PHILIPS

Philips' Corporate Emission Accounting Methodology

Scope 1 & 2

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). The methodology for purchased goods and services will be published in 2023.

Each category is subject to its unique methodology that is 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.

Scope 1

Stationary combustion

Fugitive emissions

Scope 2

Purchased electricity

Purchased heating

Purchased cooling

Purchased steam

Scope 1

1) Introduction

Scope 1 greenhouse gas emissions are direct emissions caused by company-owned and -controlled entities. For example, the burning of fossil fuels and the use of refrigerants or chemicals on-site generates scope 1-related CO_2e (carbon dioxide equivalent) emissions.

In accordance with the Greenhouse Gas Protocol, stationary and fugitive emissions are within the reporting span. Process emissions and mobile emissions are nonexistent in our scope 1 operating landscape. We do, however, account for our leased and rented vehicles under scope 3, category 6 (business travel).

2) Methodology

All anthrogenic or biogenic- based fuels *All refrigirants*

$$\sum_{i=1} C_i \times E_i + \sum_{i=1} R_i \times E_i$$

- C_i = Consumption of fuel i (volume-based)
- E_i = Emission factor of fuel/refrigerant i
- R_i = Consumption of refrigerant i (weight-based)

Stationary combustions and fugitive emissions are determined using the calculation-based and simplified estimation methods.

The calculation-based method examines actual activity, then estimates emissions using resource-specific emission factors. At Philips, this means that sites report their consumption of anthropogenic or biogenic-based fuels, biomass, and refrigerants via our internal sustainability reporting system. Consumption per resource is then aggregated across all sites and multiplied by resource-specific emission factors. This approach is being used for all industrial sites and 80% of our non-industrial sites' floor area. Non-industrial sites are sorted from biggest to smallest based on their square meters of space, and all sites – up to the 80% mark – are required to report on their consumption. With regards to fugitive emissions, this method of calculation likely overstates our emissions, as it focuses on refrigerant refills.

[1] World Resources Institute & World Business Council for Sustainable Development. (n.d.). Corporate Standard | Greenhouse Gas Protocol. Retrieved from https://ghgprotocol.org/corporate-standard

For the remaining 20% of our non-industrial sites' floor area, the estimation method is based on approximations of activity using the geographic location, building type, and square meters of space[1]. The estimated consumption is then multiplied by resource-specific emission factors. Although this is less accurate, we only apply this method to 20% of our non-industrial sites' floor area (approximately 10% of our total square meters), which reflects a negligible amount of our total scope 1 emissions. Furthermore, by also including more resource-intensive buildings in our extrapolation, we ensure emissions are overstated rather than understated.

The reason for extrapolation is because these sites are generally shared spaces or owned by others, meaning we do not have access to activity data. We only estimate the consumption of natural gas under scope 1. Other types of fuels and refrigerants are not extrapolated.

2.1) Extrapolation logic

As previously mentioned, extrapolation is conducted for 20% of the non-industrial sites' floor area. This is done based on the pareto principle that states that 80% of the outcomes from 20% of the inputs. In other words, it is certain that the lower 20% barely impact total consumption.

The extrapolation is conducted using a stringent step-by-step methodology. We first examine whether natural gas is being consumed (for example, United Arab Emirates does not consume natural gas for comfort heating). If no gas is typically consumed in that region, we will not extrapolate gas consumption. If there is usually gas consumption in the region, we apply the formula below.

All natural gases
All building types
All geographies using logic below

$$C_{ijk} = \sum_{\substack{i=1 \\ j=1 \\ k=1}} P_{ijk} \times S_{jk}$$

- C_{ijk} = Consumption of fuel i in geography k for building type j (volume-based)
- P_{ijk} = Resource intensity proxy of fuel i for building type j per m^2 in geography k
- S_{jk} = Square meters of building type j in geography k

Warehouses have statistically significant different resource requirements compared with all other non-industrial sites. Therefore, we distinguish the building type of non-industrial sites between warehouses and non-warehouses. We extrapolate resource intensities per square meter for non-reporting sites using the logic below (same logic is applied for scope 2 emissions):

- By square meter, average consumption of sites of the same building type in the **Country** of operation (e.g., Netherlands, UK, US)
- If the previous data is not available, we use the **Market** average (e.g., Western Europe, North America)
- If the previous data is not available, we use the **Region** average (e.g., greater China, international markets)
- If no site of the same building type reports consumption, we use the **World** average

The emissions from the sites that report their consumption and sites that do not are aggregated. This is our total scope 1 emissions.

2.2) Emission factors

For scope 1 emissions we use two sets of emission factors. For fossil fuels and natural gases, we use the UK Department for Business, Energy & Industrial Strategy (BEIS) database. For all other relevant scope 1 refrigerants, we use the UN Intergovernmental Panel on Climate Change (IPCC) database. The BEIS database is preferred because it is more regularly updated than the IPCC database. Regardless of which factor is being used, we do, however, always use the latest information available.

Scope 2

1) Introduction

Scope 2 emissions are indirect emissions caused by the purchase of electricity, heating, steam, and cooling. These emissions are not generated on our sites but are still directly impacted by our consumption level and contractual agreements. We can therefore reduce these emissions by reducing consumption or by ensuring purchased energy comes from low-emission sources.

According to the Greenhouse Gas Protocol, corporations are required to calculate their scope 2 emissions using the market-based and location-based approaches. The market-based approach considers energy emissions by examining the consumer choice and their direct purchase decisions. Contractual agreements are therefore inspected to determine what type of energy the consumer actively pursued. The location-based approach, on the other hand, uses country-specific emission factors. Emissions are therefore not influenced by purchase agreements and can only be reduced by decreasing the activity data because the grid-average emission factor is largely outside of corporate control.

[2] Sotos, M. (2020). GHG Protocol Scope 2 Guidance - An amendment to the GHG Protocol Corporate Standard. World Resources Institute.

2) Methodology

For all industrial sites and 80% of our non-industrial sites' floor area, the calculation-based method is applied. Sites periodically report their purchase of heating, electricity, cooling, and steam. The electricity consumption is multiplied by grid-related emission factors and for all other purchases by resource-specific emission factors.

2.1) Extrapolation logic

All building types. All geographies with missing data

$$C_{ij} = \sum_{\substack{j=1 \\ i=1}} I_{ji} \times S_{ji}$$

- C_{ij} = Extrapolated purchase of electricity for building type j in country i
- I_{ji} = Electricity intensity proxy for building type j per m^2 in region i
- S_{ji} = Square meters of building type j in geography i

For the remaining 20% of the non-industrial sites' floor area, we use the simplified estimation method to determine their consumption of electricity. All other scope 2 purchases are not considered because of their negligible influence on total emissions. We apply the same extrapolation logic as in scope 1. The square meter intensity is then multiplied by the total square meters of the specific building type to arrive at an extrapolated electricity consumption for non-reporting entities. This input is used for the market-based or location-based approach to arrive at a total emission amount. Both approaches are discussed below.

2.2) Market-based approach

$$\textit{Emission amount} = \underbrace{\sum_{i=1} (C_i - R_i) \times E_i}_{\textit{All countries}} + \underbrace{\sum_{\substack{i=1 \\ k=1}} P_i \times Em_k}_{\substack{\textit{All countries} \\ \textit{All purchased heating, cooling and steam}}}$$

- C_i = Known and estimated purchase of electricity in country i
- P_i = Purchased heating, cooling and steam (not electricity) in country i
- Em_k = Emission factor of purchased resource k
- E_i = Residual mix of location i or country i specific emission factor
- R_i = Renewable energy certificate for country/market i (PPAs or REAs)

For the emissions caused by energy purchase, we first subtract the amount of renewable energy certificates acquired in a specific region from the actual or estimated amount of energy purchased in that location. The remainder can then be considered grey energy, meaning from a nonrenewable source. We then multiply this by a grid-related emission factor.

We obtain Green-e certified Renewable Energy Certificates (RECs) in the United States, European Guarantees of Origin from the Association of Issuing Bodies (AIB) of the European Energy Certificate System, and i-RECs for our ASEAN operations.

2.2.1) Purchase of heat, cooling, and steam logic
For all other purchases of heat, cooling, and steam we examine the actual consumption reported by our industrial sites and 80% of our non-industrial floor area. We then multiply this by the resource-specific emission factor.

2.2.2) Emission factors
The emission factors used for the market-based energy approach are dependent on the location. For sites in the US, we apply the eGrid-specific Residual Mix emission factor, and for sites in Europe we use the AIB European Residual Mixes. For all other countries, we apply the International Energy Agency (IEA) emission factors because residual mix emission factors are nonexistent for these regions. We use the country average emission factor, if available, and if not, the world average emission factor.

The residual mix emission factor is used to prevent any double counting of renewable energy sources. This factor only covers non-renewable, untracked, or unclaimed energy that is utilized for the segment not covered by purchase certificates. Using country- or location-specific emission factors would also cover the proportions of renewable energies that are already accounted for in the equation through the renewable energy certificates. This would therefore distort the calculations and understate emissions caused by gray energy.
For a visual representation, please refer to the appendix.

As we do not have any ownership over the transmission and distribution network, we only account for the energy transformation emissions in scope 2. All other electricity life cycle factors are accounted for in scope 3, category 3 (fuel and energy related activities).

For the purchase of heat, cooling, and steam we use the emission factors published by BEIS. These are updated annually to ensure high degrees of validity.

2.3) Location-based approach

$$\textit{Emission amount} = \sum_{i=1}^{\textit{All countries}} C_i \times E_i + \sum_{\substack{i=1 \\ k=1}}^{\substack{\textit{All countries} \\ \textit{All purchased heating, cooling and steam}}} P_i \times Em_k$$

- C_i = Known and estimated purchase of electricity in country i
- P_i = Purchased heating, cooling and steam in country i
- Em_k = Emission factor of purchased resource k
- E_i = Residual mix of location i or country i specific emission factor

For the location-based approach, we examine actual or estimated energy purchase and disregard any renewable energy certificates acquired. This amount is then multiplied by grid-related emission factors.

For all other purchases of heat, cooling, and steam we use the same logic as for the market-based approach.

2.3.1) Emission factors
For our location-based approach we use two types of emission factors for energy: the eGrid location-specific emission factors for the US, and the IEA factors for all other geographies. We use eGrid because there are large energy supply discrepancies in the US that should be considered, according to the Greenhouse Gas Protocol. For all other locations, there are no region-specific emission factors. For countries where IEA has no country-specific emission factor, we use the world average. As we do not have any ownership over the transmission and distribution network, we only account for the energy transformation emissions in scope 2. All other life cycle factors are accounted for in scope 3, category 3 (fuel and energy related activities).

Similar to the market-based approach, the BEIS database is used for purchased heat, cooling, and steam.

Appendix

3.1) Electricity grid overview