



Greenhouse Gas Emissions Calculation Methodology

Pfizer uses the World Resources Institute Greenhouse Gas Protocol's (GHG Protocol's) Corporate Accounting and Reporting Standard and associated Technical Guidance to calculate greenhouse gas emissions (GHG) for Scope 1, Scope 2, and Scope 3.

Reporting Boundaries

Pfizer uses the operational control approach for reporting GHG emissions. Pfizer's corporate GHG inventory includes direct (Scope 1) and indirect (Scope 2) emissions from all facilities where Pfizer has full authority to introduce and implement operating policies as well as emissions associated with ancillary business activities which fall under Pfizer's control (e.g., fleet operations). Emissions associated with Pfizer's use of smaller leased office, research, and warehouse facilities are reported under the Scope 3 Upstream Leased Assets category.

Pfizer also reports additional relevant indirect (Scope 3) emissions from activities in our value chain outside our operational control. Reporting boundaries for Scope 3 categories vary and are described below.

Baseline Adjustments

Pfizer establishes a baseline year to track progress toward emissions reduction goals. Adjustments are made for:

- Acquisitions, divestitures, facility openings/closures
- Methodology updates
- Operational control changes

Scope 1 and 2 emissions are adjusted for changes regardless of significance. Scope 3 category baselines are restated if changes exceed 5% of the individual category emissions. Third-party assurance is obtained for any adjustment resulting in a change of 5% or more.

Emission Factor Updates

Emission factors are updated annually to reflect any changes available from issuing bodies and are applied from their effective date which may impact the calculated Scope 1 and 2 emissions for prior years (i.e., the effective date may precede the reporting year). Scope 3 calculations are not retroactively updated. Pfizer maintains a history of emission factor updates.

Emissions Quantification

Pfizer's GHG inventory, reported in metric tons of CO₂ equivalent (mtCO₂e), includes Scope 1 and Scope 2 emissions of CO₂, CH₄, N₂O, HFCs and CO₂ resulting from the destruction of volatile organic compounds (VOCs) from both stationary and mobile sources. Pfizer's use of SF₆ is infrequent and in small quantities and therefore Pfizer reports emissions only when they occur. Pfizer does not use PFCs or NF₃ in equipment or operations and therefore does not include these emissions in reporting.

All sources of CO₂, CH₄ and N₂O related to purchased electricity, steam, heating/cooling, and the burning of fossil fuels at sites are included. Pfizer uses standardized units of measurement conversions and GHG emissions factors to normalize the data into mtCO₂e.

The inventory also includes estimated Scope 3 emissions for relevant upstream and downstream categories as defined by the GHG Protocol (purchased goods and services, capital goods, fuel- and energy-related activities not included in Scopes 1 & 2, upstream transportation and distribution, waste generated in operations, business travel, employee commuting, upstream leased assets, downstream transportation and distribution, and investments). Pfizer's Scope 3 inventory does not include emissions associated with the processing of sold products, use of sold products, end of life treatment of sold products, downstream leased assets, or franchises as emissions from these categories are estimated to represent less than 5% of total Scope 3 emissions and are not relevant to Pfizer's operations.

Direct Emissions (Scope 1)

Stationary Combustion Emissions

GHG emissions from stationary combustion are calculated by multiplying fuel consumption by the fuel-specific emissions factor. While CO₂ is the predominant GHG produced during combustion, smaller quantities of other GHGs (such as CH₄ and N₂O) are also generated and are reported as CO₂e emissions based on the total fuel consumed. Additionally, the quantity of CO₂ released by the thermal oxidation and/or biodegradation of VOCs is estimated based on data collected from manufacturing and research facilities. The calculation uses an empirically derived composite emissions factor (weighted for solvent composition of the VOC total) to convert VOC emissions reported to CO₂e.

Biogenic Emissions

Biomass is considered a low-carbon energy source; therefore, CO₂ emissions from its combustion are not included in Pfizer's total GHG emissions. However, emissions of CH₄ and N₂O, which can occur during biomass combustion, are calculated and reported as part of the overall GHG inventory.

Mobile Emissions

Direct mobile GHG emissions resulting from the combustion of fuels in company owned or leased automobiles and aircraft, referred to as fleet emissions, are accounted for in Pfizer's inventory. Annual CO₂, CH₄ and N₂O emissions are calculated by multiplying the total fuel consumed by the appropriate emission factor.

Fugitive Emissions

Refrigerant emissions from the use and maintenance of air conditioning systems are tracked in Pfizer's GHG tracking system. These emissions are converted to CO₂e using global warming potential (GWP) values established by the Intergovernmental Panel on Climate Change (IPCC).

Prior to Pfizer eliminating its use of coal in early 2021, coal pile fugitive emissions were calculated based on annual coal purchases as per The Climate Registry guidance and are included in the footprint for relevant years including the baseline.

Additionally, Pfizer has reviewed its use of acetylene and determined that it is minimal. Since welding and brazing are not core to Pfizer's operations, emissions from acetylene use are estimated at 1 mtCO₂e in the U.S. and 2 mtCO₂e globally. These emissions are considered de minimis but are still accounted for to ensure transparency and completeness in reporting.

Process Emissions

Although not material, other process emissions, e.g., those associated with fermentation and dry ice, are included in Scope 1 emissions where feasible.

Indirect (Scope 2) Emissions

Indirect GHG emissions include CO₂, CH₄ and N₂O emissions related to purchased electricity, steam, and heating/cooling. All sources are included in the inventory, and emissions are calculated using consumption data reported by sites multiplied by the appropriate emission factor.

Location-based GHG emissions in the U.S. are calculated using emission factors from the U.S. EPA Emissions & Generation Resource Integrated Database (eGRID) and U.S. EPA GHG Emission Factors Hub. International emissions are calculated using the International Energy Agency (IEA) Emissions Factors or WRI GHG Protocol's Emissions Factors from Cross-Sector Tools.

Market-based emissions are calculated using emission factors obtained from Pfizer's electricity suppliers. Emission factors used for market-based Scope 2 calculations follow the quality criteria defined in GHG Protocol's Scope 2 Guidance.

Value Chain Emissions (Scope 3)

The calculation method for each Scope 3 category is summarized in the following subsections. Unless otherwise noted, Scope 3 emissions are calculated and reported as CO₂e.

- **Scope 3 - Purchased Goods & Services & Capital Goods (Categories 1 and 2)**

Pfizer estimates cradle-to-gate GHG emissions for purchased goods and services and capital goods using a hybrid spend-based methodology that applies supplier-specific emission factors where available and industry average emission factors otherwise. Spend data are extracted from Pfizer's accounting systems (SAP) at the supplier level and categorized by material category and material group. A supplier mapping tool is used to align individual suppliers to their respective parent entities to support the application of parent-level emissions data where appropriate.

The enriched spend dataset is submitted to a third-party platform. The platform uses artificial intelligence-supported models to estimate supplier-specific emission factors based on publicly available information, including reported GHG emissions and revenue data. The platform applies defined quality criteria to assess whether supplier published emissions data are sufficiently complete and robust to support the calculation of a supplier-specific emission factor.

Where supplier-specific emission factors cannot be calculated due to insufficient or unavailable data, suppliers are mapped to industry average emission factors. This process is applied to over 1,000 suppliers, representing more than 90% of Pfizer's total spend in Categories 1 and 2. The remaining spend—covering approximately 20,000 suppliers and representing less than 10% of total spend—is allocated based on SAP material categories and material groups and mapped to the relevant industry average emission factors.

Industry average emission factors are derived from the latest available environmentally extended input-output (EEIO) datasets developed by environmental researchers and government agencies (e.g., U.S. EPA USEEIO) and are assigned at the supplier level using third-party sector classification data, supplemented by Pfizer inputs where needed. Industry emission factors are adjusted to align with the reporting year using relevant economic inflation indices (e.g., U.S. Bureau of Economic Analysis price indices) to ensure consistency between emission factors and current-year spend data. In addition, geographic adjustments are applied, where relevant, to reflect differences in regional electricity grid intensity and other location-specific emission characteristics.

- **Scope 3 - Fuel and Energy-related Activities Not Included in Scope 1 or 2 (Category 3)**

Emissions are calculated using Pfizer's GHG reporting tool and include:

- a. Production of Stationary and Mobile Fuels: Emissions are calculated by multiplying fuel consumption (in MWh, gross calorific value) by fuel-specific emission factors from the UK Government GHG Conversion Factors for Company Reporting (current year).
- b. Electricity Production:
 - WTT-Generation and WTT-Transmission & Distribution (T&D):
 - For UK operations: Emissions are calculated using current-year UK Government GHG Conversion Factors.
 - For non-UK operations: Calculated using IEA Emission Factors (latest publication).
 - T&D Losses:
 - UK: Calculated using current-year UK Government factors.
 - Non-UK: Calculated using IEA Emission Factors (latest publication).
- c. Heat and Steam Production (i.e., WTT-Generation and WTT-T&D) and T&D Losses: Emissions are calculated globally using current-year UK Government Conversion Factors.
- d. Chilled Water T&D Losses: These emissions are excluded due to the lack of an available emission factor. However, they are estimated to contribute less than 0.1% of total emissions in this category.

- **Scope 3 - Upstream Transportation and Distribution (Category 4)**

Pfizer's emissions estimates for upstream transportation and distribution include international transportation; domestic (U.S. market) transportation, Pfizer's largest market; and dry ice use related to global COVID-19 vaccine distribution.

- a. International Transportation and Distribution

Emissions for all international transportation and distribution services are calculated by Pfizer's Global Logistics (GL) team using transportation mode, distance, shipment weight and average emission factors from the GLEC Framework by the Smart Freight Center. Primary operational data from our Enterprise Resource Planning tools are leveraged by the GL team to obtain origin, destination, and shipment weight data. Emissions are reduced through the application of certificates provided by logistics suppliers using low emissions fuels, ensuring that the claimed reductions do not surpass the calculated maximum allowable limit. Emissions associated with the transportation of goods purchased from our Tier 1 suppliers (e.g., raw materials, packaging materials) are excluded as they are included in Category 1, Purchased Goods and Services.

- b. U.S. Domestic Transportation

Emissions from domestic transportation in the U.S. are obtained directly from Pfizer's three primary logistics providers. Additionally, for full truckload providers, fuel surcharge data is used to estimate gallons of diesel fuel consumed and GLEC emission factors are applied to estimate GHG emissions. For less-than-truckload shipments,

emissions are estimated using shipment weight, average distance per shipment, and GLEC average freight emission factors. Activity data is provided by the U.S. market logistics team.

c. Dry Ice and Liquid CO₂ Use

Pfizer sites report purchases of liquid CO₂ and dry ice through the GHG tracking tool. Emissions from these materials are calculated using emission factors developed by an external engineering consulting firm.

- **Scope 3 - Waste Generated in Operations (Category 5)**

Emissions from this category are calculated using Pfizer's GHG reporting tool. These include CO₂e emissions associated with the routine disposal of waste and wastewater generated by operations under Pfizer's control. Calculations are based on data reported by sites in accordance with Pfizer's Environmental Impact Reduction and Waste and Surplus Material Management standards and use the current-year UK Government GHG Conversion Factors for Company Reporting. Emissions associated with the disposal of non-routine wastes - those generated only under special circumstances and not commonly disposed of (e.g., construction debris, remediation waste) - are not considered relevant and are not included in reporting.

Included waste types:

- Recycled
- Incinerated
- Heat recovery/fuel blending
- Landfilled
- Other treatment

Emission factor coverage:

- Landfill: Includes collection, transportation, and disposal ("gate to grave").
- Combustion (with energy recovery) and recycling: Includes transport to energy recovery or material reclamation facilities.
- Other treatment: As the majority of waste reported in this category is sent to wastewater treatment, the wastewater treatment emission factor is applied to all waste in this category.

- **Scope 3 - Business Travel (Category 6)**

U.S. Emissions from business travel are calculated using a combination of primary and secondary data, depending on how the trip was booked:

a. Travel Booked Within Pfizer's Travel System:

Emissions from air travel, hotel stays, car use (rental and personal), and rail travel are calculated by Pfizer's travel agency consulting partner. Calculations are based on detailed primary data such as travel distance, aircraft type, cabin class, and other relevant factors. When primary data is unavailable, secondary data is used. Air travel emission factors include radiative forcing. Air, car, and rail travel include well-to-wheel (WTW) emissions.

- b. Personal Car Use by U.S. Field Force:
Emissions are calculated by Pfizer's reimbursement service provider using vehicle type and U.S. EPA vehicle emission ratings.
- c. Travel Booked Outside Pfizer's Travel System:
Emissions from air travel and hotel stays are estimated using spend data. If the air travel leakage rate for the reporting year is unavailable, the previous year's rate is used. Leakage rates for other travel types are estimated by Pfizer's travel agency consulting firm using industry averages, as referenced in the Emburse report: *"Data Dive: How 2021 Priorities Can Be Guided By Leakage Data."*¹

- **Scope 3 - Employee Commuting (Category 7)**

Emissions from employee commuting are estimated using the average-data method outlined in the GHG Protocol Scope 3 Technical Guidance. Estimates are based on Pfizer's year-end employee headcount, as reported in the corporate headcount report. This report identifies: employees working onsite full time, employees commuting approximately 50% of the working year, employees assigned to work remotely full time.

Commuting assumptions:

- Onsite employees are assumed to commute 200 days per year
- Flexible workers are assumed to commute 100 days per year (based on an average of 2.5 days per week)
- Remote workers are excluded from the commuting emissions estimate

Country-specific median commuting distance estimates were sourced from *NationMaster*², with regional averages applied where data gaps existed.

Commuting methods:

- For North America, commuting mode shares are based on a 2019 Bloomberg study.³
- For other regions, assumptions are made based on general regional knowledge.

Emission factors:

- North America: U.S. EPA GHG Emission Factors Hub (Table 10 – passenger car, commuter rail, transit rail, and bus)
- Other regions: DEFRA emission factors (average car, unknown fuel type; national rail; light rail and tram; and average local bus)

Note: There may be some double counting of emissions from employees using company-owned vehicles, which are already reported under Scope 1. Pfizer is actively working to refine and improve its commuting emissions methodology.

¹ [Data Dive How 2021 Priorities Can Be Guided By Leakage Data \(emburse.com\)](https://emburse.com/data-dive-how-2021-priorities-can-be-guided-by-leakage-data)

² [NationMaster Commuting Distances](https://www.nationmaster.com/statistics/commuting-distances)

³ [Bloomberg: How Americans Commute to Work](https://www.bloomberg.com/perspectives/how-americans-commute-to-work)

- **Scope 3 - Upstream Leased Assets (Category 8)**

In line with the GHG Protocol Corporate Value Chain (Scope 3) Standard and Category 8 Technical Guidance, Pfizer calculates upstream leased asset emissions using a combination of asset-specific data reported within Pfizer's internal EHS system and estimation methods based on square footage data from Pfizer's corporate real estate database, depending on data availability, site function, and operational control.

- For leased sites where Pfizer has operational control and reliable energy data is available, Scopes 1 and 2 energy and emissions reported through Pfizer's internal EHS system are used directly. For other leased offices, laboratories, warehouses, and distribution centers where site-specific energy data is unavailable, emissions are estimated using the GHG Protocol hybrid method, combining square-footage data with use-type-specific emission factors derived from comparable Pfizer-operated owned sites.
- Leased data centers are treated separately due to their more specialized energy intensity. For these sites, emissions are estimated using a site-specific, asset-based approach based on average UPS load data converted to annual electricity consumption, with grid-based emission factors applied. A data-center-specific emission factor is derived from representative Pfizer data center sites and applied to leased data center space where actual data is not present.

For leased spaces not under Pfizer's operational control, emissions are estimated using square footage data and the same hybrid, activity-based approach to ensure consistent treatment across the Category 8 boundary.

- **Scope 3 - Downstream Transportation and Distribution (Category 9)**

Emissions from downstream transportation and distribution are estimated using an activity-based approach, in which downstream operational activities are modelled. The model covers downstream transportation activities across one or two legs: from Pfizer sites to distributors, and from distributors to their customers, as well as storage activities across up to two warehousing nodes: warehousing by distributors where applicable, and warehousing by retailers or any patient serving facilities.

The downstream transportation and distribution emissions model applied doesn't include the following activities: 1. movements of goods not related to downstream distribution, like transfers across Pfizer sites or goods returns, 2. Transportation activities paid for by Pfizer to deliver products to downstream customers or any other Transportation already reported within our Category 4 - Upstream Transportation section and 3. activities occurring beyond the retail level directly serving patients.

Product volumes, expressed as weights, are used with modelled distances to calculate tonne kilometer (tkm) activity, to which emission factors sourced from the GLEC Framework are applied to quantify emissions.

- **Scope 3 - Processing of Sold Products (Category 10)**

Not relevant. Pfizer products are not typically subjected to further processing.

- **Scope 3 - Use of Sold Products (Category 11)**

Not relevant. Pfizer products are not likely to create significant emissions in normal use.

- **Scope 3 - End-of-life Treatment of Sold Products (Category 12)**

Not relevant. GHG emissions associated with the normal use of Pfizer products are negligible. Products returned to Pfizer for destruction by Pfizer are accounted for in the waste treatment estimate.

- **Scope 3 - Downstream Leased Assets (Category 13)**

Not relevant. Pfizer is not a significant lessor of real estate. Emissions from real estate assets within Pfizer sites that are leased to third parties are included in Scopes 1 and 2 emissions and are therefore not reported under Scope 3.

- **Scope 3 - Franchises (Category 14)**

Not relevant. Pfizer does not operate franchises.

- **Scope 3 - Investments (Category 15)**

Pfizer holds an interest in a joint venture, ZHOPL, located in India. This site reports its energy consumption directly into Pfizer's GHG tracking tool, which is then used to calculate its Scopes 1 and 2 emissions.

Pfizer's Category 15 emissions inventory includes only those equity method investments—such as joint ventures—that have operational activities and are not already reflected in the company's Scopes 1 and 2 emissions. Other equity method investments were evaluated and determined not to generate material GHG emissions.

External Assurance/Verification

Pfizer's GHG emissions (excluding Scope 3 downstream transportation and distribution) are verified annually by an independent consultant. Assurance is undertaken in accordance with methodology aligned with the International Standard for Assurance Engagements ISAE3000 (Revised).

Appendix I - Chemical Abbreviation Index

CO₂ — Carbon dioxide

CH₄ — Methane

N₂O — Nitrous oxide

HFCs — Hydrofluorocarbons

PFCs — Perfluorocarbons

SF₆ — Sulfur hexafluoride

NF₃ — Nitrogen trifluoride

VOCs — Volatile organic compounds