# GHG Protocol - Hardware Factsheet

## How do I use this methodology? Ask for support!

Please note that the factsheet below is part of the GHG Protocol ICT Sector Guidance, which contains six chapters. The first chapter is an introduction to the general principles of life cycle accounting and reporting in the ICT sector; the following five chapters are divided into five separate factsheets, for better readability – and are available on the map of methodologies of the project. Although no specific factsheet was developed for the introduction chapter, relevant content is included in the factsheet below on ICT Hardware.

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| GREENHOUSE GAS PROTOCOL | GHG Protocol ICT Sector Guidance – ICT Hardware | |
| Name of Initiative/Methodology | ICT Sector Guidance built on the GHG Protocol Product Life Cycle Accounting and Reporting Standard – Chapter 5 – Guide for assessing GHG emissions of ICT Hardware | |
| Link to the latest published version | GHG Protocol ICT Sector Guidance (07/2017): Final version<br>www.ghgprotocol.org/sites/default/files/ghgp/GHGP-ICTSG%20-%20ALL%20Chapters.pdf | |
| Developed by | Carbon Trust, Global e-Sustainability Initiative (GeSI) | |
| History and Status | • Work started in 2011, issued as drafts in two rounds of public consultation<br>• Published in July 2017 | |
| Involved companies / parties | **Steering Committee**: Alcatel Lucent, BT, Carbon Trust, CDP, Cisco, Deutsche Telekom, European Commission, Ericsson, Fujitsu, Gartner, GeSI, HP, ITU, Massachusetts Institute of Technology, World Business Council for Sustainable Development, World Resources Institute, WSP | |
| Scope | ✖ **Organisation env. accounting**<br>✖ Scope 1<br>✖ Scope 2<br>✖ Scope 3 | ✔ **Product env. assessment**<br>✔ Life cycle approach<br>✖ Use phase only |
| | ✔ GWP<br>✖ Energy (focus on secondary energy) | ✖ Other environmental impacts<br>✖ KPIs |
| System(s) covered by the methodology | ICT hardware (IH) including computers and peripheral equipment; communication equipment (e.g. network equipment); consumer electronic equipment; and various ICT components and goods | |
| Goals | • Providing information on<br>• Assessing GHG emissions of an ICT hardware (or a product family), which may then focus attention to reduce the emissions from main sources<br>• Assessing GHG emissions due to the hardware in a complex ICT system (e.g. as part of a TNS or DMS, see [GHG Protocol ICT Sector Guidance – TNS] and [GHG Protocol ICT Sector Guidance – DMS]) | |
| Generic features | • All stages other than the use stage may be grouped together (embodied emissions)<br>• Critical review by a first or third party is required<br>• Offsets, avoided and delayed emissions are not to be included in the inventory results<br>• Functional unit:<br>◦ For all final products, the unit of analysis is defined as a functional unit<br>◦ For intermediate products where the eventual function is unknown, the unit of analysis is defined as the reference flow<br>• Cradle-to-gate and gate-to-gate inventory results should be reported separately (if not limited by confidentiality)<br>• Companies shall disclose and justify any exclusions of attributable processes in the inventory report<br>• Companies shall collect primary data for all processes under their ownership / control<br>• Companies shall assess the data quality of activity data, emission factors, and/or direct emissions data | |
| ICT-specific features | • The functional unit description includes magnitude, duration and quality of the IH's service<br>• A screening assessment is recommended to focus data collection efforts; in particular for ICT hardware that is kept operating for long periods of time<br>• Refer to [ETSI TS 103 199] and [ETSI ES 203 199 / ITU-T .1410] for boundary settings and allocation specific to ICT<br>• Some processes are excluded from the IH assessment, such as: facility operations, corporate activities, and capital goods (e.g. machine used in assembling IH product)<br>• Four calculation methods may be used to assess cradle-to-gate GHG emissions of IH; capabilities and drawbacks are detailed for each of them.<br>◦ Component characterization<br>◦ Hardware parameterisation<br>◦ Life cycle stage ratio profiling<br>◦ Environmentally extended input-output (EEIO)<br>• The product lifespan is a very important factor as it can have very significant impact on the total life cycle GHG emissions from an IH product. In all cases, documentation of the modelled product life and the rationale for the modelling is imperative.<br>• The use profile needs to reflect the time spent in the different power states<br>• The software and firmware installed on the equipment can make a significant difference in the product's power consumption over its operating life | |
| Examples of implementation / experience feedback | The Appendix 1 of the document presents the calculation of GHG emissions by the component characterisation method, for a SOHO wireless router | |
| Interaction with other methodologies | • [IEC TR 62725] Analysis of quantification methodologies of greenhouse gas emissions for electrical and electronic products and systems<br>• [ISO/TS 14067] Greenhouse gases - Carbon footprint of products - Requirements and guidelines for quantification and communication<br>• [ISO 14040] Environmental management - Life cycle assessment - Principles and framework<br>• [ISO 14044] Environmental management - Life cycle assessment – Requirements and guidelines<br>• [GHG Protocol] Product Life Cycle Accounting and Reporting Standard<br>• [ETSI TS 103 199] Life Cycle Assessment (LCA) of ICT equipment, networks and services; General methodology and common requirements<br>• [ETSI ES 203 199/ITU-T L.1410] Methodology for environmental life cycle assessments of information and communication technology goods, networks and services<br>• [PAS 2050] Specification for the assessment of the life cycle greenhouse gas emissions of goods and services<br>• [EU Energy Star] | |

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