

# Philips' Corporate Emission Accounting Methodology

Scope 3 — Category 9:  
Downstream transportation  
and distribution

At Philips, while we focus on our purpose to improve health and well-being, we acknowledge that the healthcare industry is a major contributor to climate change and waste. As such we are committed to pave the way for a low-emission future by reducing not only our scope 1 and 2 emissions, but also our indirect scope 3 emissions. This effort is supported and overseen by the Executive Committee, which seeks increased transparency for its stakeholders to ensure accountability.

We account for 100% of scope 1 and 2 emissions from operations over which Philips or one of its subsidiaries has operational control, but not for emissions from operations in which Philips owns an interest but does not have operational control. By contrast, scope 3 emissions are derived from indirect activities outside Philips control, meaning calculations also include non-operated assets.

Of the 15 scope 3 subcategories, we account for Philips' four most material categories, which together make up 95% of our scope 3 emissions. These are: purchased goods and services (category 1), business travel (category 6), downstream transportation and distribution (category 9), and use phase (category 11).

Each category is subject to its unique methodology elaborated on in its own document. All calculations are in line with the Greenhouse Gas Protocol; used for management purposes; in line with our Science Based Targets initiative submission; and subject to reasonable assurance by the external auditors of Philips.

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## Scope 3



Category 1  
Purchased goods  
and services



Category 6  
Business travel



Category 9  
Downstream  
transportation  
and distribution



Category 11  
Use phase

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## Scope 3 — Category 9: Downstream Transportation and Distribution

### 1) Introduction

Downstream transportation and distribution include all emissions generated by transporting components, products, or raw materials from one location to another via a mode owned by a third party. This can include transport via air, road, or sea. Rail transport is rarely used by Philips and therefore has a negligible influence on total emissions.

Upstream and downstream transportation paid by Philips are reported under the same category, because of our inability to distinguish between each trip. This has no influence on total emissions and merely simplifies the accounting process.

### 2) Methodology

For each mode of transport, we leverage a distance-based method that uses as main determinant the range (in kilometers) between the start and end locations. This is in line with the Greenhouse Gas Protocol and commonly used throughout markets and industries. It is therefore guaranteed that our reported emissions have high degrees of comparability. The sub-calculations and corresponding emission factors, however, are still dependent on the underlying mode of transport. Each is discussed in detail in the following sections.

#### 2.1) Ocean freight

The two types are: less than container load transports (LCL) and full container load transports (FCL). Each type will be explored in more detail below.

Regardless of the type, the distance between the port of loading and port of discharge is determined using the same process (this corresponds to leg 2 of the entire journey). First, the longitudinal and latitudinal coordinates of the ports are mapped using their unique location codes (UN/LOCODE) from [Aquaplot](#). Then, we use the same tool to determine the nautical miles between the two ports. These are converted to kilometers to ensure comparability with other transport modes.

In rare case no exact distances can be determined for the port-to-port route, a country-to-country distance calculation is used. If this is also not available the maximum distance is used.

In each scenario, a distance factor is applied to include the distance from the factory to the start harbor (leg 1) and the distance from the target harbor to the end customer (leg 3). This factor is equal to 5% of the total distance traveled (2.5% for each leg).

Roughly 90% of Ocean related emissions are based on data gathered through our internal transport analytics system. All other emissions are based on supplier data.

#### 2.1.1) Less than container load transport

An LCL shipment refers to freight that is not large enough to fill an entire container. In that case, Philips shares the available container space with one or more entities, ensuring the limited capacity of the cargo ship is utilized to the maximum. The formula below is then applied to determine the total amount of emissions.

$$\text{LCL emissions} = \sum_{i=1}^{\text{All shipments}} W_i \times D_i \times E_i + W_i \times D_i \times 0.05 \times A_i$$

- $W_i$  = Chargeable weight (kg/1000) of shipment  $i$
- $D_i$  = Distance (km) between port of loading and port of discharge for shipment  $i$
- $E_i$  = Emission factor of cargo ship for shipment  $i$  (kg CO<sub>2</sub>e/tonnes.km)
- $A_i$  = Average emission factor of Heavy Goods Vehicles (HGV), inland containers and rail for shipment  $i$  (kg CO<sub>2</sub>e/tonnes.km)

To calculate the corresponding emissions of LCL ocean freight, we compile the distance traveled and the corresponding weight of the shipment. This is multiplied with transport-specific emission factors to estimate emission generated. By introducing the 5% distance factor, we aim to overstate rather than understate emissions.

##### 2.1.1.1) Emission factor

For LCL shipments, the emission factors of the [UK Department for Business, Energy & Industrial Strategy \(BEIS\)](#) are used. (The database was formerly managed by the Department for Environment, Food & Rural Affairs.) These are annually updated and provide a holistic overview of the emissions generated. The factor for the distance between the port of loading and the port of discharge is a generic cargo ship factor that does not consider the trade lane or carrier type.

For the distance from the factory to the harbor and the distance from the harbor to the end customer, we use an average emission factor from BEIS considering HGV, inland container, and rail transport.

### 2.1.2) Full container load transport

FCL refers to Philips-specific shipments that take up an entire container.

*All trade airlines  
All carrier types*

$$FCL \text{ emissions} = \sum_{\substack{i=1 \\ j=1}} C_{ij} \times D_{ij} \times E_{ij} + W_i \times D_{ij} \times 0.05 \times A$$

- $C_{ij}$  = Number of containers (TEU) transported through trade lane  $i$  using carrier type  $j$
- $D_{ij}$  = Distance (km) between port of loading and port of discharge using trade lane  $i$  and carrier  $j$
- $E_{ij}$  = Emission factor of trade lane  $i$  and carrier  $j$  (kg CO<sub>2</sub>e/TEU.km)
- $W_{ij}$  = Chargeable weight (kg/1000) of all shipments transported through trade lane  $i$  using carrier type  $j$
- $A$  = Average emission factor of Heavy Goods Vehicles (HGV), inland containers and rail for shipment  $i$  (kg CO<sub>2</sub>e/tonnes.km)

Distance remains the main element but instead of considering the weight of the shipment only the number of containers travelling along the same trade lane with the same carrier, are of interest. The reason for doing so is because we apply 20-foot equivalent units' kilometers (TEU.km). This is then multiplied by transport and trade lane specific emission factors. The distance factor (5% for leg 1 and leg 3) is again used to consider the distance between the factory and the port of loading (leg 1) and the port of discharge and the end customer (leg 3). For leg 1 and leg 3 we leverage the chargeable weight in tonnes and not the industry standard for TEU.

#### 2.1.2.1) Emission factor

For LCL shipments, the carrier- and trade-lane-specific emission factors of the **Clean Cargo** collaboration are used. These are annually updated and more granular, compared with BEIS.

If both the carrier type and trade lane are known and available, that specific emission factor is applied. If only one is known, that specific emission factor is used. If neither variable is available or given, we use a cargo-ship-specific emission factor that is not linked to a specific trade route nor to a specific carrier.

Regarding leg 1 and leg 3 distance, we use an average emission factor of BEIS looking at HGV, inland container, and rail transport.

### 2.2) Road freight

Next, road freight is calculated using the road distance between the start and end location and the weight of the shipment. Contrary to ocean freight only one leg of transportation is assumed. This is summarized below:

*All road transports*

$$Road \text{ freight emissions} = \sum_{i=1} W_i \times D_i \times E$$

- $W_i$  = Chargeable weight (kg/1000) of transport  $i$
- $D_i$  = Road distance (km) between start and end locations for transport  $i$
- $E_i$  = Emission factor of cargo truck (kg CO<sub>2</sub>e/tonnes.km)

Instead of calculating the direct distance between the start and end location the deviations from this straight line is considered by only examining road distances. These are automatically calculated by our internal system using the fastest route possible. If exact distances are unknown country average distances are applied and if this is also unknown maximum mode specific distance is used.

Roughly 60% of road related emission are based on data gathered through our internal transport analytics system. All other emissions are derived from supplier data.

#### 2.2.1) Emission factor

Transport-specific emission factors from **BEIS** are applied for road freight. To ensure a conservative approach is taken, it is assumed the entire distance is completed using HGV. This overstates emissions, as it is common to use more fuel-efficient city vans for the last mile. An average-laden emission factor (kg CO<sub>2</sub>e/tonnes.km) is applied because of the inability to determine to what extent the truck's capacity is occupied by Philips freight.

### 2.3) Air freight

Emissions are calculated based on the direct distance between the start and end locations, and the freight's weight.

$$\text{Air freight emissions} = \sum_{i=1}^{\text{All transports}} \frac{W_i \times D_i \times E_i + W_i \times D_i \times A_i \times R}{.98}$$

- $W_i$  = Chargeable weight of transport i
- $D_i$  = Straight line distance (Km) between start and end locations of transport i
- $E_i$  = Haul specific emission factor for transport i (kg CO<sub>2</sub>e/tonnes.km)
- $A_i$  = Average emission factor of HGV trucks for transport i (kg CO<sub>2</sub>e/tonnes.km)
- $R$  = Road weighted Average of 1.66%

The distance between the departure airport and destination airport is calculated to determine the total kilometers traveled. This is based on the haversine (Great Circle) distance and an additional uplift factor for any unexpected detours. Then similarly to ocean freight a distance factor is applied to consider that an HGV truck is used for the distance from the factory to the airport and from the airport to the end customer. This factor corresponds to our road weighted average of 1.66% of the distance travelled between the two airports. Furthermore, each flight is classified as short haul (less than 1,500 km), medium haul (between 1,500 and 4,000 km), or long haul (more than 4,000 km). Typically, airplanes require significantly more fuel during takeoff compared with the rest of the journey, which means fuel consumption is not linear. This is why we apply different emission factors depending on the haul type.

Roughly 60% of all air freight data (based on number of shipments) is derived from our internal transport analytics system. The remaining 40% is coming directly from our suppliers through so called KPI reports. To factor in that we might not capture all air freight shipments we apply a 2% correction factor to each shipment therefore ensuring a conservative reporting estimate.

#### 2.3.1) Emission factor

Haul-specific emission factors from **BEIS** are applied for air freight. Although these factors exclude the type of aircraft, class of service, and occupation rate, they are still deemed the most valid and reliable. Cross-sector usage and frequent updates ensure high degrees of comparability and accuracy.

Radiative forcing caused by airplanes is not considered, in line with industry standards and the Greenhouse gas Protocol. This also ensures consistency and comparability across all our reporting years.

For the journey between the factory and the departure airport, as well as the distance between the arrival airport and the end customer, we use the emission factors from BEIS for HGV.

### 2.4) Parcel delivery

As last freight component parcel delivery for single shipments are of interest. This can include a mix of different transportation modes such as trucks and airplanes. Accounting for the corresponding emissions is therefore more complex and dependent on several assumptions (estimates). These are explored in more detail below.

$$\text{Parcel emissions} = \sum_{i=1}^{\text{All transports}} \sum_{j=1}^{\text{All modes of transport}} W_i \times ((D_i \times 0.95) \times E_{ij} + (D_i \times 0.05) \times E_{ij})$$

- $W_i$  = Chargeable weight of transport i
- $D_i$  = Distance (km) between start and end locations of transport i
- $E_{ij}$  = Emission factor for transport i using mode j (kg CO<sub>2</sub>e/kg km)

Again, the distance between the start and end locations is a key component to determine what mode of transport – and correspondingly what emission factor – is being used.

If the total amount of road kilometers between the start and end locations is less than 1,000 km, it is assumed that road transport is used to deliver the package. In this case, HGV emission factors are applied for 95% of the distance and city van emissions for 5% of the distance. It is highly unlikely that a truck is used to distribute a package to a customer's doorstep.

If the road distance is more than 1,000 km, it is assumed an airplane is used to deliver the package. In that case, we use the straight-line distance between the start and end locations. It is assumed that an airplane is used for 95% of the distance and an HGV for the remaining 5%. Again, this is done to account for the distance between the airport and the end customer. By applying the emission factors of an HGV instead of a city van, we ensure that the corresponding calculations are conservative.

All parcel related emissions are based on supplier data shared with Philips in the form of KPI reports.

#### **2.4.1) Emission factor**

We apply emission factors from **BEIS** for parcel delivery. These are updated annually and therefore remain reliable. Distinct factors are applied depending on the assumed mode of transport. For air freight, we apply haul-specific emission factors that acknowledge the nonlinear fuel consumption of airplanes. Radiative forcing is not considered.

#### **3) Global Warming Potentials**

In accordance with international reporting requirements, emissions from each of the gases is weighted by its Global Warming Potential (GWP), so that total Greenhouse Gas emissions can be reported on a consistent basis. For all of our emissions derived from the emission factors of BEIS, the GWPs are used from the IPCC Fifth Assessment Report. For Clean Cargo emission factors the GWPs are used from the IPCC sixth Assessment Report.

