

FKG method for collecting data and calculation of climate footprint for components supplied to the automotive industry



Method description

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FKG method for collecting data and calculation of climate footprint for components supplied to the automotive industry.

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1. Introduction

This method is developed for the purpose of helping suppliers to the automotive industry present a potential climate footprint of their proposed products to their customers in a quotation stage.

The supplier/producer company is responsible for making a complete inventory of all inputs and outputs of the proposed product in accordance with the Data Collection Template.

The method is based on the modelling of a climate footprint for a fictive average product, that can be used to present an estimated potential climate footprint for future product offers. The method was developed as integral parts of a climate footprint project coordinated by FKG, representing Swedish automotive component suppliers. **The project resulted in this method, including an inventory tool to be used by suppliers to collect data and an average product model and calculator to estimate a potential climate footprint of the suppliers' products.** The inventory data includes information on supplied materials (types and qualities), transportation (volume, mode, and distance), and energy sources (types and suppliers) used in production during 2021 or 2022. This data can be used in simulations for future products.

Life Cycle Assessment (LCA) consultants utilize the inventory to construct a simplified cradle-to-gate model in software tools like SimaPro, LCA for Experts (formerly GaBi), or other LCA modelling software tool. This model, which employs a “simple cut-off” for recycled input materials and recyclable materials from production (“simple cut-off” according to Ekvall et al. 2020 as recommended by EPD International, see further chapter 2 and 3 for scope and modelling), either utilizes certified climate data (e.g. EPDs) from sub-suppliers or, more commonly, relies on general Ecoinvent data for materials and energy. A simplified LCA model for the average product from the previous year is documented and serves as the baseline for the calculation. Subsequently, a calculator is developed that can simulate a climate footprint; for production of a new product in the factory, based on the production volume and material mix from the previous year. In the calculator, the climate footprint of the 'core' for each main process and subprocess is treated as fixed factors proportional to the weight of the product. The upstream part treats the raw material mix (bill of

materials) as a variable that can be adjusted for each product, where each raw material has specific climate footprint factors.

Validation of the method to develop an average-product-model and the calculator is carried out by a validation body. In this first version of the method, the validation body is RISE. The validation program builds on review of assumed data and confirms the use of reasonable and sufficient data for the simplified LCA model. The validation program does not verify that the bill of materials and bill of processes are sufficient to produce the product/component but validates the reasonableness of this data.

2. Objective and scope

2.1 Purpose

This method is developed for the purpose of allowing suppliers to present a potential (predicted) climate footprint of their proposed products to their customers in a quotation stage.

2.2 Principles, frameworks and standards to support method development and method validation

Principles used as a base for developing this method is based upon ISO 14040, 14044 and 14033:2019. The purpose of the method is to provide a reliable basis for the production of climate data sheets.

The method is furthermore structured according to Life Cycle Assessment - Principles and structure (ISO 14040:2006) and - Life cycle assessment - Requirements and guidance (ISO 14044:2006) and is also based on principles for generating and providing quantitative environmental information according to Environmental management systems - Quantitative environmental information - Guidance and examples ISO 14033:2019 and Greenhouse gases - Carbon footprint of products - Requirements and guidelines for quantification ISO 14067:2018.

This method is designed to produce a climate data sheet and the execution of this methodology can be validated by a third party, a validation body. The validation program is based on and carried out in accordance with Conformity Assessment – General principles and requirements for validation and verification bodies (ISO/IEC 17029:2019).

The purpose of the methodology, which is based on the above-mentioned standards, is to ensure that the final outcome of the methodology, producing a climate data sheet with a claim of a potential carbon footprint of a fictitious average component or product, is properly executed and can be communicated to interested parties.

As mentioned above, the result is presented as a potential carbon footprint for a fictitious average component or product. If performed correctly, this climate data sheet can be said to have been produced in accordance with this methodology and the above-mentioned standards. It can then go through a validation process with a favourable result. Note the limitations and simplifications of this method, which are described in full in this document.

2.3 Applicability of the method

The method is applicable in repetitive manufacturing industries, where raw material or subcomponents are processed and or converted into a finished component, product or part; supplied to a customer who receives the climate datasheet for a specific component, product or part. The production is expected to remain in a relatively steady state of production processes from year to year. If larger changes are made within the productions processes, a new set of inventory and calculations are required; all can be executed within the method.

The method is not applicable for project-based build-to-order industries like construction industry or when the manufacturing processes involves changes during the course of production.

2.4 Scope

The method is based on the attributional LCA approach. The scope included in the climate datasheet is a simplified cradle-to-gate scope for a component or final product. In the modelling stage, the scope was divided into upstream and core.

Upstream includes all raw material and subcomponents based on next-tier sub-suppliers.

The supplier company's **core** operations are mapped in detail. With regards to the Core operations, all energy, water usage, process materials and chemicals related to the operations need to be accounted for, but capital goods (buildings, and equipment) are not accounted for in this simplified calculation. The core can include internal or external sub-processes until delivery to customer (gate).

Any downstream supply chain (customer and their distribution, retail and further to the final product user), use-phase and end-of-use or end-of-life, is not accounted for since it lies outside the scope (after gate).

2.5 Declared units and inventory units

The climate footprint is first calculated as carbon dioxide equivalents per kilogram of a fictive average product from a company. It is specified for upstream and core, and if appropriate external and internal subprocesses. The climate footprint is declared as carbon dioxide equivalents for each specific products, based on the fictive average product calculation. If packaging is included, the unit is 1 kg of packaged product. This is then used to calculate the climate footprint per piece packaged product at factory gate.

Inventory data is provided by the suppliers in the unit they have available as raw data, thereafter most data is converted into SI-units. Transportation is summarized in tonne-kilometres Electricity use is summarized in kWh. For the modelling, weight (in kilograms or tonnes) of materials is preferred as unit of analysis, but if needed; /the quantity of sub-components (#) can be used as unit of analysis.

2.6 Simplifications and exceptions

As stated in the Scope section, the inventory and modelling of "core" should include all process materials and other consumables connected to the production processes. All chemicals used in the operations need to be included as either raw materials or process materials, but smaller amounts may be clustered together. Other maintenance materials, office consumables and personal protection and personnel related materials (clothes etc.) are not included in this simplified calculation, mainly

because the data is usually not significant. Regarding energy use, energy in all buildings, including offices, must be included. Personnel transportation such as business travelling and commuting to work is not included in this simplified model (in line with EPD calculations but not in line with Iso 14067). Maintenance of equipment and buildings may be omitted if the amounts are sufficiently small.

One issue is around tools and maintenance materials, categorized either as consumables or as investment materials, is that composition and weight often may be unknown. These should be included in the inventory phase if their cost per piece is more than 20% of the material cost, but may be omitted in the modelling if they are sufficiently small (< 20%), or if the climate footprint is known to be <1% of the total climate footprint.

If the company wish to include any of the not included areas above, it is allowed but only if those areas are separately accounted for and reported (outside Core and outside Upstream).

3. Data inventory (Life cycle inventory) modelling and analysis

The data inventory follows a simplified cradle to gate life-cycle inventory where a company's yearly input-output; product material, process material, energy inputs, components, waste material and emission outputs are collected over a year. Transportation for inbound product material, process material, internal transportation and outgoing waste material are also collected. Outbound product transports may be included in inventory and reported separately but is not included in modelling the core. Upstream supply chain life-cycle data is simplified and thus includes all material streams and transports from next tier sub-suppliers. For purchased components, generic manufacturing datasets are included (e.g. metal working and plastic processing).

3.1 Input-output inventory/Primary Data collection (executed by the supplier/producer company)

The inventory may be conducted in accordance to an initial environmental review according to (Zackrisson et al., 2014 and Astrand et al., 2004), however, some data from the full inventory can then be omitted; permits, accidents, and employee travel can be excluded, while all material inflow and outflow (amount, type, supplier distance, and transportation mode) for production material, chemicals, process consumables as well as products, waste, and recycled materials must be included. Also, suppliers and volumes of all energy input (electricity and fuels) and transportation services must be included. Equipment and buildings that are not typically included in an initial environmental review should not be included.

The supplier/producer company is responsible for making a complete inventory of all inputs and outputs in accordance with the data collection template with support from consultant. The data should include information about supplied materials (volume/weight, supplier, type and qualities), transportation (volume, mode, and distance), and energy (type and supplier). Common data sources are environmental reports, Enterprise Resource Planning systems, product specifications, safety data sheets and technical data sheets.

3.1.1 Upstream – automotive products/value adding materials

All specific product raw materials and sub-components that are purchased because they are part of a produced component/product need to be part of the inventory for "raw-materials". This includes packaging materials that are used to supply products to the OEM. The inventory need to include and

identify supplier, specification of the raw material or sub-component, transport type and distance, and if available the carbon footprint data of the raw-material sub-component together with certificates on this. In addition, the share of recycled or circulated material in the raw-material or sub-component could be specified together with certificates on this. To collect data on weights may include actual weighing of the raw materials and sub-components.

3.1.2 Core – Process materials, energy, water, waste, and emissions

Process materials. All material and products supplied to the company/plant that are not part of a produced component/product, but are used in the company's operations are process materials. The inventory should include all process material used for the company's production processes. Process chemicals and consumables used in the process must be included in the inventory. Tools must be part of the inventory unless the annual value is less than 20% of the material cost per component. Office materials and e.g. construction materials used in building new parts of the factory may be excluded from the inventory. The inventory needs to include specification of the material or sub-component, transport type and distance, and if available the carbon footprint data of the material or products together with certificates on this. To collect weights, it may include actual weighing of the material and products.

Energy. All energy use, including fuels, supplied to the company/plant needs to be included in the inventory. The inventory needs to include specification of the energy, and if applicable, transport type and distance. If it is available, specific carbon footprint data from energy companies should be included.

Water and wastewater. The inventory must include the amount of water used on plant level, both purchased public water and any internally or externally used water sources. Outgoing wastewater both to purification and outflows to recipients has to be reported. The inventory needs to include specification of the water source or recipient, and if applicable transport type and distance. If available, specific carbon footprint data from the water and wastewater companies should be included.

Waste. The inventory must include the amount of waste divided into fractions. The fractions need to be clearly declared on if they are disposed of, combusted or material recycled. For balancing purposes, the waste fractions should be classified regarding if they contain, mainly product material/ lost raw-materials/ components or mainly process materials or both (then try to estimate %). The inventory dataset needs to include waste management supplier, specification of the fraction, transport type and distance, and if available the carbon footprint data of any combustion or disposal processes. (In this method negative climate footprint/credits for recycling waste-materials are not applied since the method accounts for use of recycled materials).

Emissions. All emissions from the production processes as reported to authorities or otherwise identified, are included in the inventory, not only GHG protocol specified gases. Thus, release of CH₄, VOC, and coolants etc. are included. The inventory needs to include the different types of emissions and how they were calculated/measured and which inventory materials or energy they are connected to.

3.1.3 Transportation

Inventory data on all inbound transports and outbound waste material transports should be collected together with the respective material transported and summarized in tonne-kilometres. Collecting data about personnel transportation of any sort is not necessary and if it is collected and reported it

should be reported separately. Outbound transportation of products could be part of inventory (for control purposes) but if it is modelled it should be reported separately.

3.1.4 Outgoing products

Inventory of all outgoing products must be reported. However, the products may be grouped into product families / product categories. The total mass of outgoing products shall be included in inventory and is later used for checking mass balance between ingoing and outgoing materials.

3.1.5 Not included in inventory

Some process materials are not included in the inventory. Equipment and buildings that are not typically included in an initial environmental review should not be included. Office materials and some maintenance materials such as spare parts and equipment may be excluded from the inventory if their corresponding climate footprint are sufficiently low in relation to the total climate footprint.

Personnel transportation of any sort is not necessary and if it is collected it should be reported separately. (Outbound transportation of products should be part of inventory for control purposes but if it is modelled it should be reported separately).

Changes and improvements to the “Core” processes that may have occurred after the yearly inventory are not accounted for.

3.1.6 Internal subprocesses

It is not a requirement of this method to separate sub-processes. If internal subprocesses are used the subdivision need to include all operations and flows attributable to that subprocess.

Internal subprocesses need to have a specific inventory (Process materials, energy, water, waste, and emissions) in the same way as Core. This will end up in a sub-core inventory for that subprocess. Allocation of specific process materials, specific waste fractions and specific energy types that are only possible for a certain sub-process can then be conducted. Allocation of general process materials, energy (e.g., electricity) or general waste fractions etc. should not be done in the inventory phase, it is done, if needed, by the consultants in the modelling phase.

A sub-process needs to be a physical distinguished process separated from the other processes. It is not allowed to allocate generic production processes for product group A differently from a product group B that use the same physical processes.

3.1.7 External subprocesses

External subprocesses preferably have an EPD or equivalent, for that service. In addition, the supplier company, location, and transportation volume need to be specified. The inventory needs to include supplier, specification of the process/service, transport type and distance, and if available the carbon footprint data of the process together with certificates on this should be included. As an alternative, a specific subprocess inventory (Process materials, energy, water, waste, and emissions), in the same way as Core, can be used.

For specified suppliers and processes the consultants may use generic database data or regionalized database data. If the sub supplier can provide data in the form of public environmental reporting and volumes of production, the consultant may calculate a footprint of the external subprocess. See 3.2.7.

3.2 System modelling (executed by the Consultant)

A consultant with LCA expertise is responsible for processing the inventory data and construct a simplified cradle-to-gate LCA model of a fictive average product, which employs a simple cut-off for waste and recycled material. The consultant shall use professional software like Sima Pro (<https://simapro.com/>) or LCA for Experts (<https://sphera.com/life-cycle-assessment-lca-software/>) or similar. The LCA model can use certified climate data from sub-suppliers and general LCA database data (e.g., Ecoinvent or similar). The LCA-model must employ a “simple cut-off” for recycling materials from production (“simple cut-off” according to Ekvall et al. 2020 as recommended by EPD see further chapter 2 and 3 for scope and modelling). The LCA-model is documented in a written report in a unified format (the “Simplified LCA Report”). The standardized LCA model and report is then used to make a climate footprint calculator/climate footprint datasheet generator, in which the customer can calculate, simulate, a climate footprint; for the production of any new product in the factory based on the production volume and mix from the previous year. In the calculator, the climate footprint of the 'core' (for each main process and subprocess) is treated as fixed factors, proportional to the weight of the product. The upstream part treats the raw material mix (bill of materials) as a variable that can be adjusted for each product, where each raw material has specific climate footprint factors.).

3.2.1 Upstream

The upstream materials are important to model correctly since they often carry a majority of the climate footprint and since they are variables in the climate footprint calculator used by the customer. Any single error in the upstream materials may thus have a large impact.

All specific product raw materials, sub-components and packaging material that are purchased as part of the produced component/product need to be modelled as “raw materials” and have their own climate footprint calculation. If an EPD or otherwise validated footprint is available as primary data for that raw material, it should be used. Otherwise, secondary data may be used from regular LCA databases. Here the method relies on the consultant expertise for selecting appropriate databases and datasets. If share of recycled content in ingoing materials is known, generic datasets can be modified to account for this.

The inflow (of raw materials, supplies, packaging, etc.) must match the outflow of products, wastes, and emissions. This is checked in a mass balance and the associated "extra" material and losses are included in the climate footprint calculations. To account for fluctuations over time, inventory is done for a whole year. This is suitable for most companies, but some companies purchase materials in large batches on fewer occasions. For these companies it is necessary to also investigate stocks, to get a good understanding and a correct mass balance, so that the calculator can properly include production spillage. Note that there is always some spillage in a production process, the mass of outgoing products should not be larger than the mass of ingoing raw materials.

3.2.2 Core

The modelling of the core needs to include all different types of process inputs and outputs, process material including chemicals, energy inputs, and waste material and emission outputs over a year. If an EPD or otherwise validated footprint is available as primary data for any of the process materials, energy or water inputs or wastewater outputs, it should be used. Otherwise, secondary data may be used from regular LCA databases.

Conservative secondary data must be chosen when e.g., recycled content or electricity mix is not known, virgin material or residual mix for the country/region should be used.

3.2.3 Transportation

Transportation for inbound product material, process material, internal logistics and outgoing waste material must be included in the modelling. Outbound product transports may be included in the model and reported separately. If an EPD or otherwise validated footprint is available as primary data for the transport service, it should be used. Otherwise, secondary data may be used from regular LCA databases.

Transports are used in the calculation in a similar way as core, meaning that the average transportation climate-footprint of the previous year is given to each component/product in the carbon footprint calculator. This is a simplification compared to letting the transport distance be a variable (but was deemed to be of less importance in the 20 trial cases).

3.2.4 Outgoing products

Inventory data on outgoing products are used to check balances of incoming and outgoing materials. There shall always be more incoming product materials than outgoing materials, $(\text{Incoming materials} - \text{outgoing products}) / \text{outgoing products} = X\%$ which is the spill factor.

3.2.5 Not included in modelling

Some process materials are not included in the model. Equipment and buildings that are not typically included in an initial environmental review should not be included. Office materials and some maintenance materials such as spare parts and equipment may be excluded from the model if they are sufficiently low (less than 20% of the material cost per component [in line with PCR 2023:01 Fabricated metal products, except construction products (1.0.2)] or <1% of total carbon footprint).

Personnel transportation of any sort is not included in the model and if it is modelled it should be reported separately. Outbound transportation of products may be part of inventory for control purposes but if it is modelled it should be reported separately.

Changes and improvements to the “Core” processes that may have occurred after the yearly inventory are not accounted for.

3.2.6 Internal subprocesses

It is not a requirement of this method to separate sub-processes.

Internal subprocesses need to be modelled from a specific inventory (Process material, energy, water, waste, and emissions) in the same way as Core. This will end up in a sub-core inventory for that subprocess. Allocation of specific process materials, specific waste fractions and specific energy types that are only possible for a certain sub-process can then be done. Allocation of general process materials, energy (e.g., electricity) or general waste fractions etc. may be done by the consultants in the modelling phase. Then it is important to allocate in accordance with the specific production index used in the modelling (most commonly per kg component produced). Any internal transportation needed should be allocated accordingly to the products going through the subprocess.

A sub-process needs to be a physical distinguished process separated from the other processes. It is not allowed to allocate generic production processes for product group A differently from a product group B that use the same physical processes.

3.2.7 External subprocesses

External subprocesses normally need an EPD or equivalent validated dataset for that service. In addition, the supplier company, location, and transportation need to be specified (e.g. ton-km). The inventory needs to include supplier, specification of the process/service, transport type, volume, and distance, and if available the carbon footprint data of the process together with certificates on this.

For specified suppliers and processes the consultants may use generic database data if those are available.

As alternative, modelling may be done using the specific subprocess inventory (Process materials, energy, water, waste, and emissions) in the same way as Core is calculated. In that case it is important that the consultant check the credibility of such inventory data. If the sub-supplier can give data in the form of public environmental reporting and volumes of production, the consultant may calculate a footprint of the external subprocess.

4. Documentation

All documentation required for this method should be regarded and handled as confidential information. All relevant documentation should be archived and made available for review by the validation body for a minimum of 6 six? years.

4.1 Simplified LCA report

The simplified cradle-to-gate LCA model of a fictive average product is documented in a Simplified LCA Report. Overall, the report contains objectives and scope, including purpose, product description, environmental impact assessment, system boundaries and life cycle inventory, analysis, results, and conclusions. The Report Template is owned, managed, and maintained by FKG.

4.2 Inventory data sheet

The inventory data is collected and documented in accordance with the previously mentioned Data Collection Template, which is owned, maintained, and provided by FKG. The Data collection Templates includes all inventory data required as described in chapter 3.1.

4.3 Calculator

The simplified LCA report contains a specific section on how to design a calculator sheet for specific products, based on the results of the potential climate footprint for a fictive average product. The calculator can then be used to calculate a specific product produced with the company's processes using the raw material included in the inventory. The calculator needs to be updated and validated annually.

4.4 Competence documentation

The consultant should provide a CV showing the competence demands as specified in 5.2. The company representative competence is assessed by the consultant.

5. Competence

5.1 Competence demands and assurance of company representative

Company representatives assigned for this area of responsibility need to have sufficient documented competence in following areas:

- Good overall knowledge about the company's materials, products, and processes.
- Relevant and sufficient experience in Excel
- Sufficient and good knowledge about and training for this method. Training can be provided by an external consultant or by an internal trainer, who has obtained this competence through an external consultant.

5.2 Competence demands and assurance for consultant

External consultants need to have sufficient documented competence in following areas:

- Relevant higher-level education or other equivalent education and training
- Relevant industry area expertise for the specific assignment/business
- Technical competence and experience in relevant areas related to climate calculations; this may include relevant experience in the LCA methodology and application area, including access to LCA software and databases.
- Knowledge of the methodology and assignment area specifically
- Environmental/climate data analysis and review techniques

6. Timeline and process for a company

Step 1: The learning phase, where companies receive a training program in sustainability skills. They also receive a review of basic concepts and description of the data collection process.

Step 2: Companies receive training in collection of data and completion of climate data sheets for the total production volume. This is performed by the company in the inventory template, with support from the coaching consultant.

Step 3: Companies receive a review together with the coaching consultant, of the method and process for allocating data and distribution, for a fictive average product.

Step 4: A simplified cradle-to-gate LCA model of a fictive average product is carried out by the consultant, based on total inflows and outflows in a specific year, resulting in a fictive average product.

Step 5: An Excel spreadsheet is developed for the possibility of calculating the carbon footprint for more of the company's products based on the inventoried materials. This can be calculated and adjusted by companies themselves.

6.1 Workshop 1 Start-up

Companies receive basic knowledge, about sustainability in general and climate calculations specifically, in parallel with skill development exercises. There is a review of the method and constituent tools and data for the production of climate data sheets. The consultants provide support if necessary.

6.2 Workshop 2

Review of emission factors and how climate footprint is calculated. This delivers more detailed and comprehensive knowledge about the method; how the calculation of environmental impact is done, where and how to obtain inventory data, sub-supplier climate footprint data and the importance of identifying and using accurate data. The workshop is followed by the company's own work on identifying and collecting the inventory data needed for climate footprint. The consultants provide support if needed.

6.3 Company visits

This step may be combined with workshop 2. The consultant visits the supplier to study the processes and material flow in the company, in order to get a deeper understanding of the business. The site visit is mainly devoted to the company's efforts to identify and collect data to complete the inventory template but can also explore opportunities for improving internal process flows. After the company visit, the consultant works with the company to finalize a model that is used in the climate data calculation. The company then has a company-specific tool and a model to be able to calculate and report the climate impact of various articles in the form of a climate data sheet.

6.4 Validation of the method for producing climate data sheets

The consultant submits ready and complete documentation in accordance with this methodology on the company's process for producing climate data sheets, to the validation body, currently RISE. The validation body subjects the documented evidence to a validation program and carries out a review to confirm, whether the company have produced their climate data sheets in accordance with this current methodology. In addition to this review including for example random sampling of collecting data, calculations and basic data, the validation process also includes reviewing the documented competence of the individuals who are responsible for the implementation and results of producing climate data sheets. When the validation is completed, a statement from RISE is sent to the company, indicating whether the result reaches the acceptable level or needs to be supplemented with additional data, to be approved.

When approved by RISE Validation body; climate data sheets can then be produced by the company and communicated to interested parties in accordance with the company needs. The validation of the company's internal process to comply with this current methodology is valid for one year and must therefore be updated annually. Note that each unique climate data sheet is not validated; it is the internal process and the company's ability to comply with this current methodology, when the producing of climate data sheets in accordance with this current methodology, that is validated.

The current established methodology is the requirement document in the validation program and the methodology development and improvement of the methodology will be continuous and realized by a dedicated reference group, with the participation of various stakeholders and managed by FKG.

6.5 Producing climate data sheets for specific components and products:

Once the company has gone through the described process, they are considered to have the knowledge and competence required to use the validated model and independently undertake the work involved in creating Climate Data Sheets for specific components or products. In this, it is not

allowed to use any other processes or materials than the ones included in the model. The company needs to update its calculation models and input data annually and submit new data for validation. External consultancy support may be needed in specific areas, such as emission factors for new raw materials etc.

7. Terms and definitions

Component means the product, part or component produced, for which the climate calculation is performed.

Average product is a fictive average product/component/part that the company produced in the year for which the data inventory was made. It is a 1kg product and is used for validation purposes.

The company is the supplier company that utilize this method to make a climate datasheet for their component.

Supplier is the **company** producing the component who submits the climate datasheet to the customer. The supplier is tier supplier to the customer.

Customer is the presumed recipient of the climate datasheet.

Upstream is the supply chain of the supplier.

Sub-suppliers are the tier 2 suppliers of the customer (and are suppliers to the supplier)

Core means the core operations of the(supplier) company, including all activities and processes used (or needed to be used to) produce the component/part/product.

Process material includes all material and products supplied to the company/plant that are not part of a produced component/product but are used in any part of company's operation. Some of these are not included in the inventory.

Waste material is all rest materials disposed of or recycled...

Potential climate footprint is the predicted future climate footprint based on current known data.

environmental claim: statement, symbol or graphic that indicates an environmental aspect of a product, a component or packaging.¹

life cycle: consecutive and interlinked stages of a product system, from raw material acquisition or generation from natural resources to final disposal

Offsetting

mechanism for compensating for the carbon footprint of a product through the prevention of the release of, reduction in, or removal of, an equivalent amount of GHG emissions in a process outside the boundary of the product system. Offsetting is not allowed in this method.

EXAMPLE External investment in renewable energy technologies; energy efficiency measures; afforestation/reforestation.

Validation: Validation is a confirmation of a claim, through the provision of objective evidence, that the requirements for a specific intended future use or application have been fulfilled.

validation body is a body that performs validation.

validation program is a program containing rules, procedures, and management for carrying out validation activities in a specific sector.²

¹ Note 1 to entry: An environmental claim may be made on product or packaging labels, through product literature, technical bulletins, advertising, publicity, telemarketing, as well as through digital or electronic media such as the Internet.

² Note 1 to entry: Validation programmes can be operated at international, regional, national, sub-national or sector-specific level.

Note 2 to entry: A program can also be called a "scheme".

Note 3 to entry: A set of standards able to cover all the requirements of this document can serve as a program.

primary data is data obtained from known direct measurement or from company-controlled inventory data (economical system for receiving and shipping goods, invoices and similar) and implicitly or explicitly defined calculations based on data originating from such direct measurements. Also, primary data from suppliers that have been validated can be used as primary data.

secondary data is data obtained in other ways than primary data, such as validated generic data in LCA databases for certain groups of components, materials, processes, industries and/or regions. In this method, secondary data from unvalidated sources are not used.

