

Clariant Methodology for Scope 1-3 Emissions Calculation

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This document describes the calculation boundaries, methodologies, assumptions, and key references used in the preparation of the FY2025 inventory of scope 1, 2, and 3 greenhouse gas (GHG) emissions in Clariant's value chain.

Emissions for our business are calculated using methodologies consistent with the Greenhouse Gas (GHG) Protocol: A Corporate Accounting and Reporting Standard, with reference to the additional guidance provided in the GHG Protocol: Scope 2 Guidance (amendment to GHG Protocol), GHG Protocol Corporate Value Chain (Scope 3) Accounting and Reporting Standard (Scope 3 Standard), GHG Protocol Technical Guidance for Calculating Scope 3 Emissions (Scope 3 Guidance). Additionally, we consider the World Business Council for Sustainable Development (WBCSD) "Guidance for accounting and reporting corporate GHG emissions in the chemicals sector value chain" and the Together for Sustainability guideline as appropriate.

We have also reviewed emissions guidance across a range of other standards in preparing these disclosures, including Intergovernmental Panel on Climate Change (IPCC) Guidelines for National GHG Inventories, International Standard ISO 14064-1, and the Sustainability Accounting Standards Board (SASB). This document, in combination with the published data on scope 1, scope 2, and scope 3 GHG emissions for our business, meets the disclosure requirements of the Global Reporting Initiative (GRI) standard GRI 3052 and the European Sustainability Reporting Standard (ESRS). Our disclosures are also aligned with the recommendation of the Financial Stability Board's Task Force on Climate-related Financial Disclosures (TCFD) that organizations disclose "Scope 1, Scope 2, and, if appropriate, Scope 3 greenhouse gas emissions, and the related risks".

KPMG has provided limited assurance over scope 1 & 2 and scope 3.1, 3.3, 3.4, 3.9, and 3.12 emissions data. A copy of KPMG's independent assurance statement can be found in our Annual Report 2024. The same assurance scope is foreseen for 2025.

The company committed to reducing scope 1, 2, and 3 Greenhouse Gas (GHG) emissions by setting near-term company-wide emission reductions in line with climate science with the Science Based Targets initiative (SBTi), which were validated in 2021 and revalidated in 2025.

Changes from the Previous Year

For the first time, the acquisition of Lucas Meyer Cosmetics (LMC) is included in the scope 1&2 and Scope 3 reporting. Two sites are operated by Clariant LMC: Knockrow, Australia, and Yavne, Israel.

Organizational Boundary

From FY2019, Clariant has developed scope 1 & 2, and scope 3 emissions totals based on the financial consolidation approach to boundaries, consistent with the GHG Protocol Corporate Accounting and Reporting Standard definitions:

Clariant's Financial Control Approach

- **Definition:** Under this approach, Clariant accounts for 100% of GHG emissions from operations over which it has financial control, meaning it can direct financial and operating policies with the aim of gaining economic benefits.
- **Boundary Setting:** Clariant includes emissions from all facilities and operations where it has financial control in its GHG inventory, even if it doesn't have full ownership.
- **Consolidation Method:** Emissions are consolidated based on financial accounting rules, aligning with how Clariant prepares its consolidated financial statements.
- **Subsidiary Treatment:** For subsidiaries where Clariant has financial control, 100% of emissions are included in its GHG inventory, regardless of the actual equity ownership percentage.
- **Joint Ventures:** For joint ventures, the treatment depends on whether Clariant has financial control. If it does, 100% of emissions are included; if not, these emissions are not included in scope 1 & 2.
- **Consistency with Financial Reporting:** This approach creates alignment between Clariant's financial reporting and its GHG emissions reporting, making it easier to integrate climate-related financial disclosures.
- **Exclusions:** Laboratories, offices, and warehouses are included in the report only when located within Clariant-owned production sites. Other standalone locations are excluded from the reporting scope, as their contribution to scope 1 & 2 GHG emissions amounts to less than 1 % of total emissions and is therefore not material. Exclusions for Scope 3 emissions are listed in the corresponding section below.

Scope 1 Emissions

Clariant follows a structured methodology for reporting scope 1 (direct) emissions in accordance with the GHG Protocol.

Emission Sources Identification

Clariant identifies and accounts for all direct emission sources under its financial control, including:

- **Stationary combustion (boilers, furnaces, process heaters, etc.)**
The fuel consumption is, wherever possible, reported based on monthly invoices. If the consumption is based on meter reading, periodic calibration is ensured. Monthly coal consumption is recorded by scale, and annual consumption is reconciled with invoices.
- **Mobile combustion (company-owned vehicles, equipment)**
The consumption is based on invoices

- **Process emissions from chemical production**

In general, CO₂, CH₄, N₂O, PFCs, SF₆, and NF₃ are to be considered as potential greenhouse gases. Due to the nature of Clariant's chemical processes, only CO₂ and N₂O contribute to the process-related scope 1 emissions. The process CO₂ emissions are calculated based on activities (chemical reactions and stoichiometric ratios). N₂O emissions are calculated based on activities (chemical reactions) and N₂O measurements of representative reactions.

- **Fugitive emissions related to HFCs (leaks, refrigerant losses)**

HFC emissions are associated with losses and leaks in cooling systems and are attributed to the amount of refrigerant added during maintenance in the reporting year. HFCs (hydrofluorocarbons) are calculated using the GWP factors for their individual components.

Calculation Methodology

Clariant employs the following calculation approach:

- **Activity Data Collection:** Systematically gathers monthly consumption data for fuels and other emission-generating activities on site and plant level
- **Emission Factors:** Applies appropriate emission factors from recognized sources. The GHG protocol combustion tool is used for all combustion-related emissions. These factors include relevant emissions due to N₂O and CH₄.
- **GHG Calculation:** Uses the formula: Activity Data × Emission Factor = GHG Emissions
- **Global Warming Potentials (GWPs):** Converts all greenhouse gases to CO₂ equivalents using IPCC's latest GWP values (IPCC Fifth Assessment Report)

Clariant created the Sustainable Operations Cockpit (SOC) to enable monthly tracking of energy consumption and GHG emissions. It combines energy consumption data for all production sites with conversion and emission factors. It also enables more granular reporting using individual conversion factors at the site and plant levels. All conversion factors are centrally managed to ensure data harmonization and accuracy. The SOC also tracks energy and utility supply to third parties at sites where Clariant serves as a service provider.

Scope 2 Emissions

Scope 2 emissions result from purchased electricity and steam consumption.

Calculation Methodology

Clariant employs the following calculation approach:

- **Activity Data Collection:** Systematically gathers monthly invoiced consumption data for electricity and steam on-site and plant level

- **Emission Factors:** Applies supplier-specific emission factors wherever possible (see below). These factors include relevant emissions due to N₂O and CH₄.
- **GHG Calculation:** Uses the formula: Activity Data × Emission Factor = GHG Emissions

Purchased Electricity

Electricity-related scope 2 emissions are reported using both the market-based method (default calculation approach unless otherwise stated) and the location-based method, as recommended by the GHG Protocol scope 2 Guidance. Definitions of location and market-based reporting used in Clariant's accounting are consistent with the GHG Protocol terminology as follows:

Market-based reporting

Scope 2 GHG emissions are based on the generators (and therefore the generation fuel mix) from which the reporter contractually purchases electricity and/or is directly provided electricity via direct line transfer. The market-based calculations utilize the latest conversion factors derived from supplier-specific information and contractual instruments for green electricity procurement, including Power Purchase Agreements (PPAs) and bundled and unbundled renewable electricity certificates. For green electricity supply contracts, Clariant uses the emission factor obtained from contract agreements on specific sources for which there is no emission of specific attributes.

Location-based reporting

Scope 2 GHG emissions based on average energy generation emission factors for defined geographic locations. For location-based electricity emissions calculations, Clariant uses the latest emission factors from the International Energy Agency (IEA), except for US operations, where the latest US EPA eGRID sub-regional emission factors specific to each state are applied. The same factors are used in a few cases where no market-based factors are available.

Purchased Steam

Steam-related emissions are calculated using either supplier-specific information or, when unavailable, standard emission factors of the primary fuel combined with its corresponding efficiency factor. A standard value for the heating value of steam of 0.778 MWh/ t of steam (equivalent to 0.0028 TJ/t of steam) is used. The following table shows the information for the main types of primary energy used for steam generation

Calculation of steam emission factor based on primary energy					
primary energy	Emission factor primary energy T CO ₂ /TJ according GHG protocol	Energy efficiency steam generation	Energy value steam TJ/T of steam	Emission factor steam T CO ₂ /T of steam	Emission factor steam t CO ₂ /GJ
Natural gas	56.1	0.95	0.0028	0.165	0.059
diesel	73.3	0.80	0.0028	0.257	0.092
Bituminous coal	94.6	0.7	0.0028	0.378	0.135
Antracite coal	98.3	0.7	0.0028	0.393	0.140
Biomass	1.9	0.8	0.0028	0.007	0.002
Mix NG, antracite 10:90	94.08	0.75	0.0028	0.351	0.125
Mix NG, Bituminous 50:50	75.35	0.75	0.0028	0.281	0.100

Monitoring

- Conducts regular site audits and inspections
- Maintains detailed logs of fuel consumption and process parameters
- Performs periodic calibration of measurement equipment

Quality Assurance

- Applies internal verification procedures like four-eye principle and visualization in SOC, which allows easy identification of outliers
- Conducts regular data quality checks
- Implements a multi-level review process
- Ensures consistency in methodologies across different sites

Reporting Framework

- Reports emissions in metric tons of CO₂ equivalent (tCO₂e)
- Provides transparent documentation of calculation methodologies
- Includes contextual information such as production volumes for intensity metrics
- Ensures year-to-year consistency in reporting approaches

Scope 3 Emissions calculation at Clariant: A Commitment to Sustainable Value Chain Management

Clariant's carbon footprinting process is managed through dedicated tools and procedures that ensure consistency, accuracy, and transparency in emissions reporting. This methodology document provides an overview of the approaches used to calculate emissions for each material scope 3 category, the data sources utilized, and the processes for validation and verification.

Importance of Corporate Calculation and Reporting of Scope 3 Emissions in the Chemical Industry

Scope 3 emissions are all indirect greenhouse gas emissions that occur in a company's value chain, including emissions from raw material extraction, transportation, and disposal of products. These emissions are often the most difficult to measure and manage, as they are outside of an organization's direct control and require collaboration with suppliers, customers, and other stakeholders.

For chemical companies like Clariant, these emissions typically represent the largest portion of their carbon footprint, making their measurement, reporting, and reduction essential for meaningful climate action.

Scope 3 Emissions Calculation and Reporting at Clariant

Clariant began serious efforts to calculate and report scope 3 emissions with 2019 as its baseline year. Due to cumulative changes exceeding the threshold across scope 1, 2, and 3 emissions, Clariant conducted a comprehensive Rebaselining project in 2024. The recalculation encompassed all scopes and relevant scope 3 categories and implemented current reporting methodologies while maintaining consistent data granularity between the 2019 baseline and present reporting standards.

Clariant reports on several scope 3 categories that were deemed material at the time of setting its Science-Based Targets (SBTs) and that represent 95% of the scope 3 emissions. These include:

- **Category 1:** Purchased goods and services
- **Category 3:** Fuel- and energy-related activities (not included in scope 1 or scope 2)
- **Category 4:** Upstream transportation and distribution
- **Category 9:** Downstream transportation and distribution
- **Category 12:** End-of-life treatment of sold products

Material Scope 3 Categories

Clariant has assessed all 15 scope 3 categories defined by the GHG Protocol and has identified the following 5 categories as material to its operations:

Category	Description	Influence	Size/Coverage
1	Purchased goods and services	High	Large
3	Fuel- and energy-related activities	Medium	Medium
4	Upstream transportation and distribution	High	Large
9	Downstream transportation and distribution	Medium	Medium
12	End-of-life treatment of sold products	Low	Medium

GHG Emissions Calculation Methodology for Material Scope 3 Categories

Category 1: Purchased Goods and Services

Clariant's methodology provides comprehensive coverage of all raw materials and packaging materials purchased globally.

Clariant has developed a hybrid methodology that combines supplier-specific data with secondary emission factors to calculate its scope 3 Category 1 emissions. To ensure that always the best available emission factor is used for a procured raw material, a hierarchical approach to data sources is implemented:

- At the top of this hierarchy are supplier-specific emission factors, which are collected through Clariant's Supplier Sustainability Assessment program.
- When supplier-specific data is unavailable, the emission factors from reputable databases such as ecoinvent and other industry-specific sources are used on the Material or CAS level, considering technological and geographical representativeness whenever possible.
- For materials where database information is limited, Clariant turns to literature-based emission factors derived from published scientific literature and industry reports or data for relevant analogue materials as a proxy, respectively.

- As a last resort, when no other sources are available, the company employs Business Unit-specific extrapolations to ensure comprehensive coverage. This granular approach ensures that calculations reflect the specific circumstances of each material purchase and guarantees that the best available data are used.

The actual emissions calculations are performed using Clariant's scope 3 Dashboard, which multiplies material quantities by their respective emission factors.

Clariant's methodology incorporates several special considerations that require manual adjustments to ensure accuracy and completeness:

- Emissions related to packaging (indirect spend) are calculated by determining the annual spend and applying an average emission factor from the I/O database, which is the closest one available for packaging.
- Palm emission corrections based on Roundtable on Sustainable Palm Oil (RSPO) certificate purchases are manually adjusted at year-end to reflect the reduced environmental impact of certified sustainable palm oil products. The calculation is based on a methodology that was certified by a third party in 2024.
- Subsidiaries: Joint ventures or new acquisitions not included in Clariant's ERP system require manual addition to ensure comprehensive coverage. Depending on data availability, emission data were either collected directly from the sites or extrapolated from total purchased quantities and average emission data (purchased goods) or % sales of Clariant (packaging), respectively.
- Divestments: Divested sites are systematically removed from annual reporting following the year the divestiture is completed, maintaining the relevance and accuracy of the emissions data (not relevant for 2025).

The following items are excluded from emissions calculation:

- Customer-owned materials
- Toll-manufactured goods if raw materials are provided by Clariant and scope 1 & 2 emissions from tolling operations were found to be negligible
Emissions from services (indirect spend) were found to be negligible

Category 2: Capital Goods

Scope 3 Category 2 emissions cover greenhouse gas emissions associated with capital goods, which are final products that have an extended life and are used by the company to manufacture products, provide services, or sell, store, and deliver merchandise.

Calculation Methodology

Clariant uses a spend-based method for calculating emissions from capital goods. This approach involves:

- **Data Collection:** Financial data on capital expenditures is collected from Clariant's financial systems.
- **Categorization:** Capital expenditures are systematically categorized by type to ensure appropriate emission factor application.
- **Emission Factor Application:** Appropriate emission factors from the USEEIO (United States Environmentally Extended Input-Output) database are applied based on the category of capital good.
- **Calculation Formula:** Emissions are calculated by multiplying expenditure by the corresponding emission factor

The methodology covers all capital expenditure reported on Clariant's financial systems. It's essential to acknowledge that the spend-based method yields estimates rather than precise measurements, a recognized limitation of this approach.

Category 3: Fuel- and Energy-Related Activities

Scope 3 Category 3 emissions relate to the upstream impacts of fuel and energy-related activities that are not included in scope 1 & 2. The calculation requires the total quantities of fuels, steam, and electricity purchased and sold to end users in the calendar year.

The emissions are divided into four sub-categories:

Category 3a: Upstream Emissions of Purchased Fuels

Emissions are calculated by multiplying the quantities of fuels purchased by selected emission factors, which do not include combustion, to avoid double-counting with scope 1 & 2 emissions. Clariant uses the following datasets for different fuel types:

- **Diesel/petrol:** market for diesel (RoW) from ecoinvent v3.10 or higher
- **Heavy oil:** market for heavy fuel oil (RoW) from ecoinvent v3.10 or higher
- **Natural gas:** market for natural gas, medium pressure, vehicle grade (GLO) from ecoinvent v3.10 or higher
- **Coal, lignite:** market for lignite (RoW) from ecoinvent v3.10 or higher
- **Coal, bituminous:** market for charcoal (GLO) from ecoinvent v3.10 or higher
- **Biomass:** market for bagasse, from sugarcane (RoW) from ecoinvent v3.10 or higher
- **Biofuel:** Palm oil biodiesel (open effluent pond) from RED III directive

Category 3b: Upstream Emissions of Purchased Electricity

All upstream (cradle-to-gate) emissions of purchased energy are calculated based on the quantities of energy purchased and consumed (subtracting any supplied energy) multiplied by the latest well-

to-tank emission factors. These factors are sourced from the International Energy Agency (IEA) for electricity and DEFRA for steam.

Electricity data (consumption and emission factors) are computed at the country level, while for steam a single emission factor is applied to the overall consumption.

Category 3c: Transmission and Distribution (T&D) Losses

Emissions from T&D losses are calculated based on the purchased quantities of electricity per country (supplied energies not excluded), multiplied by the country-specific IEA T&D emission factors. For steam-related emissions, the calculation uses total steam purchased multiplied by the T&D loss emission factor from DEFRA, accounting for an overall 5% loss.

Category 3d: Generation of Purchased Electricity Sold to End Users

This covers emissions from electricity/ steam purchased but not consumed and hence sold. The emissions cover the full lifecycle of the energy as per the GHG Protocol. The emission factors are therefore the sum of the respective upstream and combustion factors. The latest available IEA emission factors are used for electricity and DEFRA for steam.

Category 4: Upstream Transportation and Distribution

Scope 3 category 4 at Clariant relates to GHG emissions from all transportation and distribution activities paid for by the company, including inbound logistics, outbound logistics, and transportation between Clariant's own facilities in vehicles not owned or controlled by Clariant. Clariant uses two complementary methods for calculating these emissions:

Inbound Transportation Emissions:

This method aligns with the Product Environmental Footprint (PEF) method developed by the European Commission and is used for calculating emissions from the transport of materials from suppliers to Clariant plants. The calculation process involves:

- Collecting data from SAP, including vendor region, Clariant plant region, and volume of raw materials purchased (in kg)
- Calculating the total weight of materials transported between different regions (Europe, Latin America, Asia/Pacific, North America, Middle East & Africa)
- Using default transport modes based on the PEF method for intracontinental and intercontinental transport
- Multiplying material weight by distance to calculate activity data in ton-kilometers (t*km)
- Determining the split of shipments by air by dividing weight of air shipments by total weight.
- Calculating ship transport for intercontinental distances by subtracting the percentage of air transport
- Selecting appropriate emission factors from the ecoinvent database for different transport modes according to PEF recommendations

- Calculating emissions by multiplying the total weight of purchased goods by the respective distances and emission factors for each transport mode

Outbound transportation emissions

Implemented in 2024, this method (4flow) is used for calculating well-to-wheel emissions related to transport paid for by Clariant. The 4flow method is compliant with ISO 14083, DIN, and GLEC standards.

The process includes:

- Quarterly exports from SAP of all detailed shipment data
- Processing data through the 4flow tool to calculate GHG emissions
- Determining real transportation modes and precise distances using automatic intermodal routings
- Running calculations through EcoTransIT (a certified service provider) with results available via a 4flow BI platform

These specific steps are followed for each shipment:

- Routing from origin to destination with leg/section creation for mode and transport attribute changes
- Determining fuel consumption based on vehicle type, emission class, and utilization
- Calculating energy and emissions, including freight weight, emission factors based on fuel consumption, and distance including empty trips
- Summing up all section emissions (GHG, exhaust emissions, external costs)

Emissions from storage were calculated in the same way as the storage for Category 9, using the total procured material weight as input.

Category 5: Waste Generated in Operations

Clariant employs a waste-type-specific method to calculate emissions from waste generated in operations. This approach accounts for the varying environmental impacts of different waste streams and treatment methods, providing a more accurate representation of waste-related emissions compared to generic waste factors.

The calculation process involves:

- **Data Collection:** Waste data is collected from Clariant's corporate reporting system, which tracks waste quantities by type and treatment method across all sites. Waste is categorized by Type (e.g., hazardous, non-hazardous, organic, inorganic, wastewater) and Treatment method (e.g., landfilling, incineration, recycling, composting) in different regions
- **Emission Factor Application:** For solid waste, emission factors from a life cycle inventory database are identified for each end-of-life scenario and associated with each material type

and fate. The emissions are calculated by multiplying the quantity of waste (in kg or m³) by the associated emission factor

- **Wastewater Treatment:** Clariant distinguishes between wastewater treated at its own facilities and wastewater sent to third-party or municipal treatment plants. Wastewater directly released after treatment from Clariant's own facilities is considered within scope 1 & 2 emissions. For wastewater sent to external treatment plants, a common emission factor is used for both municipal and third-party treatment plants and multiplied by the wastewater volumes.
- **Data Sources:** Activity data comes from quantities of waste by type and treatment method from internal data management systems. Emission factors are derived from a life cycle inventory database.

This methodology is part of Clariant's broader carbon footprinting process, which includes accounting for scope 1, 2, and 3 GHG emissions, ensuring alignment and robust calculations across all Business Units.

Category 6: Business Travel

The emissions for business travel are calculated by mode of transportation (car, train, air travel) and the distances travelled. Clariant uses the calculation methodology provided by a third-party provider, which has well-established methodologies for emission calculation from various modes of business travel.

- For **flight emissions**, the calculations are based on the VDR (Verband Deutsches Reisemanagement) methodology that includes RFI (Radiative forcing index). The other methodologies that are adopted are DEFRA, ICAO, and VFU.
- For **car travel emissions**, the calculations include the kilometers travelled, the vehicle category and the average fuel consumption per 100 passenger-km.
- For **rail travel emissions**, the segment distances and the type of rail travel are considered for the calculation.
- According to the GHG Protocol, emissions from hotel stays are **optional**, and thus not considered in the calculation.

Category 7: Employee Commuting

Clariant calculates the emissions associated with employee commuting by coupling the number of employees per country with the average commuting data for that country. The average commuting distances per transport mode are provided by the country statistics and governmental references.

The rationale behind this approach is to leverage country-specific data on commuting patterns and habits, which can vary significantly across different regions. By using average commuting data from reliable data sources provided by government statistics, the calculation provides a good estimate of emissions related to employee commuting.

Category 8: Upstream Leased Assets

Emissions related to upstream leased assets were negligible in 2019, accounting for less than 1% of total scope 3 emissions, as the most relevant leased assets' emissions were already included in scope 1. Emissions are estimated from the operation of assets that are leased by the reporting company in the reporting year and not already included in the reporting company's scope 1 or scope 2 inventories. This category applies only to companies that operate leased assets (i.e., lessees). For companies that own and lease assets to others (i.e., lessors), see category 13 (Downstream leased assets).

To estimate the scope 3, category 8 emissions, the following information was collected:

- The amount paid for leasing by Clariant (million CHF)
- Clariant annual revenue (sales)
- The average emissions from USEEIO database were used for estimating the emissions from Upstream Leased Assets

Category 9: Downstream Transportation and Distribution

Scope 3 category 9 relates to the GHG emissions from all downstream transport and distribution activities that are not paid by Clariant (i.e. transportation and distribution services purchased by customers) as well as warehousing. The **4flow-based** method was used to calculate emissions for downstream transportation and distribution (refer to category 3.4).

Warehousing impacts are also included in category 9, which were assessed based on the total quantities sold for the reporting year. Based on PEF guidance, assumptions are defined to estimate energy consumption and the area needed for warehousing and storage (products density, warehouse occupation, etc.). Emission factors from the latest ecoinvent version were used.

Category 10 & 11: Processing and use of sold products

Clariant does not calculate and report the GHG emissions from the processing of sold products (category 10) as they are not relevant. This was concluded based on the analysis and balancing of different relevance criteria for scope 3 emissions sources and the five accounting and reporting principles of the GHG Protocol standards by WRI and WBCSD. Clariant has a huge product portfolio,

and the products have multiple end-use applications. The application's versatility is challenging to monitor systematically; thus, acquiring dependable yearly figures is unattainable. In addition, the WBCSD Guidance for Accounting & reporting Corporate GHG emissions in the Chemical Sector Value chain states that “chemical companies are not required to report scope 3, category 10 emissions, since reliable figures are difficult to obtain due to the diverse application and customer structure”.

Likewise, Clariant does not calculate and report the GHG emissions from the use of sold products (category 11), as sold products are intermediate products that have no direct usage emissions or energy consumption. Therefore, given the nature of the products sold by Clariant, as per the GHG Protocol, this category is not applicable.

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

Clariant's methodology for calculating scope 3 category 12 emissions (end-of-life treatment of sold products) follows a structured approach that accounts for product composition, regional waste treatment practices, and carbon content. This methodology enables Clariant to estimate greenhouse gas emissions from the disposal and treatment of all products sold in the reporting year at the end of their lives.

Data Collection and Preparation

Clariant collects the following key information to estimate scope 3 category 12 emissions:

- Total sold product quantity for the relevant years, with respective share of sales per regions and business unit
- Regional distribution of sales across Europe, Latin America, Asia/Pacific, North America, and the Middle East & Africa
- Total mined quantities in the calendar year (for specific products like bentonites)
- List of all raw materials purchased in the calendar year

Carbon Content Determination

The fossil carbon content of products sold is approximated from the average fossil carbon content of raw materials purchased in each Business Segment. The fossil carbon content of raw materials is calculated from biogenic and total carbon content of raw materials, respectively, which is assessed through multiple methods:

- External database
- Direct calculations based on molecular composition
- Applying estimations when specific data is unavailable

In cases where the exact carbon content of a material cannot be determined through available data sources or calculations, but a material is known to contain carbon, a conservative default carbon content value of 0.8 is applied to ensure comprehensive coverage in its emissions assessment. Throughout this process, Clariant carefully distinguishes between fossil and biogenic carbon content to ensure accurate emissions accounting.

Regional End-of-Life Scenarios

In its current methodology, Clariant considers incineration (with and without energy recovery), landfill/other (incl. wastewater treatment), and recycling as end-of-life treatment options for calculating emissions. The products that are incinerated with energy recovery are burden-free using the cut-off approach as per GHG Protocol.

Where primary data on the fate of products are available on product segment level, the regional end-of-life scenario shares for a Business Unit were calculated as weighted averages according to sold quantities in respective product segments. Where primary data is limited, Clariant defines average end-of-life fate per region based on the World Bank's "What a Waste Global Database" (2024 version; used for regions other than Europe) or Annex C of PEF (dataset for Germany as representative for Europe) whenever its own data are not available. The company identifies the top sales countries that account for at least 50% of total sales per region to ensure representative coverage. When multiple countries contribute to this sales threshold, Clariant scales the waste fate according to the sales data for the selected top countries, providing a weighted approach to regional waste treatment patterns.

Calculation Methodology

The calculation process involves using the volume of products sold per region, based on category 9 accounting data. Clariant applies the (fossil) carbon content ratio to these sold product quantities to determine the total carbon content being disposed of in each region. By considering the specific end-of-life scenarios in different regions and countries, the company calculates total fossil carbon-related emissions at the end of life, assuming all fossil carbon is eventually released to the atmosphere as CO₂.

Special Considerations

For specific products like bentonites, Clariant applies additional considerations to account for moisture content variations throughout the supply chain. The company assumes that mined bentonites are wet with a moisture content of 35-40%, using 35% as a conservative assumption for calculations. Clariant further assumes that the moisture content of sold bentonites is approximately 16%. The difference between these moisture levels (19%) is subtracted from the total mined quantities, as Clariant assumes this volume is not shipped or sold to customers, thereby providing a more accurate representation of the actual product quantities entering the waste stream at end-of-life.

Limitations and Assumptions

The methodology includes several assumptions and limitations:

- All products are estimated to eventually release carbon into the environment
- All packaging material is assumed to be reused, recycled, or revalorized
- Regional variation in waste management practices may not be fully captured
- Carbon content of sold products is approximated from procured materials

Clariant continuously works to improve this methodology through enhanced data collection, refined product categorization, and updated treatment assumptions to increase the accuracy of its scope 3 category 12 emissions reporting.

Category 13: Downstream Leased Assets

The emissions are estimated from the operation of assets that are owned by the company (acting as a lessor) and leased to other entities in the reporting year and are not already included in scope 1 or 2.

To estimate scope 3, category 13 emissions, the following information was collected:

- The amount received from rents/leasing by Clariant
- Clariant annual revenue (sales)
- The average emissions from the USEEIO database were used for estimating the emissions from Downstream Leased Assets

Category 14: Franchises

No emissions related to franchises were calculated (category 14) because Clariant does not have franchises.

Category 15: Investments

To calculate scope 3, category 15 emissions, the following information was collected:

- Clariant scope 1 and 2 emissions
- Clariant annual revenue (sales)
- The revenue from Clariant's investment, which is calculated with the total sales of the companies weighted by the share owned by Clariant
- The emissions per million CHF of revenue for the investment, which is assumed equivalent to those of Clariant as they operate in similar sectors.

Clariant's scope 1 & 2 emissions for the year are divided by the annual revenue and multiplied by the weighted revenue of the invested companies.

The aim behind this method is to leverage Clariant's own emissions intensity as a proxy for estimating the emissions associated with its investments, under the assumption that the invested companies operate in similar sectors and have comparable emissions profiles per unit of revenue.

Overview and Screening

Data Input

Scope 3 Category	Activity Data	Emission Factors
Purchased goods and services	Quantities of purchased materials by BU, plant, and supplier from the Corporate ERP System	Supplier-specific emission factors, Ecoinvent v3.10 or newer, IPA study, own Clariant LCA, literature. In case of data gaps, a BU Average will be applied.
Capital goods	Capital expenditure data on buildings, machinery, equipment from internal data management systems	US Environmentally-Extended Input-Output (USEEIO) database (emission factors per cost)
Fuel and energy-related activities (not included in scope 1 or scope 2)	Quantities of fuels, steam, and electricity purchased/sold from internal data management systems	3a (Upstream emissions of purchased fuels): Ecoinvent v3.10, RED III directive 3b (Upstream emissions of purchased electricity): International Energy Agency (IEA) 2024 for electricity, DEFRA for steam 3c (T&D losses): IEA 2024 country-specific factors, DEFRA for steam 3d (Generation of purchased electricity sold): IEA for electricity, DEFRA for steam
Upstream transportation and distribution	Weight of materials, transport modes, distances from internal data management systems	4flow tool (ISO 14083 compliant), Ecoinvent v3.10
Waste generated in operations	Quantities of waste by type and treatment method from internal data management systems	Life cycle inventory database, external consultant company

Business travel	Distances traveled by mode of transportation from BCD travel partner (real booking data)	Third-party provider using VDR, DEFRA, ICAO, and VFU methodologies
Employee commuting	Number of employees per country	Country-specific average commuting data, external consultant company
Upstream leased assets	Amount paid for leasing from internal data management systems	USEEIO database
Downstream transportation and distribution	Weight of products, transport modes, distances from internal data management systems	4flow tool (ISO 14083 compliant), ecoinvent v3.10
End-of-Life treatment of sold products	Volume of products sold per region, carbon content from internal data management systems	EOL assumptions from World Bank's "What a waste Global Database" and Annex C of PEF Methodology
Downstream leased assets	Amount received from rents/leasing from internal data management systems	USEEIO database
Investments	Revenue from investments weighted by ownership share	Clariant's own emissions intensity as a proxy, external consultant company

Note: Category 10 (Processing of sold products) was excluded from the assessments as it is not relevant due to diverse applications; Category 11 (Use of sold products) was excluded due to intermediate products with no direct usage emissions, and Category 14 (Franchises) was excluded due to Clariant not having franchises.

Coverage

Category	Exclusions
Purchased goods and services	• Sites not fully productive in the calendar year • Tolling processes were not significant • Customer-owned materials • Materials without conversion factors • Emissions from services (indirect spend) • Fuels and energies (included in Scope 1 & 2)
Capital goods	No specific exclusions
Fuel and energy-related activities	No specific exclusions
Upstream transportation and distribution	Impacts related to product storage
Waste generated in operations	No specific exclusions
Business travel	Emissions from hotel stays are excluded as they are optional according to GHG protocol
Employee commuting	No specific exclusions
Upstream leased assets	No specific exclusions
Downstream transportation and distribution	• Materials without conversion factors to convert quantities to kg • Pipeline transport excluded due to low significance
End-of-life treatment of sold products	Packaging material (assumed to be either reused, recycled or revalorized)

Downstream leased assets	No specific exclusions
Investments	No specific exclusions

Note: Category 10 (Processing of sold products) was excluded from the assessments as it is not relevant due to diverse applications; Category 11 (Use of sold products) was excluded due to intermediate products with no direct usage emissions and Category 14 (Franchises) was excluded due to Clariant not having franchises.

Data quality

Category	Technology	Geography	Reliability
Purchased goods and services	- Secondary datasets may not reflect specific production technologies of actual suppliers - Proxy data used when emission factors from secondary data sources were unavailable for specific purchased raw materials	- Secondary datasets may not match the actual geographical origin of materials - Global averages used when supplier-specific data unavailable	- Hierarchy of data quality as described in methodology description, ensures that the most reliable dataset available is used. - Recent versions of industrial databases were used as a data source (ecoinvent, IPA)
Capital goods	- Broad emission factor categories used rather than technology-specific factors	- All datasets are US-based since no region-specific data are available	- No primary data used; all calculations rely on secondary data from USEEIO database
Fuel and energy-related activities	- For biodiesel, emission factor from REDIII directive for palm oil biodiesel is used when the exact feedstock is unknown - Technological representativeness was considered when taking the database emission factors	- Electricity data computed at country level - Single emission factor used for steam data, not considering different geographies - Global market datasets are used when specific supply chain details are unknown	- Relies on third-party databases (IEA, DEFRA, ecoinvent)
Upstream transportation and distribution	- Default transport modes based on PEF method when actual data unavailable	- Default distances based on PEF method when actual data unavailable (i.e., no regional differentiation) - Global emission factors used for transportation modes	- Relies on 4flow tool for internal transportation between Clariant sites and affiliate sites, respectively and ecoinvent database
Waste generated in operations	- Common emission factor used for both municipal and third-party wastewater treatment plants - Limited differentiation	- Regional data and no country-specific data used	- Relies on life cycle inventory database emission factors and end-of-life assumptions

	between waste treatment technologies		
Business travel	- Actual data from internal data management systems used	- Actual travel data from internal data management systems used	- Relies on third-party provider methodologies (VDR, DEFRA, ICAO, VFU) using actual business travel data
Employee commuting	- Country-specific assumptions are made regarding transportation modes	- Based on country statistics which may vary in quality and applicability	- Based on average commuting data for each country and relying on country statistics and governmental references
Upstream leased assets	- No consideration of specific building technologies or energy systems used in leased assets - Average emissions factors used rather than technology-specific factors	- No geographic specificity in the data collection or emission factors	- Emissions estimated using financial data rather than actual energy consumption or operational data - Uses average emissions from USEEIO database
Downstream transportation and distribution	- Warehousing impacts estimated based on PEF guidance assumptions	- Actual data used for the 4flow tool coming from internal data management systems	- Relies on 4flow tool (actual data from internal management systems) and ecoinvent database
End-of-life treatment of sold products	- No technological differences considered within end-of-life scenarios - All products are estimated to eventually release carbon into the environment	- Average end-of-life fate per region is defined based on public statistics where primary data were not available - Regional variation in waste management practices may not be fully captured	- Carbon content of sold products approximated from procured materials - Default carbon content of 0.8 applied when exact carbon content unknown - Assumptions made based on an external database where no primary data was available for fate of sold products in respective region
Downstream leased assets	- No consideration of specific building technologies or energy systems used in leased assets	- No geographic differentiation in the emission factors used	- Calculations rely on financial data rather than actual asset operations - Emissions estimated using average emissions

	- Average emissions factors used rather than technology-specific factors		factors from USEEIO database
Investments	- Assumptions made based on invested companies operating in similar sectors with comparable emissions profiles - No technology-specific differentiation in calculations	- No geography-specific differentiation in calculations	- Clariant's own emissions intensity used as a proxy - Revenue used as the allocation basis - Relies on assumption that emissions intensity of investments equals Clariant's own intensity

General Materiality Assessment Statement: The following categories are identified as material for Clariant: Categories 1, 3, 4, 9, and 12. These categories were deemed to be material at the time the Science-Based Targets were set in 2020/2021 and remain material for Clariant after the rebaselining exercise in 2024.

For more details on the materiality statement for exclusions, please see section “GHG Emissions Calculation Methodology for Material Scope 3 Categories.”

Exclusion Criteria for Scope 3

Category	Exclusion Criteria
Processing of sold products	Category deemed not relevant due to: • Product portfolio diversity • Multiple end-use applications • Systematic monitoring challenges • Inability to obtain reliable yearly figures WBCSD Guidance for Accounting & Reporting Corporate GHG Emissions in the Chemical Sector Value Chain states that "chemical companies are not required to report scope 3, category 10 emissions, since reliable figures are difficult to obtain due to the diverse application and customer structure" Assessment based on: • Analysis of product portfolio • Evaluation of data availability • Consideration of industry guidance • Balancing of different relevance criteria for scope 3 emissions sources • Application of the 5 accounting and reporting principles of the GHG Protocol standards
Use of sold products	Category deemed not applicable due to: • Nature of products sold • No direct usage emissions • No energy consumption during use According to the GHG Protocol, this category is not applicable given the nature of Clariant's products. Assessment based on: • Analysis of product characteristics • Evaluation against GHG Protocol criteria • Determination of direct emissions from product use
Franchises	Category deemed not applicable due to: • Business model structure • Absence of franchises

Continuous Improvement

Clariant is committed to continuously improving its scope 3 emissions assessment methodology through:

- Regular updates of emission factors and calculation methodologies
- Expansion of supplier-specific data collection
- Enhancement of carbon footprinting tools
- Alignment with evolving best practices and standards

This methodology document will be reviewed and updated annually to reflect improvements in data quality, calculation methods, and reporting practices.