Methodology for calculating the Environmental Profit & Loss Account

As a leading health technology company, it is our purpose to improve people's lives and well-being through meaningful innovation. We aim to improve 2.5 billion lives per year by 2030.

To guide our efforts and measure our progress, we take a two-dimensional approach – social and ecological – to improving people's lives.

Philips Group
Lives improved dimensions
2020

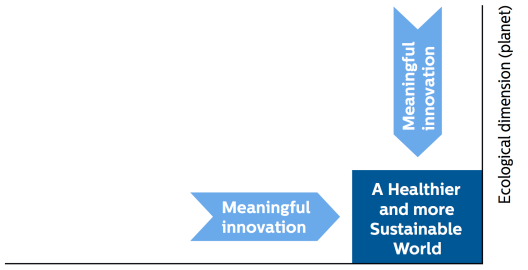

Figure 1: Lives improved dimensions

The Philips Environmental Profit & Loss (EP&L) account guides our efforts on the ecological dimension. It is an economic valuation in EUR of the impact that Philips has on the environment, or in other words: an environmental footprint of Philips' complete value chain expressed in monetary terms.

Our EP&L account is based on Life-Cycle Assessment (LCA) methodology. Philips has been performing LCAs since 1990. The assessments are used to steer our EcoDesign efforts and to determine the Green Focal Areas (GFAs) of the Philips product portfolio. The GFAs are product characteristics like energy efficiency, weight and product lifetime that determine the environmental impact of our product portfolio. They form the basis of our steadily growing Green solutions portfolio.

The EP&L account is a logical next step to extend the scope from individual product value chains to Philips' complete value chain. It will support the direction of our sustainability strategy by providing insights into the main environmental hotspots from an overall business point of view and it will guide Philips in its efforts to deliver on its commitment to reduce its full value chain emissions in line with a 1.5 °C global warming scenario.

The current EP&L account only includes the hidden environmental costs that are associated with our activities and products. It does not include the benefits ('profit') to society that Philips generates by improving people's lives through our products and solutions, e.g. our healthcare or healthy food preparation solutions. We have a well-established methodology to calculate the number of lives we positively touch with our products and solutions. It is our aim to look into valuating these societal benefits in monetary terms as well, and to include them in our future EP&L account where possible.

This document describes the methodology we used to calculate the 2020 EP&L account, including information on the scope, assumptions and data sources. The 'EP&L' metric is part of the assurance assignment of EY. EY's assurance report can be found here: chapter 13.6 of the Annual Report 2020.

Scope

The scope of the EP&L account comprises three parts:

Philips Group
Scope of the Environmental Profit & Loss Account
2020

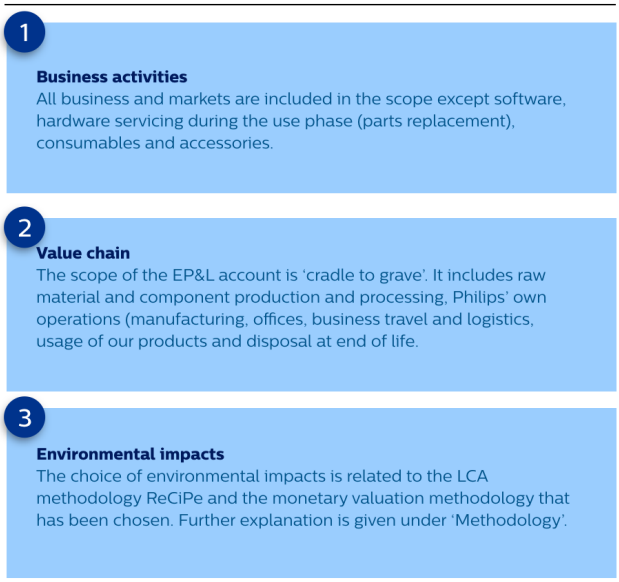

Figure 2: Scope of the EP&L

Business activities

For Personal Health, 97% of the product portfolio revenue is covered in the EP&L. Products not covered consist of accessories, spare parts and products with relatively low sales revenue.

Consumables that are directly connected to consumer electronic products, such as dust bags and filters for vacuum cleaners and brush heads for toothbrushes, have been included. Consumables not directly attached to the product (e.g. shaving gel, coffee pads, toothpaste, water, etc.) are not included.

For Precision Diagnosis, Connected Care and Image Guided Therapy 42% of the revenue is included in scope. All medical systems and monitors are included in the calculation with the exception of Lumify, catheters, and product (spare) parts.

New additions as of 2020 are the full Sleep & Respiratory Care portfolio including the energy consumption of equipment rentals (1 year of energy consumption). Consumables, accessories, and hardware upgrades are excluded from scope with the exception of masks. Reason for the exclusion is that due to the large variety (e.g., sensors, ECG electrodes and cables, batteries, cuffs) it is not yet possible to accurately determine the overall material composition and weight.

Hardware upgrades and parts replacement (repair) of medical equipment during the use phase of medical equipment are difficult to trace back to material composition and are thus not included yet in scope. However, the environmental impact of business travel of the service engineers is included in the scope.

The energy consumption of sold refurbished systems (2nd lifetime) is included in scope.

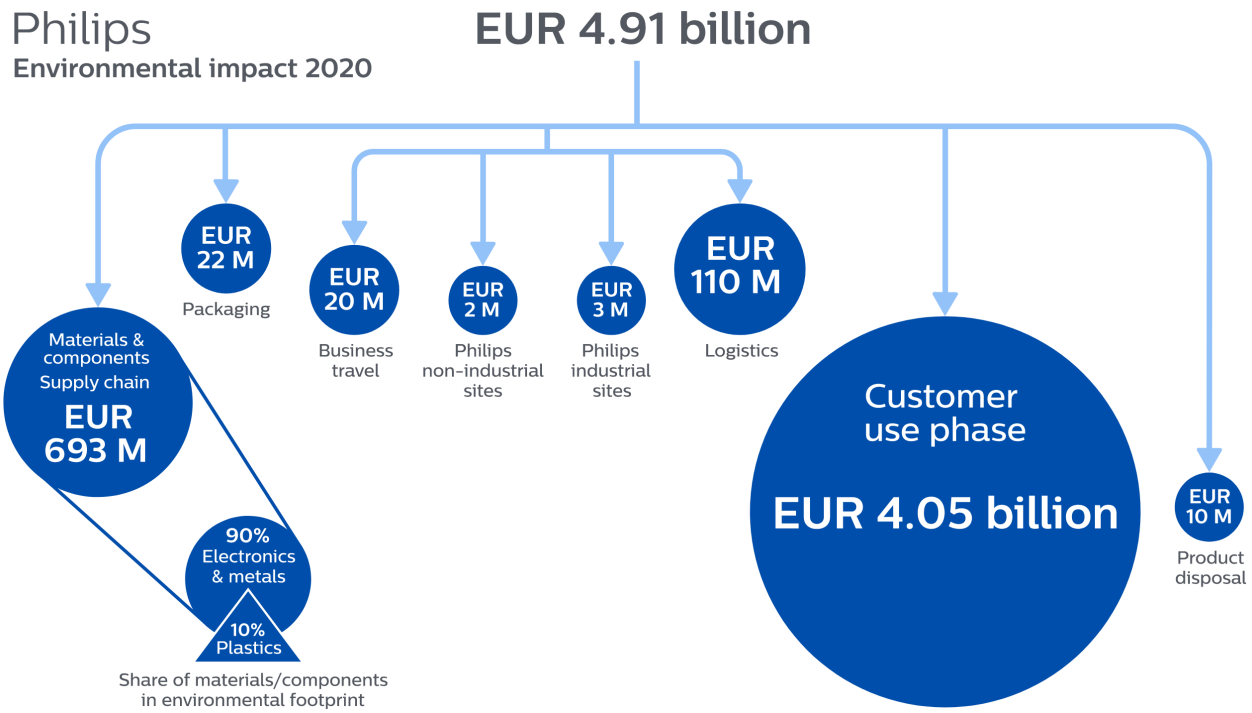

Figure 3: Environmental impact, results of EP&L

Value chain

The scope of the EP&L addresses the key environmental contributors. For extraction and processing of raw materials and production of components (e.g. plastics and printed circuit boards), generic environmental impact data from the LCA database Ecoinvent 3.4 have been used.

The energy consumption of our products is by far the dominant factor in Philips' environmental impact. Energy consumption during the full lifetime of the products sold in 2020 is included. For example, the environmental impact of electricity needed to use a Diamond Clean toothbrush during its full lifetime of an estimated four years, so until 2024, is included in the 2020 EP&L account. This is a significant overestimate of the 2020 impact; however as the life-cycle impact is 'generated' in 2020 it has been decided to account for this impact in the year that the products are sold.

The environmental impact of the use phase of our products strongly depends on the power levels (W) and the pattern of use. In 2020, we re-assessed the use case scenarios of our product portfolio. We found that not all products are used at maximum power at all times and that the duration of use was not always in accordance with the latest consumer behavior studies. Especially for the haircare products, significant adjustments have been made in the use case scenario, resulting in a substantial reduction of the total EP&L impact (- EUR 1.7 billion based on 2019 sales volume).

As of 2020 we measured the impact of the electricity consumption of our products based on the specific energy mix of the market where the products are sold.

For all Healthcare diagnostic imaging equipment, we aim to calculate the energy consumption according to the COCIR standard. In the current EP&L, this is the case for the MR and CT equipment. The energy measurement of the X-ray and Ultrasound equipment is close to COCIR but will be fully aligned to COCIR for new product introductions.

Environmental impacts

The choice of environmental impacts is related to the LCA methodology (ReCiPe) and the monetary valuation method that has been chosen. Further explanation is found under 'Methodology'.

Out of scope

Not included in the EP&L, besides the above mentioned out-of-scope

business activities, are inputs and outputs that are difficult to assess and have a relatively low contribution:

- Inbound transport of raw materials, components and subassemblies
- Purchased materials that do not end up in final products (e.g. cutting wastes in our factories)
- Emissions to air and water, waste, consumption of water and process chemicals at Philips manufacturing sites
- Waste and water consumption of non-industrial Philips sites (e.g. offices and warehouses)

Philips uses mostly off-the-shelf components in its products, which means that the net Bill of Materials (BOM) of products as used in the EP&L calculation will not deviate much from the gross purchased materials.

Methodology

The method used to calculate the EP&L account is the internationally recognized ReCiPe methodology[1], in combination with environmental pricing as provided by CE Delft. The LCA software used for the environmental impact assessment is EcoChain. Data models are based on the Swiss national LCI database Ecoinvent v.3.4, for background as well as foreground data. The insights we derived from the EP&L results when expressed in ReCiPe end scores (mPts) do not deviate from the results expressed in EUR. We also verified whether another LCA and pricing methodology, in particular the CML method in combination with shadow costs, would result in a significant change of outcome, but this is not the case.

Environmental impacts included in the assessment

- Climate change
- Ozone depletion
- Human toxicity
- Eutrophication (fresh/marine water)
- Photochemical oxidant formation
- Particulate matter formation
- Acidification
- Ionizing radiation
- Ecotoxicity (marine and freshwater/land)
- Land use

Figure 4: Environmental impact categories

The environmental pricing methodology of CE Delft is based on the ReCiPe methodology for LCA. The prices (see table 1) are so-called damage costs (as opposed to prevention or abatement costs) and represent the willingness of citizens to pay for not having to be exposed to an additional 1 kg of environmental pollution, expressed in EUR per 1 kg of emissions. The environmental prices are included as conversion factors ('weighing factors') in the LCA software at the midpoint level of environmental impacts.

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The CE Delft pricing methodology does not yet include environmental prices for depletion of water, fossil fuels and metals and natural land transformation and hence these environmental impacts are excluded from the scope.

The environmental prices have been calculated for Dutch territory only. Many environmental impacts like human toxicity and ecotoxicity are specific to the local context. This means that the environmental prices cannot be automatically extrapolated to other regions outside of The Netherlands.

CE Delft also has European environmental prices available. However, as that would also not represent Philips' global sales, it has been decided to continue using the (higher) Dutch environmental prices and await the publication of the global set of country-specific prices.

Theme	Unit	External costs	Weighting factor
Climate change	EUR /kg CO_2-eq	EUR 0.06	EUR 0.06
Ozone depletion	EUR /kg CFC-eq	EUR 30.40	EUR 123.00
Human toxicity	EUR /kg 1.4 DB-eq	EUR 0.16	EUR 0.16
Photochemical oxidant formation	EUR /kg NMVOC-eq	EUR 2.10	EUR 2.10
Particulate matter formation (chimney >100m)	EUR /kg PM_{10}-eq	EUR 35.12	EUR 35.12
Ionizing radiation	EUR /kg kBq U235-eq	EUR 0.05	EUR 0.05
Acidification	EUR /kg SO_2-eq	EUR 5.40	EUR 8.12
Freshwater eutrofication	EUR /kg P-eq	EUR 1.90	EUR 1.90
Marine eutrophication	EUR /kg N	EUR 3.11	EUR 3.11
Terrestrial ecotoxicity	EUR /kg 1.4 DB-eq	EUR 8.89	EUR 8.89
Freshwater ecotoxicity	EUR /kg 1.4 DB-eq	EUR 0.04	EUR 0.04
Marine toxicity	EUR /kg 1.4 DB-eq	EUR 0.01	EUR 0.01
Land use	EUR /m2*year	EUR 0.03	EUR 0.04

Table 1: Environmental prices of environmental impacts in the Netherlands

As can be derived from table 1, particulate matter formation (main contributor to results) has a relatively high weighting factor. This is due to the rather unique Dutch situation with relatively low air quality and a high concentration of ammonia in the air. Ammonia is an important source of particulate matter formation. As mentioned, due to lack of environmental prices that are geographically differentiated, we used the Dutch data.
However, CE Delft does provide a differentiation in environmental price for particulate matter formation related to the source of emission. The environmental price for particulate matter formed via transportation exhaust gasses is higher than particulate matter formed via high chimneys of electricity generation plants. Given the fact that electricity consumption is the main contributing factor to the Philips EP&L (83%), with particulate matter formation and climate change as the main environmental impacts, we used an adapted environmental price of particulate matter formation as provided by CE Delft (35.12 EUR/kg PM10 eq).

Data quality

Several factors are influencing the bandwidth of the final EP&L account results:

- Accuracy of generic datasets
- Scope of data included
- Assumptions made (e.g. the choice of reference products as proxies to cover all product categories and the pattern of use of products to derive the electricity consumption)

Availability and quality of data is a challenge inherent to LCA and results in uncertainty of the EP&L outcome. Uncertainty also results from the LCA and monetary valuation methodology used, which is based on assumptions that will vary over time.
The figures reported are Philips' best possible estimate. As we gain new insights and retrieve more and better data, we may enhance the methodology and accuracy of results in the future. The inherent uncertainties relevant to the further development of the EP&L are expressed in the related disclosures in the Annual Report.

Next steps

We will also closely follow (inter)national developments in the LCA methodology, e.g. the EU Product Environmental Footprint (PEF) project aimed at the development of an EU harmonized LCA method, and environmental pricing methodology, especially research aimed at the development of localized environmental pricing factors.

[1] Goedkoop, M. et al., 2013. R. ReCiPe 2008, A life cycle impact assessment method which comprises harmonised category indicators at the midpoint and the endpoint level; First edition (version 1.08) Report I: Characterisation, Den Haag: Ministerie van Volkshuisvesting, Ruimtelijke Ordening en Milkieubeheer (VROM).

Data sources

The following data-sources have been consulted in order to create the EP&L.

Data	Source	Remark
Material extraction and processing upstream	Generic data from Eco-invent (LCA) database (industry averages)	No specific environmental data from suppliers have been collected. Geographical scope of Ecoinvent datasets: Global (GLO) data for materials, unless country of origin is known, or if only European dataset (RER) is available.
Environmental data Philips sites	Energy consumption as registered in Credit360 software (used by Philips sites)	Waste, emissions to air and water, consumption of water and process chemicals excluded Geographical scope of used Eco-invent datasets: country-specific datasets used for energy processes. For example, for China-based plants, the Chinese electricity mix is used.
Outbound transportation supplied and (semi)final goods	Invoices from our logistic providers	This includes transportation between Philips sites and from Philips sites to customers.
Material composition and weight Philips products	Bill of materials (BOM) of reference products (Article Groups: AGs) and product documentation Philips website	For each business, within the mentioned scope, representative reference products with high sales were identified and the material composition of these products derived. These data were used as proxy for comparable other product categories. Net BOM data have been used.
Production amounts	Sales data	
Business travel	Internal declaration system as used by Philips employees	As reported in our operational Carbon Footprint
Energy consumption office buildings	Invoices from our energy providers	As reported in our operational Carbon Footprint
Use phase	Based on power (W) and duration of usage per day or week; lifetime based on Lives improved data	If data was not available, assumptions were made based on use cases of similar products. Geographical scope of used Eco-invent datasets: region-specific datasets used for electricity generation
Final disposal	WEEE disposal scenario in Eco-invent database.	Assuming 50 km transportation by truck from disposal location (e.g. retailer or hospital) to waste treatment/recycling facility

Table 2: Data sources