensive information that adequately reflects its current situation. The main tools used to engage with this stakeholder group include direct contact via the Management Review Meetings Monthly and Annual Report of the organization which is published publicly.

IOL Chemicals and Pharmaceuticals Limited commitment to sustainability has begun with widely recognized significant ratings and rankings, Carbon Disclosure Project (CDP), Ecovadis and signing commitment letter with Science Based Target Initiatives (SBTi) to keep us aligned in the journey of keeping down the emissions of the world below 1.5 degree Celsius in line with global goal (Paris Agreement).

The IOLCP's EHS & S Policy provides clear direction and specific objectives with regards to Environment, Health, Safety and Sustainability. It combines eight strategic EHS & S elements and applies to the whole organizations' activity.

Science Based Targets

The Science Based Targets Initiative (SBTi) is an initiative between the Carbon Disclosure Project, the United Nations Global Compact, World Resources Institute, the World Wildlife Fund for Nature, and we mean business Coalition.

The SBTi encourages companies to set carbon emissions reduction targets at a level necessary to meet the 1.5/2°C compared with preindustrial temperatures set in the Paris Climate Agreement

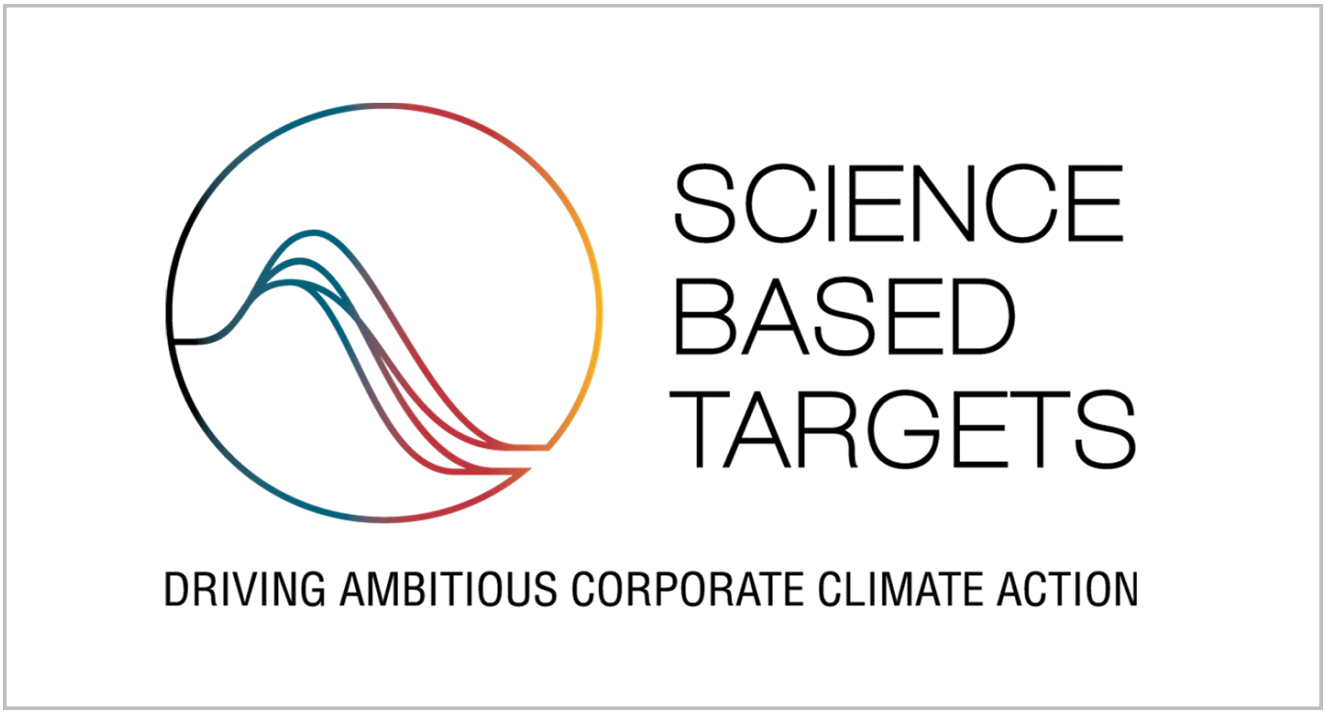


Figure No. 1: Science Based Target Initiatives

2. Inventory Boundaries

2.1 Organizational Boundary

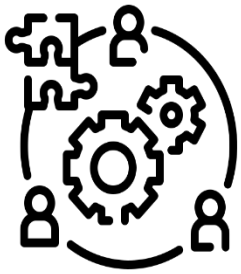
IOL Chemicals and Pharmaceuticals Limited is a leading manufacturer of APIs' and Specialty Chemicals and is a single operating site consisting of all the plants for the manufacturing worldwide supply of the products.

All the operations of IOL Chemicals and Pharmaceutical Limited takes place at Barnala location situated in Punjab and the Corporate office of the company is situated at Ludhiana, Punjab.

On both the locations the company has full financial and operational control, hence these two locations accounts for the emissions and falls under the operational control approach for the Green House Gas emission reporting.

Table No. 1: Organizational Boundary of IOL Chemicals & Pharmaceuticals Limited (Operational site and corporate office)

List of all legal entities or facilities over which reporting company has equity share, financial control, or operational control	Does reporting company have financial control? (yes/no)	Does reporting company have operational control? (yes/no)
IOL Chemicals & Pharmaceuticals Limited (Operational plants, Barnala, Punjab)	Yes	Yes
IOL Chemicals & Pharmaceuticals Limited (Corporate Office, Ludhiana, Punjab)	Yes	Yes



2.2 Reporting Boundaries

Defining the operational boundary involves identifying emissions associated with its operation categorizing them as direct and indirect emissions and choosing the scope of accounting and reporting for indirect emissions.

IOLCP has calculated its direct emissions (Scope1/Category1) from sources it owns or controls and indirect emissions (Scope 2/Category 2) resulting from the generation of purchased electricity in its annual non-financial report well as to those ESG indices requiring such information. This report will account and report the six greenhouse gases covered by the Kyoto Protocol and in accordance to ISO 14064-1:2018.

The GHG Protocol splits (Scope 3/Category 3,4,5) emissions in 15 distinct categories that occur in the company's value chain. It is the intention of IOLCP to report (Scope 3/Category 3,4,5) emission categories as reliable and transparent data becomes available and in future reports in accordance with the verified science-based target.

The following (Scope 3/Category 3,4,5) emissions from both upstream and downstream sources were accounted for and included in this report based on the availability of the data within the organization.

The following definitions are used:

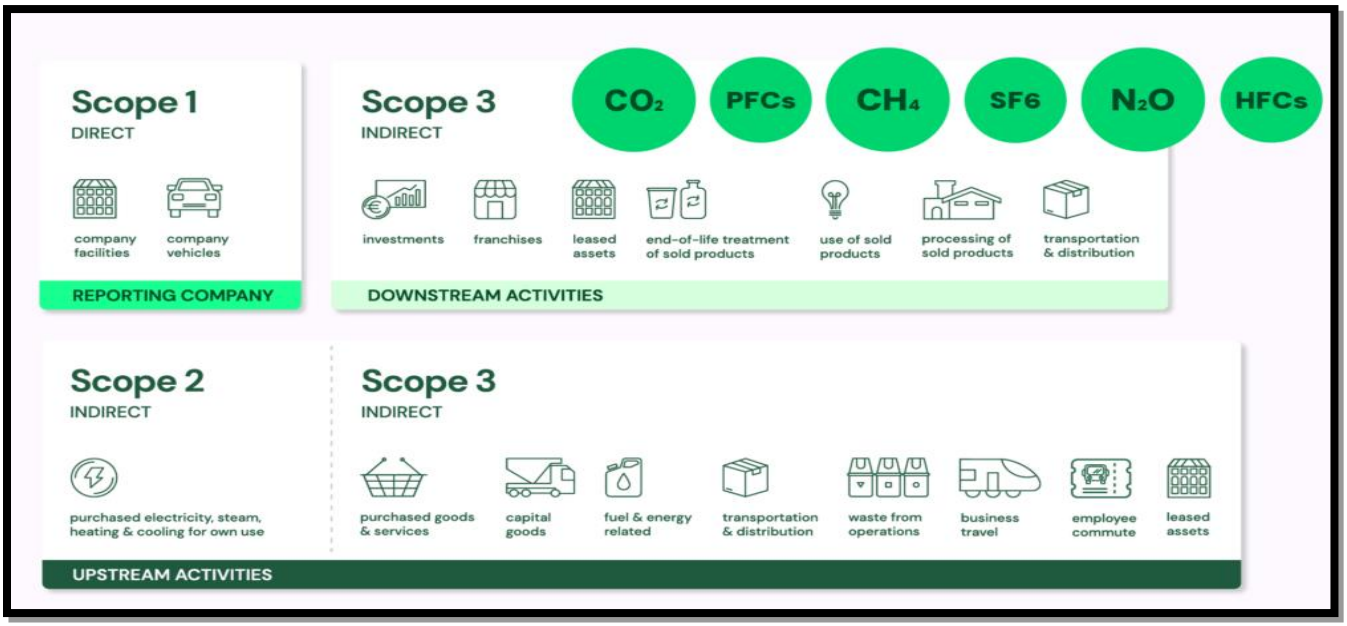


Figure No. 2 GHG Emission Scope Definitions

Scope I (Category 1) refers to direct emissions.

Scope II (Category 2) refers to indirect emissions.

Scope III (Category 3,4,5) refers to other indirect emissions.

Table No. 2: Scope/Category of GHG Emissions are subdivided into further categories which are considered:

Scope 1 /Category 1	Scope 2 /Category 2	Scope 3 /Category 3,4,5
Stationary Combustion (Coal, HSD)	Purchased Electricity	Upstream transportation and distribution • Capital Goods – Transportation. • HW Transportation • Fuel and Energy Transportation • LPG Consumption Site
Refrigerants (R-22)		Waste generated in operations
Fire Extinguisher (CO2)		Downstream Transportation and distribution
LPG Cylinder (LPG) - HO		Business travel
Mobile Combustion (Diesel)		Fuel and Energy

Significance Criteria:

Criteria for significance of Emissions is derived considering following factors:

1. Size/magnitude/volume of the emissions.
2. Challenges to gather data.
3. IOLCP level of influence on sources/sinks.

Criteria that would mandate disclosure of emissions sources as significant is:

a) Wherever the full-fledged primary and secondary data are available, IOLCP deep dive into more detailed carbon emissions calculation for instance, we have full control over our business travel activities and all the emission factors are available so we can provide the GHG emissions with utmost accuracy.

b) The emission sources excluding the activities that are not contributing more than 1% of the total emissions are considered non-significant.

2.3 Inclusion/Exclusion

IOLCP recognizes the need of identifying the significant emissions and thus included and excluded emission sources from the inventory with valid reason mentioned. The exclusion sources are not considered significant to the stakeholders, the context of the inventory and/ or are not feasible or practical to calculate at the current point of time.

Remark on exclusions:

a) No purchased steam or cooling from outside, therefore no emissions from these sources are included.

b) The fuel consumption of gardening equipment and associated emissions are very less when compared to overall fuel consumption by IOLCP. SO, it is excluded from the inventory.

c) Employees (non-localites), are coming from various locations by Buses, own vehicle (Car, Bike, Cycle) process to collect emission due to activity is established and implemented in FY 22-23 hence FY 21-22 is excluded .

d) The company do not have any leased assets or franchise currently so; these two categories will not be contributing to the company's emissions currently.

e) Upstream transportation & Fuel and energy transportation emissions for FY 21-22 is excluded in GHG report .

f) Use of Sold Products & End of Life Treatment of Sold Products are also excluded from the inventory for FY 21-22 and FY 22-23 because sector specific emissions factors not available.

g) Purchased goods and services emissions occurred for product manufacturing are excluded due to non-availability of sector specific emissions factors FY 21-22 and FY 22-23

h) Downstream transportation and distribution taken for FY 22-23 for Pharma products, chemical products are excluded for FY 22-23 .

i) Head office Employee commute Details are excluded for FY 21-22 and FY 22-23 it will be included from FY 23-24.

j) LPG, HSD, Refrigerants, HSD for owned Vehicle Consumption are taken for FY 22-23 and for FY 21-22 are excluded in this report for head office due to data insufficiency it will be included for subsequent years.

k) Business Travel for FY 21-22 is excluded for both location Site and Head office in GHG report.

l) Nonhazardous waste emissions excluded for FY 21-22 and FY 22-23 due to data insufficiency will be included for subsequent years.

Table No. 3: Inclusion and Exclusion of categories for emission calculation of IOLCP with reasons is given in the table below :

Category as per ISO-14064-1:2018	Emission Source	Inclusion/Exclusion	Remarks	FY 21-22 HO	FY 21-22 Site	FY 22-23 HO	FY 22-23 Site
Scope 1/Category 1	Stationary Combustion	Included and Reported	Boiler fuel (Coal and Husk), HSD Fuel by DG sets are considered	No	Yes	Yes	Yes
	Fugitive Combustion	Included and Reported	LPG Cylinders used in the in-house Kitchen of the industry; Fire Extinguisher (CO2) are included	No	Yes	Yes	Yes
	Mobile Combustion	Included and Reported	Company owned vehicles moving in the organization's premises are included in this category	No	Yes	Yes	Yes
Scope 2/Category 2	Purchased Electricity	Included and Reported	The purchased electricity from the grid is considered	Yes	Yes	Yes	Yes
	Purchased Steam & Cooling	Not Applicable	IOLCP produces its own Steam & cooling and hence do not require to purchase it from the outside	NA	NA	NA	NA
Scope 3/Category3	Line item: 01 Upstream transportation and distribution	Included and reported	RM purchase included in Scope 3 FY 21 -22 Excluded	No	No	No	Yes
	Line item: 02 Business travel	Included and Reported	Air travel. Road travel. Train travel.	No	No	Yes	Yes

	Line item: 03 Employee commuting	Excluded and Not Reported	Large number of employees comes by their own vehicle therefore keeping the record is not feasible at the current time.	No	No	No	Yes
	Line item: 04 Downstream transportation and distribution	Included and Reported	Domestic and International out bounds are calculated	No	Yes	No	Yes
Scope 3/Category4	Line item: 05 Purchased goods and services: this refers to the emissions occurred for product manufacturing.	Excluded and Not Reported	Not Considered as sector specific Emissions factor not available	No	No	No	No
	Line item: 06 Capital goods: ex: equipment, machinery, buildings, facilities, vehicles: emission related to manuf. of these.	Excluded and Not Reported	Not Considered as sector specific Emissions factor not available only transportation part is included in Cat -3	No	No	No	No
	Line item: 07 Fuel- and energy-purchased related activities	Included and Reported	Considered	No	No	No	Yes
	Line item: 08 Waste generated in operations	Included and Reported	Landfill disposal. Recycling. Incineration. Composting.	No	Yes	No	Yes
	Line item: 09: Upstream leased assets: emission generated from leased assets.	Not Applicable	IOLCP does not own and leased assets	NA	NA	NA	NA
Scope 3/Category5	Line item: 10: Processing of sold products	Excluded and Not Reported	Sector specific emissions factors not available.	No	No	NA	Yes

	Line item: 11: Use of sold products	Excluded and Not Reported	Sector specific emissions factors not available.	No	No	NA	Yes
	Line item: 12: End-of-life treatment of sold products	Excluded and Not Reported	Sector specific emissions factors not available.	No	No	No	No
	Line item: 13: Downstream leased assets	Not Applicable	IOLCP does not own and leased assets	NA	NA	NA	Na
	Line item: 14: Franchises	Not Applicable	IOLCP does not have any franchise, it is a single operating site situated in Barnala with head office in Ludhiana	NA	NA	NA	NA
	Line item: 15: Investments	Not Applicable	Not Applicable	NA	NA	NA	NA

3. Emission Calculations

3.1 Reporting period and methodology

Base year

The base year is IOLCP's financial year 2021-2022, or the period between April 1, 2021 to March 31, 2022.

Reporting period

This GHG emissions report reflects the situation of IOLCP's financial year 2021-22 and 2022-2023. Methodology Quantifying GHG emissions includes the data collection process and the application of documented emission factors. The quantification is based on two calculation-based methodologies, depending on the type of emission source:

- Emission in which there is a chemical transformation process (combustion, fixed or mobile) and indirect emissions from electricity consumption:

  Emissions of CO2 (t CO2e) = Activity data x Emission factor x GWP

- Emission sources where there is no chemical transformation process (fugitive emissions), or in case the results in GHG are different than CO2 are converted to tones of CO2e using the Global Warming Potential (GWP) values provided by the IPCC (e.g. tones of CH4):

  Emissions of CO2 (t CO2e) = Activity data x Global warming potential

Table No. 4: Emission factor reference and Methodology opted for the emission calculation.

Scope /Category	Source of Emission	Emission Factor FY 21-22	Emission Factor FY 22-23	Reference	Emission Factor unit
Scope 1/ Category -1	Coal	CO_2- 1.6809 CH_4- 0.00682 N_2O – 0.01904	CO_2- 1.6045 CH_4- 0.00682 N_2O – 0.01904	CEA Appendix -B Version 18 DEFRA 2022	kg CO2e of CO2 per Kg of Coal kg CO2e of CH4 per Kg of Coal kg CO2e of N2O per Kg of Coal
Scope 1/ Category -1	HSD	CO_2- 2.662 CH_4- 0.00026 N_2O - 0.0372	CO_2- 2.662 CH_4- 0.00026 N_2O - 0.0372	DEFRA 2022 full set advance users	kg CO2e of CO2 per ltr of HSD kg CO2e of CH4 per ltr of HSD kg CO2e of N2O per ltr of HSD
Scope 1/ Category -1	Refrigerant	1960	1960	AR 6 report (March -2023)	kg CO2 per Kg refrigerant
Scope 1/ Category -1	CO2 FE	1	1	DEFRA 2022 full set advance users	CO2 Eq. in tCO2
Scope 2/ Category -2	Electricity consumption	0.81	0.81	CEA (V-18)	tCO2e/MWH
Scope 3/ Category -3	Upstream transportation (Waste disposal diesel consumption)	--	CO_2- 0.94506 CH_4- 0.00017 N_2O – 0.00999	DEFRA 2022 full set advance users- freighting goods	kg CO2e of CO2 per km kg CO2e of CH4 per km kg CO2e of N2O per km
	Upstream transportation Capital Goods	--	CO_2- 0.94506 CH_4- 0.00017 N_2O – 0.00999	DEFRA 2022 full set advance	kg CO2e of CO2 per km kg CO2e of CH4 per km kg CO2e of N2O per km

				users- freighting goods	
	Upstream transportation RM Road Domestic	--	CO2- 0.94506 CH4- 0.00017 N2O – 0.00999	DEFRA 2022 full set advance users- freighting goods	kg CO2e of CO2 per km kg CO2e of CH4 per km kg CO2e of N2O per km
	Upstream transportation PM -Road	--	CO2- 0.94506 CH4- 0.00017 N2O – 0.00999	DEFRA 2022 full set advance users- freighting goods	kg CO2e of CO2 per km kg CO2e of CH4 per km kg CO2e of N2O per km
	Upstream transportation RM Road Import	--	CO2- 0.13204 CH4- 0.00002 N2O – 0.00140	DEFRA 2022 full set advance users- freighting goods	kg CO2e of CO2 per t.km kg CO2e of CH4 per t.km kg CO2e of N2O per t.km
	Upstream transportation RM Flight	--	CO2- 0.53358 CH4- 0.00004 N2O- 0.00505	DEFRA 2022 full set advance users- freighting goods	kg CO2e of CO2 per t.km kg CO2e of CH4 per t.km kg CO2e of N2O per t.km
	Upstream transportation RM Rail	--	CO2- 0.02749 CH4- 0.00002 N2O –0.0031	DEFRA 2022 full set advance users- freighting goods	kg CO2e of CO2 per t.km kg CO2e of CH4 per t.km kg CO2e of N2O per t.km
	Upstream transportation RM Sea	--	CO2- 0.01250 CH4- 0.000004 N2O –0.00017	DEFRA 2022 full set advance users- freighting goods	kg CO2e of CO2 per t.km kg CO2e of CH4 per t.km kg CO2e of N2O per t.km
Scope 3/ Category -4	Purchase of Fuel & Energy	--	WTT Coal - 393.14029 Husk: 68.65 from WTT-Biomass	DEFRA 2022 full set advance users	kg CO2e of CO2 per ton kg CO2e of CO2 per ton
Scope 3/ Category -3	Business Travel	--	Rail - 0.007837 Road : Car & Bus SUV,<2000 CC - 0.186 MDV (<12T) - 0.5928	Air – ICAO Rail - India GHG Program Road - India GHG Program	Kg passengers' CO2/journey (KG) Kg CO2 / Passenger – km
Scope 3/ Category -3	Employee Commute		Road : Car & Bus SUV,<2000 CC - 0.186 MDV (<12T) - 0.5928 Bike 125cc -0.0290	GHG Program Road - India GHG Program	kg CO2e of CO2 per KM kg CO2e of CH4 per KM kg CO2e of N2O per KM

Scope 3/ Category -4	Waste Generated in operation	--	Recycling -21.28 Landfill- 467.008 Co-processing- 21.28	DEFRA 2022 full set advance users	tCO2 per Ton
Scope 3/ Category -4	LPG consumption by outsourced vendor	CO2- 2935.18 CH_4- 2.28 N_2O – 1.83	CO2- 2935.18 CH_4- 2.28 N_2O – 1.83	DEFRA 2022 full set advance users	kg CO2e of CO2 per t of LPG kg CO2e of CH4 per t of LPG kg CO2e of N2O per t of LPG
Scope 3/ Category -3	Downstream transportation Waste diesel	--	CO2- 0.94506 CH_4- 0.00017 N_2O – 0.00999	DEFRA 2022 full set advance users- freighting goods	kg CO2e of CO2 per km kg CO2e of CH4 per km kg CO2e of N2O per km
	Downstream transportation Product Sold -Road	--	CO2- 0.13204 CH_4- 0.00002 N_2O – 0.00140	DEFRA 2022 full set advance users- freighting goods	kg CO2e of CO2 per t.km kg CO2e of CH4 per t.km kg CO2e of N2O per t.km
	Downstream transportation Product Sold -Flight	--	CO2- 0.53358 CH_4- 0.00004 N_2O- 0.00505	DEFRA 2022 full set advance users- freighting goods	kg CO2e of CO2 per t.km kg CO2e of CH4 per t.km kg CO2e of N2O per t.km
	Downstream transportation Product Sold -Rail	--	CO2- 0.02749 CH_4- 0.00002 N_2O –0.0031	DEFRA 2022 full set advance users- freighting goods	kg CO2e of CO2 per t.km kg CO2e of CH4 per t.km kg CO2e of N2O per t.km
	Downstream transportation Product Sold -Sea	--	CO2- 0.01250 CH_4- 0.000004 N_2O –0.00017	DEFRA 2022 full set advance users- freighting goods (Container Ship)	kg CO2e of CO2 per t.km kg CO2e of CH4 per t.km kg CO2e of N2O per t.km
Biogenic	Husk	1.16	1.16	DEFRA 2022 full set advance users	kg CO2e of CO2 per Kg of Husk

Note 1 : DEFRA full set (Advance) database is being used for calculation of GHG Scope/ Category Emissions as they are globally acknowledged and to maintain the uniformity throughout the calculations in this report. Country specific (Road, Rail transport) emission factors are used for business and employee travel only .

Note 2: Coal Emission factor calculation approach:

STEP 1: Emission factor based on internal lab testing reports, GCV based factors for imported/Indian coal was taken from reference: CEA V-18
STEP 2: Inhouse consumption of Indian and Indonesian coal was calculated.
STEP 3: Blending ratio of both the coal types considered
Eg: Blending ratio = Consumption of Indian coal/ Total consumption of coal
STEP 4: Calculation of weighted average
Emission factor base on GCV * blending ratio
STEP 5: Emission factor = Weighted average* coal consumed

Note 3: Scope 3/Category 3 Employee Commute calculation approach:

STEP 1: Distance measurements departure (home/ common bus stop to destination (IOLCP site)
Bus to & fro avg. station: 15 km.
Car/bikes to & fro avg. 18 km.
STEP 2: Emission factors are taken from the DEFRA database.
STEP 3: Multiplication of values from step 1 and step 2 will give the final values total emissions.

4. Information on emissions

BASE YEAR

Table No. 5: Contains information regarding the base year FY 21-22

Scope /Category	TOTAL Emissions (tCO2e)
Scope 1/Category 1	**24928**
Scope 2/Category 2	**1171.5**
Scope 3/Category 3,4,5	**779**
Total Emissions (Category 1 to 5)	**26879**

INFORMATION ON EMISSIONS

Biogenic CO2 emissions

Relevant biogenic CO2 emissions and removals quantified separately in tCO2e for Rice Husk are given below :

EMISSIONS	TOTAL (tCO2e) FY 21-22	TOTAL (tCO2e) FY 22-23
Rice Husk	**134434**	**155243**

Table No. 6: FY 2021-2022 (April'21-Mar'22)

Sr. No.	Fuel Source	CO2 (tCO2e)	CH4 (tCO2e)	N2O (tCO2e)	HFCs (tCO2e	PFCs (tCO2e)	SF6 (tCO2e)
1	Diesel for Vehicles Barnala (Owned)	58	0.006	0.813	NA	NA	NA
2	Diesel for Vehicles HO (Owned)	NA	NA	NA	NA	NA	NA
3	Coal Consumption Boilers	24204.96	98.208	274.2	NA	NA	NA
4	Refrigerant R 22	NA	NA	NA	131.7	NA	NA
5	CO2 Fire Extinguishers	0.049	NA	NA	NA	NA	NA
6	HSD Consumption in DG's/Hydra/Forklifts	157.58	0.015	2.202	NA	NA	NA
Total Scope 1/Category 1 Emissions		24421	98.229	277.191	131.7	NA	NA

Emissions disaggregated by source types	
Scope 2/Category 2: Indirect Emissions from the Use of Purchased Electricity, Steam, Heating and Cooling	**tCO2e**
Indirect Emissions from Purchased/Acquired Electricity	**1171.5**
Indirect Emissions from Purchased/Acquired Steam	**NA**
Indirect Emissions from Purchased/Acquired Heating	**NA**
Indirect Emissions from Purchased/Acquired Cooling	**NA**
Total Scope 2/Category 2Emissions	**1171.5**

Scope 3/Category 3,4,5 Details FY 21-22

Fuel Source	CO2 (tCO2e)	CH4 (tCO2e)	N2O (tCO2e)	HFCs (tCO2e)	PFCs (tCO2e)	SF6 (tCO2e)
HW Transportation Upstream Cat -3	7.74	0.0014	0.082	NA	NA	NA
Waste Generated/Disposal in Operation Cat-4	684.7904	NA	NA	NA	NA	NA
LPG Used in Canteen Barnala Site Cat-4	86.6083	0.06727	0.0539	NA	NA	NA
Total Scope 3/Category 3,4,5 Emissions	779	0.06727	0.136	NA	NA	NA

Table No. 7: FY 2022-2023 (April'22-Mar'23)

Scope/Category	TOTAL (tCO2e)
Scope 1/Category 1	23786.46
Scope 2/Category 2	6134.45
Scope 3/Category 3,4,5	14419
Total Emissions (Category 1 to 5)	44340

Emissions FY 22-23

Fuel Source	CO2 (tCO2e)	CH4 (tCO2e)	N2O (tCO2e)	HFCs (tCO2e)	PFCs (tCO2e)	SF6 (tCO2e)
Diesel for Vehicles Barnala (Owned)	69	0.007	0.96	NA	NA	NA
Diesel for Vehicles HO (Owned)	99	0.010	0.037	NA	NA	NA
Coal Consumption Boilers	22952.37	97.560	272.367	NA	NA	NA
Refrigerant R 22	NA	NA	NA	101.52	NA	NA
CO2 Fire Extinguishers	0.064	NA	NA	NA	NA	NA
HSD Consumption in DG's/Hydra/Forklifts	165.94	0.0162	2.3191	NA	NA	NA
HSD Consumption in DG's HO	12.24	0.0012	0.1711	NA	NA	NA
LPG HO Owned Canteen	13.27	0.01031	0.0082	NA	NA	NA

Total Scope 1/Category 1 Emissions	23311	97.604	275.85	101.52	NA	NA

Emissions disaggregated by source types	
Scope 2/Category 2: Indirect Emissions from the Use of Purchased Electricity, Steam, Heating and Cooling	**tCO2e**
Indirect Emissions from Purchased/Acquired Electricity	**6134.45**
Indirect Emissions from Purchased/Acquired Steam	**NA**
Indirect Emissions from Purchased/Acquired Heating	**NA**
Indirect Emissions from Purchased/Acquired Cooling	**NA**
Total Scope 2/Category 2Emissions	**6134.45**

Note : Scope 2/Category 2Emissions hiked from last FY 21-22 as there were replacement work for turbine was done during that time period, we consumed grid electricity from PSPCL - Punjab State Power Corporation Limited during that particular time period.

Scope 3/Category 3,4,5 Details FY 22-23

Gases →	CO2	CH4	N2O	HFCs	PFCs	SF6
Fuel Source	(tCO2e)	(tCO2e)	(tCO2e)	(tCO2e)	(tCO2e)	(tCO2e)
HW Transportation Upstream Cat -3	56.01	0.010	0.59	NA	NA	NA
Waste Generated in Operation Cat-4	1322.16	NA	NA	NA	NA	NA
LPG Used in Canteen Barnala Site Cat-3	96.92	0.075	0.06	NA	NA	NA
Business Travel Cat-3	74.29	NA	NA	NA	NA	NA
Cat -3 Product Sold Domestic	2285.23	0.346	24.23	NA	NA	NA
Cat-3 Product Sold International	1761	0.45	20	NA	NA	NA
RM Cat -03 Domestic	2217.88	0.399	23.44	NA	NA	NA
RM Cat -03 Import	3423.31	0.464	39.12	NA	NA	NA
Capital goods Transportation Cat -03	133.724	0.0241	1.41	NA	NA	NA
Employee Commute Cat-03	31.23	NA	NA	NA	NA	NA
Packaging Transportation Cat -03	509.91	0.0917	5.390	NA	NA	NA
Purchase of Fuel (Coal,Husk) 04	2391	NA	NA	NA	NA	NA

Total Scope 3/Category 3,4,5 Emissions	**14303**	**1.8620**	**114**	NA	NA	NA

ADDITIONAL INFORMATION

Information on any GHG sequestration
Tree Plantation are being done through CSR drives outside and within the campus.

Uncertainty in GHG Emissions:

Uncertainty is accounting of Scope1/Category1 ,Scope 3/Category 3,4,5 (indirect emissions) are related to generic assumptions made. Different challenges were faced related to collecting data and ensuring data quality. 95% details in GHG Emissions calculation are accurate and the uncertainty in the calculations are pertaining to data capturing, manual recording, calibration errors of individual measuring equipment, the variance is projected value is within 5 % of the final value**.**

Sr. No.	Scope /Category	Emission Type	Uncertainty Description
1	**Scope 3 /Category 3**	Upstream transportation	Distance between Company and Vendor site is referred from Google maps only, the uncertainty pertains to the uncertainty in measurement via google maps.
2	**Scope 3 /Category 4**	Waste Generated in operation	Distance between Company and Vendor site is referred from Google maps only, the uncertainty pertains to the uncertainty in measurement via google maps.
3	**Scope 3 /Category 3**	Downstream Activity	Distance between Company and Vendor site is referred from Google maps only, the uncertainty pertains to the uncertainty in measurement via google maps.
4	**Scope 1 /Category 1**	Coal /Husk	Uncertainty due to manual recording, measurement equipment, are linked with the primary data which lies within the committed materiality.

5	**Scope 3/ Category 3**	Employee Commute	uncertainty due to average distance mapping for employees coming from nearby localities Bus to & fro avg. station: 15 km. Car/bikes to & fro avg. 18 km.
6	**Scope 1 /Category 1**	Weighing Error	Error of weighing balance of incoming and outgoing goods on the weighing scale. The error limits within the error percentage of weighing scale.

5. Emissions Recalculation Statement

As IOLCP initiated its GHG emissions Journey in FY 21 -22 with Scope 1 & 2 emissions calculations. In order to maintain the consistency between data sets, base year emissions recalculated in line with ISO 14064-1 :2018 requirements and for aligning emissions factors.

Calculated emissions previous calculated vs current shown in Below table for FY 21-22

EMISSIONS	FY 21-22 Previous Calculated Emissions TOTAL (tCO2e)	FY 21-22 Current Calculated Emissions TOTAL (tCO2e)	Remarks
Scope 1/Category -1	33732.502	24928	Emission factors standardized & Calculator tool that were openly available over web were used for emissions Calculations earlier. However, now emission factors sourced from **Defra/IPCC/CEA are being used.**
Scope 2/Category -2	402.442	1171.5	
Scope 3 /Category3,4,5	NA	779	Scope -3/Category 3.4.5 Base year Taken as FY 22-23 as Major categories included in FY 22-23 Due to primary data unavailability from internal and external stakeholders 'certain parameters were excluded.

6. Information on Emission Reduction Initiatives

Below are Emission reduction initiatives taken by site which falls under reporting boundary only defined for GHG emission calculations.

FY 22-23:

Sr. No.	Initiative	Date of Commissioning	Objective	Scope /Category	Fuel Saving Per day (MT)	tCO2e
1	Steam saving Activity by Replacement of 13MW turbine	18.01.23	Energy saving by replacement of Old 12.1 MW Turbine with new designed efficient 12.4 MW Turbine with same input parameters of steam	Scope -1 /Category -1	60.11	**4869.738**
2	Steam saving Activity by Replacement of 4MW turbine	04.11.22	Energy saving by replacement of Old 4MW Turbine with new designed efficient 4.225MW Turbine with same input parameters of steam.	Scope -1 /Category -1	37.5	**4271.98125**

Note 1: Initiative No.1

From the date of commencement, the turbine has run for 51.5 days in FY 22-23.
Coal saving in the running days is multiplied with the emission factor of coal (1.6045) for calculating the emissions saved in tCO2e.

Note 2: Initiative No.2

From the date of commencement, the turbine has run for 71 days in FY 22-23.
Coal saving in the running days is multiplied with the emission factor of coal (1.6045) for calculating the emissions saved in tCO2e.

Emission reduction projects projected for FY 23-24

Table No. 8: CAPEX Budget of Sustainability assigned to the organization.

Sr. No.	Particular	Scope /Category	tCO2e
01	EV Golf Car for Employees/Visitors from main gate to main block or other areas keeping in view the distance	Scope-1 /Category -1	25.552
02	EV Bus for company employees (1 No.)	Scope -1/ Category -1	489.70
03	E-Scooty/Ranger Bicycles for Environment and Sustainability Team	Scope -1/Category -1	1.27776
04	Replacement of Diesel Forklifts with Li-Ion Battery Operated Forklifts (2 No.) in Warehouse	Scope -1/Category -1	57.4992
Total Scope -1/Category -1 Reduction tCO2e – 574.02896			

List of References:

Sr. No.	Details	Link
1	Central Electricity Authority V-18	https://cea.nic.in/cdm-CO2-baseline-database/?lang=en
2	DEFRA 2022 full set advance users	https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2022
3	India GHG Program - Road Rail	https://indiaghgp.org/transport-emission-factors
4	ICAO – Air	https://applications.icao.int/icec
5	Biogenic Emissions	https://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/2_Volume2/V2_2_Ch2_Stationary_Combustion.pdf
6	Distance -Road	https://www.google.com/maps/dir/"/"/@30.3042426,75.5142605,14z/data=!3m1!4b1
7	Distance -flight	https://applications.icao.int/icec
8	Distance -rail	https://indiarailinfo.com/
7	AR6 GWP	https://www.ipcc.ch/report/ar6/wg1/downloads/report/IPCC_AR6_WGI_Chapter_07_Supplementary_Material.pdf

List of Abbreviations

Sr. No.	Abbreviation	Definition
01	GHG	Green House Gases
02	USFDA	US Food & Drug Administration
03	EDQM	European Directorate of Quality of Medicine & HealthCare Management
04	FDA	Food & Drug Administration
05	ISO	International Standardization for Organizations
06	SBTi	Science Based Target Initiatives
07	GWP	Global Warming Potential
08	DEFRA	Department of Environment Food & Rural Affairs
09	IGES	Institute of Global Environment Strategies
10	EPA	Environmental Protection Agency
11	ICAO	International Civil Aviation Organization
12	CEA	Central Electricity Authority
13	HSD	High Speed Diesel
14	PM	Packaging Material
15	RM	Raw Material
16	HW	Hazardous Waste
17	R & D	Research and development

Carbon Foot Print Verification Third Party Asssurance :

By Royal Charter

CARBON FOOTPRINT VERIFICATION
VERIFICATION OPINION STATEMENT

This is to verify that: **IOL Chemicals and Pharmaceuticals Limited.**
Trident Complex,
VPO Fatehgarh Channa
Distt. Barnala
Punjab-148101
India

Holds Statement No: **CFV 787773**

Verification opinion statement

As a result of verification procedures, it is the opinion of BSI with limited assurance that:

- The Greenhouse Gas Direct emissions and Indirect Emissions for IOL Chemicals and Pharmaceuticals Limited for the period from 01/04/2022 to 31/03/2023 in tons of CO_2 equivalent is:

Category	**Emission type**	**Total** (t CO_2e)
Category 1	Direct emission	23786
Category 2	Indirect emission from imported energy	6134
Category 3, 4 & 5	Indirect emission from transportation, products and services used/sold	14419
	Total emission	**44340**
	Emissions from Rice Husk(biogenic)	155243

- The period from 01/04/2021 to 31/03/2022 is considered as base year, whose emissions are also verified and captured as below:

Category	**Emission type**	**Total** (t CO_2e)
Category 1	Direct emission	24928
Category 2	Indirect emission from imported energy	1171
Category 3, 4 & 5	Indirect emission from transportation, products and services used/sold	779
	Total emission	**26879**
	Emissions from Rice Husk(biogenic)	134434

- Main operational activities carried out in the defined organizational boundary include 'Production of API & Speciality Chemicals'
- No material misstatements in the selected year Greenhouse Gas Emissions calculation for IOL Chemicals and Pharmaceuticals Limited were revealed.
- Data quality was considered acceptable in meeting the principles as set out in ISO 14064-1:2018 and ISO 14064-3:2019.

Theuns Kotze, Managing Director – IMETA Assurance

For and on behalf of BSI:

Originally registered: **2023/04/22** Latest Issue: **2023/04/22**

...making excellence a habit.™

Mission Carbon Free IOLCP

"Committed Towards Green Growth and Sustainable Future"