

Product category average Scope 2 and 3

Purpose

This document provides the product category average Scope 2 and Scope 3 values published by TCO Development for use in the Annualized PCF criterion under TCO Certified. It also describes the methodology used to develop these values and the product category average annualized PCF baseline derived from them.

This document supports the Annualized PCF criterion and related supporting documents. It does not define product-level compliance with the Annualized PCF criterion. Product-level compliance is assessed under the Annualized PCF criterion using supported product lifetime, applicable product category average values, and any approved Scope 3 reductions.

Role in the Annualized PCF model

The product category average Scope 2 and Scope 3 values published by TCO Development are input parameters in the Annualized PCF model used in TCO Certified.

They are used to:

- determine the product category average annualized PCF baseline
- determine the product Annualized PCF for a certified product together with supported product lifetime and any approved Scope 3 reductions

The product category average annualized PCF baseline for each product category is based on the published category average Scope 2 and Scope 3 values and the product life assumption defined by TCO Development for that category.

Methodology

The Scope 2 and Scope 3 category average values are averages of the Scope 2 and Scope 3 components in a large number of Product Carbon Footprints within each product category. These are compiled using the Px3 ICT carbon footprint database. The database is updated daily with a rolling time scale of two years applied to each device. The Scope 2 and Scope 3 category average values used in TCO Certified are defined by a snapshot of the database. The values may be updated from time to time to reflect products available on the market.

The Scope 3 supply chain emissions values, including production, transport, and end-of-life treatment, are extracted directly from manufacturer-published Product Carbon Footprint reports generated in accordance with ISO 14040, ISO 14044, and ISO 14067. Where a manufacturer publishes a range, the mean value is used to represent the device.

The Scope 2 emissions value is annualized and based on four years of use using a blended European electricity greenhouse gas emissions factor. All values are expressed in kg CO₂e.

For more information, see [Sutton-Parker, J. \(2022\), Is sufficient carbon footprint information available to make sustainability focused computer procurement strategies meaningful? Procedia Computer Science, Volume 203, Pages 280-289.](#)

Versioning and applicability

The product category average Scope 2 and Scope 3 values applicable to an assessment are the values published by TCO Development for the relevant criteria generation and decision period.

The publication of a product category average value does not by itself mean that the product category is currently subject to an Annualized PCF mandate under TCO Certified.

EU market average annualized PCF

The product category average annualized PCF baseline for an average product on the EU market is determined using the published product category average Scope 2 and Scope 3 values together with the product life assumption for the relevant product category.

$$PCF_{\text{annualized average}} = \frac{(\text{Scope 3}_{\text{Product category average}})}{\text{Supported product lifetime}} + \text{Scope 2}_{\text{Product category average}}$$

Published product category average values

Product	Scope 2	Scope 3	Product	Category average
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Product category average Scope 2 and 3 v1.1 2026-06-03

category	average	average	category average life	annualized PCF
Displays	18,5 kg CO ₂ e/year	327 kg CO ₂ e	4 years	100,25 kg CO ₂ e/year
Notebooks	6,5 kg CO ₂ e/year	237 kg CO ₂ e	4 years	65,75 kg CO ₂ e/year
Desktops	20,5 kg CO ₂ e/year	300 kg CO ₂ e	4 years	95,5 kg CO ₂ e/year
Tablets	4,5 kg CO ₂ e/year	118 kg CO ₂ e	4 years	34 kg CO ₂ e/year
All-in-one PCs	27,5 kg CO ₂ e/year	368 kg CO ₂ e	4 years	119,5 kg CO ₂ e/year
Headsets	TBD	TBD	TBD	TBD
Smartphones	TBD	TBD	TBD	TBD