Green House Gas (GHG) Emission Report FY 25-26

The Granules GHG Emissions Report presents a comprehensive assessment of greenhouse gas emissions associated with Granules India Limited (GIL) and its subsidiaries—Granules Pharmaceuticals Inc. (GPI), Granules Consumer health (GCH), Granules Life Sciences (GLS), Granules CZRO (GCZRO) and Senn Chemicals AG—encompassing emissions across Scope 1, Scope 2, and Scope 3 categories.

As part of our commitment to reducing environmental impact, we have analyzed emissions directly under our control (Scope 1), such as fuel combustion in company-owned facilities and vehicles, as well as indirect emissions from purchased electricity, steam, and heating (Scope 2).

Scope 3 emissions encompass indirect greenhouse gas emissions across our entire value chain, including those arising from supplier activities as well as the use and end-of-life treatment of our products. As these emissions typically constitute the largest share of our overall carbon footprint, we are committed to addressing them through enhanced collaboration with suppliers, operational optimization, and active engagement with stakeholders throughout the supply chain.

Granules Scope 3 quantification methodology is aligned with the GHG accounting standard and ISO 14064, which provides guidance on the quantification and reporting of greenhouse gas emissions. Due to variations in data availability and the nature of each category, we have employed different methodologies for different categories

Note: Categories 11,13,14 and 15 are accounted as they are not relevant to Granules Business.

FY 24-25	Category	Unit	Granules (Standalone)	Subsidiaries					Granules Consolidated
			GIL	GLS	GCZRO	GCH	GPI	Senn Chemicals AG	
Scope-1	Direct emissions from fuel	tCO_2e	59,851	920	6	121	1,830	723	63,451
Scope-2 (location based)	Indirect emissions from electricity consumption	tCO_2e	64,967	12,898	291	441	2,448	119	81,164
Scope-2 (market based)	Indirect emissions from electricity consumption	tCO_2e	1,285	12,898	291	441	2,448	119	17,482
Scope-1+2(market based)		tCO_2e	61,136	13,818	297	562	4,278	842	80,933
Scope-3	Category 1 – Purchased goods & services	tCO_2e	4,29,284	4,278	8,483	1,578	2,758	12,868	4,59,249
Scope-3	Category 2 – Capital Goods	tCO_2e	4,018	12,841	954	1,875	2,812	336	22,836
Scope-3	Category 3 – Fuel & Energy related activities	tCO_2e	29,733	3,609	79	106	779	250	34,556
Scope-3	Category 4 – Upstream transportation & distribution	tCO_2e	6,844	246	3	21	1,022	38	8,174
Scope-3	Category 5 – Waste generated from operations	tCO_2e	849	2	1	85	10	423	1370
Scope-3	Category 6 – business travel	tCO_2e	664	39	5	34	50	30	823
Scope-3	Category 7 – employee commuting	tCO_2e	1,323	89	2	208	549	112	2,283
Scope-3	Category 8 – Upstream Leased assets	tCO_2e	253	-	-	34	1,017	-	1,304
Scope-3	Category 9 -Downstream transportation & distribution	tCO_2e	48,342	158	0	83	1,262	3	49,847
Scope-3	Category 10 – Processing of sold products	tCO_2e	36,547	-	-	-	-	-	36,547
Scope-3	Category 11 – Use of sold products	tCO_2e							
Scope-3	Category 12 – End of life treatment of sold products	tCO_2e	2,436	5	-	398	1,460	-	4,299
Scope-3	Category 13 – Downstream leased assets	tCO_2e							
Scope-3	Category 14 - Franchises	tCO_2e							
Scope-3	Category 15 - Investments	tCO_2e							
Scope-3 emissions		tCO_2e	5,60,293	21,268	9,527	4,422	11,720	14,060	6,21,289
Scope-1 + 2 (market based) + Scope-3		tCO_2e	6,21,429	35,086	9,824	4,984	15,998	14,902	7,02,222

GHG Quantification Methodology

SCOPE 1 - QUANTIFICATION METHODOLOGY

Scope 1 emissions have been calculated by considering the following categories:

Stationary combustion

Emissions from stationary combustion have been calculated based on the consumption of fuels used in our on-site operations. The primary fuel types considered include furnace oil, coal, high-speed diesel (HSD), natural gas, and gasoline. The quantification of associated emissions has been performed using emission factors prescribed in IPCC and DEFRA.

Fugitive emissions from refrigerants

Activity data for refrigerant consumption has been estimated using a purchase-based approach. Fugitive greenhouse gas (GHG) emissions have been quantified by applying emission factors taken from the Intergovernmental Panel on Climate Change (IPCC) and the UK Department for Environment, Food and Rural Affairs (DEFRA).

Process Emissions

Wastewater generated across the Company's manufacturing units is discharged to third-party Common Effluent Treatment Plants (CETPs) for treatment and disposal. As these activities occur outside the Company's operational boundary, emissions associated with the transportation and off-site treatment of effluents are accounted for under Scope 3 – Category 5: Waste Generated in Operations. Accordingly, such emissions are excluded from Scope 1 process emissions.

Biogenic emissions

Biogenic emissions have been quantified for biomass-based fuels, specifically wood chips and bio-briquettes, utilized in our boiler operations. Activity data has been taken from actual fuel consumption records maintained during the reporting period.

Emissions of biogenic carbon dioxide (CO_2) have been calculated using emission factors sourced from the UK Department for Environment, Food and Rural Affairs (DEFRA). In accordance with established greenhouse gas accounting standards, biogenic CO_2 emissions are disclosed separately from fossil-derived CO_2 emissions to ensure transparency and comparability.

SCOPE 2 - QUANTIFICATION METHODOLOGY

Scope 2 emissions comprise indirect greenhouse gas (GHG) emissions associated with the consumption of purchased electricity. Activity data has been derived from grid electricity consumption during the reporting period.

A location-based approach has been adopted for the quantification of Scope 2 emissions, due to the unavailability of supplier-specific emission factors. The estimation of emissions has been carried out using the latest available grid emission factors published by the Central Electricity Authority (CEA), India.

SCOPE 3 QUANTIFICATION METHODOLOGY

The methodology adopted for the quantification of Scope 3 emissions is aligned with the Greenhouse Gas (GHG) Protocol and ISO 14064 (guidance on the quantification and reporting of greenhouse gas emissions).

Given the variability in data availability and the diverse nature of Scope 3 categories, a combination of calculation approaches has been applied across different categories. These include spend-based, activity-based, and hybrid methodologies, selected based on the most appropriate representation of underlying emissions and data reliability.

Scope 3 Category No	Scope 3 Category description	Methodology used
1	Purchased Goods & Services	Supplier – specific method (~85%) Hybrid method (~15%)
2	Capital Goods & Services	Hybrid method Average-product method
3	Fuel and energy-related activities	Average – data method
4	Upstream Transportation and Distribution	Distance-based method
5	Waste Generated in Operations	Waste-type-specific-method
6	Business Travel	Distance-based method
7	Employee Commuting	Distance-based method
8	Upstream Leased Assets	Lessor-specific method
9	Downstream Transportation & Distribution	Distance-based method
10	Processing Sold Products	Average-data method
11	Use of Sold Products	Not Applicable, as this category is not relevant
12	End-of-Life Treatment of Sold Products	Average-data method
13	Downstream Leased Assets	Not Applicable, as this category is not relevant

Scope 3 Category No	Scope 3 Category description	Methodology used
14	Franchises	Not Applicable, as this category is not relevant
15	Investments	Not Applicable, as this category is not relevant

Category 1 – Purchases Goods & Services

A significant proportion of emissions from purchased goods and services is attributable to the procurement of Active Pharmaceutical Ingredients (APIs), Key Starting Materials (KSMs), excipients, solvents, and packaging materials.

Key raw materials contributing to these emissions include, para-aminophenol (PAP), acetic anhydride, dicyandiamide (DCDA), ibuprofen, metformin hydrochloride etc. These inputs represent core components of the organization's manufacturing processes and, therefore, constitute a material share of value chain emissions.

Methodology Used: Supplier specific method & Hybrid method using primary and secondary data.

Category 2 – Capital Goods

Most of our capital goods emissions arise from the procurement of pharmaceutical manufacturing equipment supporting the production of Active Pharmaceutical Ingredients (APIs), Pharmaceutical Formulation Intermediates (PFIs), and finished dosage forms.

Key equipment includes compression machines, tablet printing machines, coating granulators, air receiver tanks, reactors, centrifuges, and other auxiliary processing equipment.

Methodology Used: Hybrid method & Average-product method using primary and secondary data.

Source of emission factor – USEEIO v1.4.0

Category 3 – Fuel and energy-related activities

Electricity and fuels such as coal, high-speed diesel (HSD), and furnace oil are used in the manufacture of pharmaceutical products. As a result, most emissions from fuel- and energy-related activities arise from upstream processes, including the extraction, production, and transportation of fuels, as well as the generation and transmission of purchased electricity.

Methodology Used: Average-data method using primary data

Calculation formula: ∑ (Fuel consumed (eg – Liters, tonnes, kWh) x upstream fuel emission factor (kgCO2e / T))

Source of emission factor – DEFRA 2025, Ecoinvent

Category 4 – Upstream Transportation & Distribution

Majority of upstream transportation and distribution emissions arise from the inbound movement of materials, including APIs, raw materials (RM), key starting materials (KSMs), excipients, packing materials (PM), and MRO (Maintenance, Repair, and Operations) items used in manufacturing.

Most suppliers are in India and China, with materials primarily transported via sea and road, while air transport constitutes a relatively small share of inbound shipments.

Methodology Used: Distance-based method using primary data

Calculation formula: ∑ (mass of goods transported (Tonnes) x distance travelled (km) x emission factor for transport mode (kgCO2e / Ton km))

Source of emission factor: India Specific Transport Emission Factors, India GHG Program, 2015 & DEFRA 2025.

Category 5 – Waste generated in operations

Emissions from waste generated in operations arise from the transportation, treatment, and disposal of waste and wastewater generated during pharmaceutical manufacturing processes. The company generates two primary waste streams: liquid waste (effluent) and solid waste. Effluent is subjected to primary treatment at on-site facilities and subsequently discharged to Central Effluent Treatment Plants (CETPs). Solid waste is further categorized based on the respective disposal and treatment methods.

Reported emissions include those associated with the transportation of waste to third-party treatment facilities, as well as emissions from the treatment and disposal processes undertaken at such facilities.

Methodology Used: Waste-type-specific method using primary data

Calculation formula: ∑ (waste produced (Tonnes) x waste treatment specific emission factor (kgCO2e / Ton))

Source of emission factor: DEFRA 2025 and Ecoinvent

Category 6 – Business Travel

Emissions from business travel arise from employee travel and associated accommodation during official activities such as meetings, conferences, site visits, and training sessions. Business travel is primarily undertaken via air and road transport (cars), facilitated through company-authorized travel service providers. Additional modes of travel, including rail and bus, as well as hotel stays, are utilized as required and reimbursed in accordance with the company's travel policy.

Methodology Used: Distance-based method using primary data

Calculation formula: ∑ (distance travelled (vehicle-km / pax-km) x Emission factor (kgCO2e / vehicle-km or pax-km))

Source of emission factor India Specific Transport Emission Factors, India GHG Program, 2015 & DEFRA 2025.

Category 7 – Employee Commute

Emissions from employee commuting arise from daily travel between employees' residences and workplace locations. These emissions are generated through various modes of transport, including company-provided buses, employee-owned vehicles (such as two-wheelers and cars), and public transportation modes such as buses and metro.

Methodology Used: Distance-based method using primary data

Calculation formula: ∑ (daily one-way distance between residence and work (km) x 2 x Commuting days per year x emission factor (kgCO2e / km))

Source of emission factor India Specific Transport Emission Factors, India GHG Program, 2015.

Category 8 – Upstream Leased Assets

Emissions from upstream leased assets arise from the use of leased infrastructure and equipment, including warehouses and hostels. The company utilizes these leased assets to support its operational activities, and emissions associated with their usage have been estimated under this category.

Methodology Used: Lessor-specific method using primary data

Calculation formula: ∑ (Lessor's Scope 1 and Scope 2 emissions in proportion to the share of the asset utilized by the company, based on parameters such as area, volume, or quantity)

Source of emission factor DEFRA 2025, Ecoinvent.

Category 9 – Downstream Transportation & Distribution

Emissions from downstream transportation and distribution primarily arise from the shipment of finished dosage formulations, pharmaceutical formulation intermediates (PFIs), and active pharmaceutical ingredients (APIs) to customers. The company's customer base is largely concentrated in Europe, North and South America. International shipments are predominantly transported via sea and air, while domestic distribution mainly involves APIs, with a smaller share of PFIs, transported via road.

Methodology Used: Distance-based method using primary data

Calculation formula: ∑ (mass of goods transported (Tonnes) x distance travelled (km) x emission factor for transport mode (kgCO2e / Ton km))

Source of emission factor: India Specific Transport Emission Factors, India GHG Program, 2015, DEFRA 2025.

Category 10 – Processing of Sold Products

The company manufactures Active Pharmaceutical Ingredients (APIs) and Pharmaceutical Formulation Intermediates (PFIs), which are supplied to other pharmaceutical companies for further processing into finished dosage formulations (FD) intended for end-use consumption.

Methodology Used: Average-data method using secondary data

Calculation formula: ∑ (mass of sold intermediate products (kg) x emission factor of processing of sold products (kgCO2e / kg of final product))

Category 11 – Use of sold Products

This category is not relevant to Granules operations; all the final products are consumed by the end users.

Category 12 – End-of-Life Treatment of Sold Products

The company sells a portfolio comprising Active Pharmaceutical Ingredients (APIs), Pharmaceutical Formulation Intermediates (PFIs), and finished dosage formulations (FD). Emissions have been considered for the treatment of waste arising from the downstream processing of APIs and PFIs into finished dosages by customers.

Additionally, emissions associated with the disposal of packaging waste generated after the consumption of finished dosage products sold by the company have been accounted for.

Methodology Used: Average-data method using secondary data

Calculation formula: ∑ (mass of sold products (kg) x emission factor for waste disposal and treatment of sold products (kgCO2e / kg of final product))

Category 13 – Downstream leased assets

This category is not relevant to Granules operations; all the final products are consumed by the end users.

Category 14 – Franchises

This category is not relevant to Granules operations; all the final products are consumed by the end users

Category 15 – Investments

This category is not relevant to Granules operations; all the final products are consumed by the end users

UNCERTAINTY

The GHG emissions reported under Scope 1, Scope 2, and Scope 3 are subject to inherent uncertainties arising from the use of estimation techniques and limitations in data availability.

For Scope 1 and Scope 2 emissions, which cover direct emissions and energy-related activities within the organization's operational control, the level of uncertainty is relatively low, as these estimates are based on measured data and utility records. However, discrepancies may occur due to potential inaccuracies or gaps in fuel and electricity consumption data.

For Scope 3 emissions, the degree of uncertainty is comparatively higher due to the complexity of the value chain and the diversity of data sources involved. These emissions depend significantly on activities outside the organization's direct control, such as supplier operations, transportation, and end-of-life treatment processes. As a result, factors including variations in supplier reporting practices, limited access to primary data, data quality concerns, and the reliance on industry-average emission factors or estimation models contribute to this uncertainty.

Granules acknowledges these challenges and is committed to enhancing the quality, data collection and estimation processes over time. Efforts are ongoing to improve data collection processes, strengthen supplier engagement, adopt better calculation methodologies, and utilize more representative data sources and emission factors, thereby improving the accuracy of the Scope 3 inventory and supporting alignment with GHG Protocol requirements and sustainability objectives.