

GHG Quantification Methodology & Data Employed for FY2023 -24

Scope 1 GHG Emissions

For calculating Scope 1 emissions, we have incorporated data related to three categories:

Stationary Combustion:

The primary fuels considered for determining the activity data are Diesel, Coal, and LPG, which are utilized in diesel generators (DG sets), forklifts, boilers, and cooking. To quantify emissions, emission factors have been referenced from the IPCC, and Global Warming Potentials (GWPs) are sourced from the IPCC Sixth Assessment Report.

Mobile Combustion:

A distance-based approach' has been employed to determine the activity data for cars registered under the name of Neuland, with diesel being the fuel used. To quantify emissions, the emission factor has been sourced from India-specific road transport emission factors

Fugitive emission:

A purchase-based approach' has been utilized to derive the activity data for refrigerant consumption. To calculate fugitive GHG emissions, the emission factors from the Intergovernmental Panel on Climate Change (IPCC) Fifth Assessment Report (2014) and ASHRAE standards have been referenced.

Scope 2 GHG Emissions

The Scope 2 emissions data includes activity data related to grid electricity consumption. Due to the lack of source-specific emission factors, we have utilized a location-based approach for selecting emission factors from the CO2 Baseline Database for the Indian Power Sector.

Scope 3 – GHG Emissions

In the FY 2023-24, 4 categories under scope 3 have been covered. The methodologies and the data sources are explained below

Category	Methodology	Data Source
4) Upstream Transportation & Distribution	Distance-based method Average percentage method	Primary Secondary
5) Waste generated in Operation	Waste-type-specific method	Secondary
8) Upstream Leased Asset	Distance-based method	Primary
9) Downstream Transportation and distribution	Distance-based method	Primary

Methodology adopted

1. Category 4 - Upstream Transportation: Distance-based method

$\sum (\text{mass of goods purchased (tonnes)} \times \text{distance travelled in transport leg} \times \text{emission factor of transport mode or vehicle type (kg CO}_2 \text{ e/tonne-km)})$

Distribution: Average Data (percentage) method

$\text{Total electricity consumed (kWh)} \times (\text{volume of company's stored goods} / \text{total Volume Goods stored in storage} \times 100) (\text{m}^3 \text{ or pallet}) \times \text{electricity emission factor}$

2. Category 5 - Waste generated in Operation: Waste-type-specific method

$\sum (\text{waste produced (tonnes or m}^3 \text{)}) \times \text{waste type and waste treatment specific emission factor (kg CO}_2 \text{ e/tonne or m}^3 \text{)}$

3. Category 8 - Upstream Leased Asset: Distance-based method

$= \sum (\text{total distance travelled by vehicle type (vehicle-km or passenger-km)} \times \text{vehicle specific emission factor (kg CO}_2 \text{ e/vehicle-km or kg CO}_2 \text{ e/passenger-km)})$

4. Category 9 - Downstream Transportation: Distance-based method

$\sum (\text{mass of goods purchased (tonnes)} \times \text{distance travelled in transport leg} \times \text{emission factor of transport mode or vehicle type (kg CO}_2 \text{ e/tonne-km)})$

Datasets Employed & Assumptions in the calculations

1. Upstream Transportation Distribution:

- Only road transportation has been considered from Hyderabad Airport to units.
- Road transportation is also considered from the sea-ports of Vizag, Mumbai, and Chennai to units.
- Electricity bills for different sites are used to arrive at the emissions attributed to distribution.
- Inventory storage of Neuland in the cold storage facility is approximately 7%.

2. Leased Asset:

- Assuming bus is having capacity of 45 passengers
- All the cab and Bus are Diesel Vehicles

3. Downstream Transportation:

The following are the considerations while estimating emissions under this category.

Neuland's activity data includes various Incoterms (International commercial terms), excluding EXW and FCA, as they have not covered these expenses. The calculation sheet only includes

Incoterms for which Neuland has made payments. For road transportation from Hyderabad to the customer location, vehicles are considered as LDV due to the quantity being close to 3 tonnes.

Air transportation is from Hyderabad Airport to the customer's destination, with approximate kilometres considered from Google Maps. Sea transportation is from Mumbai JNPT Sea port to the customer's destination, with approximate kilometres considered from Google Maps.

Courier transportation is considered from Hyderabad to the customer's destination. Separate data for road transportation from the units to the Mumbai seaport is not provided, so it is calculated based on the number of rows in the sea trip. Similarly, for road transportation from the units to the Hyderabad airport, the number of rows is multiplied by the distance to the airport for each unit to calculate the total.

4. Waste generated in Operation:

- Different types of waste require specific treatments so emission factors from Defra are applied based on the type of waste and treatment method.

Emission factors used

The following sources for emission factors have been used in the estimation of Scope1, 2 and 3 and explained above:

1. IPCC
2. DEFRA
3. WRI-2015 (India transport GHG emission factors)
4. CEA-2023