FoodDrinkEurope

Guidance on the use of PEF for the food and drink sector

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Introduction

This guidance was developed by FoodDrinkEurope to help and guide life-cycle assessment practitioners in the application of the EU Product Environmental Footprint (PEF) methodology on food and drink products where no Product Environmental Footprint category rules (PEFCR) is available.

Scope of this guidance

This document provides complementary guidance to the food and drink sector based on the EU recommendation on the use of PEF, Annex 1.[1] If a PEFCR is available for a specific food product category, its use should take priority over this guidance.

The guidance is especially relevant to finished products as sold to consumers.

How to read this guidance

Font colour black: Extracted text of the updated EU recommendation on the use of PEF, Annex 1, 2021

Font colour black + italic: Definition extracted from the EU PEF recommendation (same source as above).

Font colour green or green box: Additional guidance for the food and drink sector

1 https://ec.europa.eu/environment/publications/recommendation-use-environmental-footprint-methods_en

1 Goal and scope definition

1.1 Functional unit and reference flow

The functional unit (FU) is the quantified performance of a product system, to be used as a reference unit. The FU qualitatively and quantitatively describes the function(s) and duration of the product in scope.

The reference flow is the amount of product needed to provide the defined function.

If shelf-life (indicated for example as 'best before date' or 'use by date') is provided on the packaging (e.g., number of months) of food products, then food losses at storage, retail, and consumer stages shall be quantified. If the type of packaging affects the shelf-life, it shall be taken into account. This is relevant for the 'how long' aspect of the FU.

Proposal, as basis:

Functional unit: Should be expressed per **weight** or per **volume** (i.e. 100 g or ml), of the product as consumed depending on the reference used on the product packaging, and we recommend to complementarily assess the system per **serving size** (e.g., portion, consumption unit, unit sold).

WHAT? — Food OR Drink product; packed; consumed by the consumer (i.e. a consumption unit)

HOW MUCH? — per weight OR volume (100g OR 100ml) OR per portion OR per consumption unit OR per unit sold

HOW WELL? — Suitable for human consumption

HOW LONG? — Before the expiration date

In summary, the FU should consider the quantity or weight, and should also refer to the product as consumed plus the additional component necessary to make the food/drink consumable (packaging, brine, oil, water, etc).

Reference flow: Amount of food or drink product needed to fulfil the defined function, to be measured with specific units. It should consider waste/loss during storage, retail, and consumer stage.

1.2 System boundary

Definition of aspects included or excluded from the study. For example, for a 'cradle-to-grave' environmental footprint (EF) analysis, the system boundary includes all activities ranging from the extraction of raw materials, through processing, distribution, storage and use, to the disposal or recycling stages.

The reason for, and potential significance of, any exclusion shall be justified and documented.

The system boundary shall be defined following a general supply-chain logic, including all stages from raw material acquisition and pre-processing, production of the main product, product distribution and storage, use stage and end-of-life treatment of the product (if appropriate, see section 4.2). The co-products, by-products and waste streams of at least the foreground system shall be clearly identified.

Capital goods (including infrastructure) and their end-of-life (EoL) should be excluded, unless there is evidence from previous studies that they are relevant. If capital goods are included, the PEF report shall include a clear and extensive explanation on why they are relevant, reporting all assumptions made.

In general, for food and drink products, all life-cycle stages should be included in the assessment, from raw material extraction or agriculture phase, through manufacturing, distribution, retail, and consumption, to disposal of packaging and end-of-life of the product.

More detailed guidance is provided on how to model each life-cycle stage in section 3 on life-cycle inventories.

Cut-off and exclusions should be conducted based on the following principles:

The materiality principle

One of the main features of the PEF method is the **'materiality' approach**, i.e. focusing where it really matters. In the PEF context, the materiality approach is developed around two main areas:

1. Impact categories, life-cycle stages, processes and direct elementary flows;
2. Data requirements.

Cut-off criteria

Any cut-off shall be avoided, unless under the following rules:

Processes and elementary flows may be excluded up to 3% (cumulatively) based on material and energy flows and the level of environmental significance (single overall score).

The processes subject to a cut-off shall be made explicit and justified in the PEF report, in particular with reference to the environmental significance of the cut-off applied.

This cut-off has to be considered in addition to the cut-off already included in the background datasets. This rule is valid for both intermediate and final products.

The processes that (cumulatively) account for less than 3% of the material and energy flow, as well as the environmental impact for each impact category may be excluded from the PEF study.

A screening study is recommended to identify processes that may be cut-off.

In practice, the life-cycle assessment practitioner needs to conduct a screening study to identify the processes that can be cut-off.

It is an iterative process, and it is likely that a full assessment, including a life-cycle impact assessment (LCIA), has to be conducted before any conclusion about the cut-off opportunities can be drawn. Other evidence can be used to justify the cut-off criteria if enough evidence can be gathered, from the LCI results for instance (see example below). The whole screening study needs to be conducted before assessing these cut off. Further guidance is given in the conclusions from the PEF Technical Advisory Board[2] and in Food and Drink PEFCRs.[3]

Example: if food losses at factory level are estimated to be less than 1% of the total mass of ingredients used at that stage, food loss at manufacturing can be excluded because these impacts represent less than 1% of the impacts associated with ingredients, which itself are only a part of the total impact of the product (in all impact categories), and therefore remain below the threshold of 3%. All known end-of-life options should be accounted for, not just animal feed.[4] (This is valid only if the food losses are associated with no other additional impacts or benefits, such as if it is used for feed, and if it is the only process cut-off, as the sum of all cut-off should remain below 3% as well).

1.3 Environmental Footprint (EF) impact category

EF impact categories refer to specific categories of impact considered in a PEF study, and they constitute the EF impact assessment method. Characterisation models are used to quantify the environmental mechanism between the Life-cycle Inventory (i.e. inputs (e.g., resources) and emissions associated with the product life-cycle) and the category indicator of each EF impact category.

See details in Table 2 – of the EU recommendation on the use of PEF, Annex 1: EF impact categories with respective impact category indicators and characterisation models.

For a PEF study, all EF impact categories shall be applied, without exclusion.

1.4 Assumptions/limitations

In PEF studies, several limitations on carrying out the analysis may arise and therefore assumptions need to be made. All limitations (e.g., data gaps) and assumptions shall be transparently reported.

2 https://ec.europa.eu/transparency/expert-groups-register/screen/expert-groups/consult?do=groupDetail.groupDetail&groupID=3710

3 https://ec.europa.eu/environment/eussd/smgp/PEFCR_OEFSR_en.htm

4 According to existing standards such as the WRI Food Loss & Waste Protocol https://www.wri.org/initiatives/food-loss-waste-protocol

2 Life-cycle inventory (LCI)

The life-cycle inventory represents the combined set of exchanges of elementary, waste and product flows in a LCI dataset.

An inventory of all material, energy and waste inputs and outputs and emissions into air, water and soil for the product supply chain shall be compiled as a basis for modelling the PEF.

2.1 Life-cycle stages and processes

As a minimum, the default life-cycle stages in a PEF study shall be:

- **2.1.1** Raw material acquisition and pre-processing; (including production of parts and components);
- **2.1.2** Manufacturing (production of the main product);
- **2.1.3** Distribution (product distribution, storage and retail);
- **2.1.4** Use;
- **2.1.5** End-of-life (including product recovery or recycling).

Based on current best practice, as evidenced by the development of PEFCRs for the food and drink sector, it can be relevant to adjust the definition of the different life-cycle stages. For instance, for food and drink products a specific packaging stage is often defined, encompassing activities related to packaging raw material production, packaging manufacturing and packaging transport up the product transformation facilities. Another specificity of food and drink products is the end-of-life stage in which the product is expected to be consumed, thus the end-of-life stage usually refers to the packaging disposal and food waste, if any.

Packaging should be defined as a specific stage of the life-cycle for food and drink products.

Examples of life-cycle stages defined in existing PEFCRs

Dairy products[5]	Dry pasta[6]	Packed water[7]	Olive oil[8]
• Raw milk supply; • Dairy processing; • Non-dairy ingredients supply; • Packaging; • Distribution; • Use; • End-of-life.	• Ingredients production; • Packaging manufacturing; • Pasta manufacturing; • Distribution; • Cooking; • End-of-life of packaging.	• Packaging materials; • Manufacturing; • Distribution; • Use; • Packaging end-of-life.	• Olive production; • Olive oil extraction; • Packaging; • Distribution; • Use and end-of-life.

2.1.1 Raw material acquisition and pre-processing

This life-cycle stage starts when resources are extracted from nature, and ends when product components enter (through the gate of) the product's production facility. Examples of processes that may occur in this stage include:

1. Mining and extraction of resources;
2. Pre-processing of all material inputs to the product in scope, including recyclable materials;
3. Agricultural and forestry activities[9] such as;
   Agricultural & forestry activities:
   - Land use and land use change (LULUC);
   - Water use and irrigation;
   - Seed production, propagation;
   - Application of fertilisers and pesticides;
   - Direct emissions from crops and animal production;
   - Machinery and equipment for field operations;
   - Infrastructure (silos, greenhouses, nurseries);

   Animal husbandry:
   - Production of feed;
   - Grazing;
   - Housing;
   - Milking parlour;
   - Manure management;
   - Slaughtering;
   - Ingredient processing, when applicable;
4. Transportation within and between extraction and pre-processing facilities, and to the production facility;

Reference methods to measure food waste and losses include the PEF TAB method to measure waste and the EU food waste measurement method.[10]

5 https://ec.europa.eu/environment/eussd/smgp/pdf/PEFCR-DairyProducts_Feb%202020.pdf
6 https://ec.europa.eu/environment/eussd/smgp/pdf/PEFCR_Dry%20pasta_Feb%202020.pdf
7 https://ec.europa.eu/environment/eussd/smgp/pdf/PEFCR_PackedWater_FinalPEFCR_2018-04-23_V1.pdf
8 https://ec.europa.eu/environment/eussd/smgp/pdf/pilots/draft_pefcr_olive_oil_pilot_for_3rd_consultation.pdf
9 The PEF TAB is currently looking at specific additional guidance and specification for the agricultural phase. The deliverables of the specific TAB Working Group on Agricultural Modelling are not accessible yet
10 https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32019D1597&from=EN

For more details about how to model the agricultural stage, refer to section 4.4.1 of the EU updated EU recommendation on the use of PEF, Annex 1.[11]

Climate change – biogenic (section 4.4.10.2):

This sub-category covers (i) carbon emissions to air (CO^2, CO and CH4) originating from the oxidation and/or reduction of aboveground biomass by means of its transformation or degradation (e.g. combustion, digestion, composting, landfilling), and (ii) CO^2 uptake from the atmosphere through photosynthesis during biomass growth, i.e. corresponding to the carbon content of products, biofuels or above-ground plant residues such as litter and dead wood.

Carbon exchanges from native forests shall be modelled under sub-category 3 (including connected soil emissions, derived products or residues).

Modelling requirements: the flows falling under this definition shall be modelled consistently with the elementary flows in the most recent version of the EF package and use flow names that end with '(biogenic)'. Mass allocation shall be applied to model the biogenic carbon flows.

A simplified modelling approach should be used only if the flows which influence the results of climate change impact (namely biogenic methane emissions) are modelled. **This option may apply, for example, to food PEF studies as it avoids modelling human digestion while eventually arriving at a zero balance.** In this case, the following rules apply:

i. Only the emission 'methane (biogenic)' is modelled;
ii. No further biogenic emissions and uptakes from the atmosphere are modelled;
iii. If methane emissions are both fossil and biogenic, the release of biogenic methane shall be modelled first, followed by the remaining fossil methane.

For intermediate products (cradle-to-gate), the biogenic carbon content at the factory gate (physical content) shall always be reported as 'additional technical information'.

2.1.2 Manufacturing

The production stage begins when the product components enter the production site, and ends when the finished product leaves the production facility. Examples of production-related activities include:

1. Chemical processing;
2. Manufacturing;
3. Transport of semi-finished products between manufacturing processes;
4. Assembly of material components.

The waste of products used during manufacturing shall be included in the modelling for the manufacturing stage. The circular footprint formula (section 4.4.8 – of the EU recommendation on the use of PEF, Annex 1) shall be applied to such waste.

2.1.3 Distribution

Products are distributed to users and may be stored at various points along the supply chain. The distribution stage includes transport from factory gate to warehouse/retail, storage at warehouse/retail and transport from warehouse/retail to consumers. Examples of processes to include:

1. Energy inputs for warehouse lighting and heating;
2. Use of refrigerants in warehouses and transport vehicles;
3. Fuel use by vehicles;
4. Roads and trucks.

Waste from products used during distribution and storage shall be included in the modelling. The circular footprint formula (section 4.4.8 – of the EU recommendation on the use of PEF, Annex 1) shall be applied to such waste, and the results taken into consideration under the distribution stage.

11 https://ec.europa.eu/environment/publications/recommendation-use-environmental-footprint-methods_en

Regarding the distances of transport and logistics, see details in section 4.4.3 of the EU recommendation on the use of PEF, Annex 1.

Regarding the default data to be used for the modelling of retail and warehousing, see section 4.4.5 of the EU recommendation on the use of PEF, Annex 1.

2.1.4 Use

The use stage describes how the product is expected to be used by the end user (e.g., the consumer). This stage starts the moment the end user uses the product until it leaves its place of use and enters the end-of-life (EoL) stage (e.g., recycling or final treatment).

The use stage includes all activities and products that are needed for proper use of the product (i.e. to ensure it performs its original function throughout its lifetime). Waste generated by using the product, such as food waste and its primary packaging or the product itself once no longer functional, is excluded from the use stage and shall be part of the EoL stage of the product.

See details in section 4.2.4 – of the EU recommendation on the use of PEF, Annex 1.

The use phase assessment should consider different aspects, such as, but not limited to:

- The type (ambient, fridge, freezer) and estimated duration of storage;
- The variability or the typical use, supported with local consumer insight studies where available
- Instructions required for the use;
- Additional material, equipment or process required for the consumption that are dependent of the product design (such as the energy needed for hot water in the making of a hot beverage).

Modelling requirements for the use stage

The use stage often involves multiple processes. A distinction shall be made between (i) product independent processes and (ii) product dependent processes.

(i) Product independent processes

Product independent processes have no relationship with the way the product is designed or distributed. The impacts of the use stage process will remain the same for all products in this product (sub-) category even if the producer changes the product's characteristics. Therefore, they do not contribute to any form of differentiation between two products or might even hide the difference.

For the food and drink sector, this refers to products that indirectly require energy (fuels or electricity) or materials during their use phase (e.g., additional ingredients, accessories), and which are not defined by the design of a product.

Examples are: the use of glass for drinking wine (considering that the product does not determine a difference in glass use); frying time when using olive oil; energy use for boiling one litre of water used for preparing coffee made from bulk instant coffee; and the washing machine used for heavy laundry detergents (capital good).

Additional examples: consumer cup (considering that the product does not determine a difference in cup, dishwashing, energy and water required for the additional water boiled (e.g., if boiling 1L of water for a 100 mL cup tea, the energy and water required for the 900 mL extra).

Product independent processes shall be excluded from the system boundary and qualitative information may be provided.

Dependent and independent processes should be assessed and inclusion of dependent processes should be substantiated.

(ii) Product dependent processes

Produce dependent processes are directly or indirectly determined or influenced by the product design or are related to instructions for using the product. These processes depend on the product characteristics and therefore help differentiate two products. All instructions provided by the producer and directed towards the consumer (through labels, websites or other media) shall be considered product dependent.

For the food and drink sector, this refers to food and drink products that directly consume energy (fuels or electricity) or materials during their use phase, and which are defined by the design of a product.

Examples of instructions are: indications on how long the food must be cooked, how much water must be used, or in the case of drinks, the recommended serving temperature and storage conditions. An example of a direct dependent process is the energy used by electrical equipment under normal conditions.

Additional examples: electricity used for a beverage vending machine, electricity used in a coffee machine.

Product dependent processes shall be included in the system boundary of the PEF study.

To have an indication on dependent processes (i.e. amount of water, energy consumed in cooking), on-pack instructions as defined by the product manufacturer should be considered. Otherwise, the most common way of cooking the product in the region/country of assessment should be considered.

Modelling the use stage

Part D of Annex II of the EU recommendation on the use of PEF – Annex 1 (Pages, 185–187) provides default data to be used to model use stage activities. If available, better data should be used, and shall be made transparent and justified in the PEF report.

2.1.5 End-of-life (including product recovery and recycling)

The end-of-life stage begins when the product in scope, and its packaging, is discarded by the user, and ends when the product in scope is returned to nature as a waste product or enters another product's life-cycle (i.e. as a recycled input). In general, this includes the waste from the product in scope, such as food waste and primary packaging.

Waste generated during the manufacturing, distribution, retail, use stage or after use shall be included in the life-cycle of the product and modelled at the life-cycle stage where it occurs.

The end-of-life stage shall be modelled using the circular footprint formula and requirements provided in section 4.4.8 of the EU recommendation on the use of PEF, Annex 1. The user of the PEF method shall include all end-of-life processes applicable to the product in scope.

Examples of processes to be covered in this life-cycle stage include:

1. Collection and transport of the product in scope and its packaging to end-of-life treatment facilities;
2. Dismantling of components;
3. Shredding and sorting;
4. Wastewater from products used, dissolved in or with water (e.g., detergents, shower gels, etc.);
5. Conversion into recycled material;
6. Composting or other organic-waste treatment methods;
7. Incineration and disposal of bottom ash;
8. Landfilling and landfill operation and maintenance.

For intermediate products, the end-of-life of the product in scope shall be excluded.

See details of modelling requirements in section 4.4 – of the EU recommendation on the use of PEF, Annex 1.

This section provides detailed guidance and requirements on how to model specific life-cycle stages, processes and other aspects of the product life-cycle, to compile the LCI.

2.1.6 Loss rates for food ingredients and products

For full life-cycle assessments loss rates across the entire life cycle of the product should be included except if there are specific reasons to exclude them.

If specific loss rates in the supply chain are known (primary data), these should be considered. As specific loss rates will be difficult to obtain in many cases, the Food Waste Atlas[12] can be consulted.

Note that in databases such as Ecoinvent, loss rates are normally already included in upstream processes (e.g., a process "at factory" already includes loss rates "at farm").

12 https://thefoodwasteatlas.org/

2.2 Data requirements

The following **activity data** should be considered to compile the LCI:

- Raw materials (ingredients): quantities purchased, sourcing location, agricultural production type and management (also co- and by-products);
- Raw materials (packaging): quantities purchased, type of material used, ratio virgin:recycled, conversion processes;
- Upstream transportation: inbound logistics, distances travelled, storage periods, mode of transportation used;
- Manufacturing: quantities produced (also co- and by-products), utilities and ancillary materials consumption, waste generated and destination;
- Downstream transportation & distribution: outbound logistics and operation of distribution centres, distances travelled, mode of transportation used, storage periods, storage temperature and other cold chain requirements;
- Retail: where products are sold (shops, supermarkets, hypermarkets, countries, other sale avenues such as e-commerce), cold storage
- Use phase: preparation instructions, product; as consumed (incl. reconstitution), duration of storage at home, conditions of storage (before opening, after opening);
- End-of-life: share of destinations available in the market where products are sold including hypotheses for food waste and packaging treatment in different countries of consumption.

The total environmental footprint is equal to the sum of the impact of all phases calculated based on these activity data for the year of assessment.

2.2.1 Company-specific data

Details in section 4.6.1 – of the EU recommendation on the use of PEF, Annex 1.

2.2.2 Secondary data

Details in section 4.6.2 and 4.6.3 – of the EU recommendation on the use of PEF, Annex 1.

Whenever company specific data is not available, high quality secondary data should be used. Data extrapolations and proxy data may be used for this purpose.

Preference should be given to secondary data which are compliant with the ILCD Data Network Compliance rules and entry-level requirements.[13] To assess data quality, the PEF data quality rating[14] should be used. Data sources and inputs need to be transparent, and an external peer review should be conducted as assurance in accordance with the PEF guidance.

Practitioners should first look for data availability in the PEF approved datasets.

If not available, the following hierarchy of datasets and emission factors should be considered:

- World Food LCA Database (WFLDB) (as this corresponds to the food nodes in the PEF database);
- Agri-footprint (PEF compliance in process for v6.0).

Other sources of data can be considered, due to limited availability in the above-mentioned sources.

13 https://eplca.jrc.ec.europa.eu/uploads/ILCD-Data-Network-Compliance-Entry-level-Version1.1-Jan2012.pdf

14 Commission Recommendation on the use of the Environmental Footprint methods to measure and communicate the life-cycle environmental performance of products and organisations Annex 1 – Table 26

Where inventory collection tools/calculators exist to collect primary data at farm level e.g., farm calculators, the inventory data from these tools can be used (unless there is a specific methodological difference that justifies the recalculation of such data). Other environmental indicators (e.g., water scarcity, acidification, eutrophication) can be measured based on input data from the calculators or other reported data. Some examples of these calculators are:

- IAI for Aluminum;
- Plastics Europe: for all kind of plastics;
- FEFCO: for cardboard;
- Ecoinvent: for fuels;
- IEA: for electricity.

WFLDB: for agriculture raw ingredients

2.3 Allocation

An approach to solving multi-functionality problems. It refers to 'partitioning the input or output flows of a process or a product system between the product system under study and one or more other product systems'.

Handling multi-functional processes

Systems involving multi-functionality of processes shall be modelled in line with the following decision hierarchy: (details in section 4.5 – of the EU recommendation on the use of PEF, Annex 1.

1. Subdivision or system expansion;
2. Allocation based on a relevant underlying physical relationship;
3. Allocation based on some other relationship.

Hierarchy of allocation rules in the case of products and co-products:

1. Use specific rules following standard guidelines
Example: The PEFCR for Dairy explains how emissions from cows should be separated between meat and milk.

2. Avoid allocation by dividing processes into sub-processes or system expansion
Example: Factory using energy for several products – split energy consumption per production line and assess emissions for the lines dedicated to the concerned product.

3. Use physical causalities
Example: Factory using energy for several products – if no sub-division can be made, the energy can be allocated depending on the mass/volume of the products.

4. Use other relationship (e.g., economic allocations)
Example: In the case of beer production, no sub-division can be made between the beer and the brewers' grain, and products do not have sufficiently similar functions to be allocated based on physical causalities, therefore allocation based on monetary value should be applied (such as recommended by the Beer PEFCR).

For the agricultural phase, the PEF recommends following the allocation rules described in the LEAP Guideline (https://www.fao.org/partnerships/leap/publications/en/).

3 Interpretation of product environmental footprint results

3.1 Identification of the most-relevant impact categories

The identification of the most-relevant impact categories shall be based on the normalised and weighted results. The most-relevant impact categories shall be identified as all of those impact categories that together contribute to at least **80%** of the single overall score. This shall start from the largest to the smallest contributions.

At least three relevant impact categories shall be identified as most-relevant ones. The user of the PEF method may add more impact categories to the list of the most-relevant ones, but none shall be deleted.

Some of the existing food and drink PEFCRs found the following impact categories as relevant for the covered products (pasta, beer, packed water, dairy, pet food):

- climate change (GHG emissions);
- particulate matter;
- water use (freshwater scarcity);
- land use;
- acidification;
- eutrophication, terrestrial;
- eutrophication, aquatic;
- resource use, fossils.

However, the selection of most relevant impact categories should be determined specifically in each study based on the 80% cumulative cut-off, as described above, and should not be influenced by that list.

3.2 Additional environmental info to be included in PEF

Relevant potential environmental impacts of a product may go beyond the EF impact categories. It is important to report them, whenever feasible, as additional environmental information.

Biodiversity

The PEF method does not include any impact category named 'biodiversity', as there is no international consensus on a Life-cycle Impact Assessment (LCIA) method capturing that impact. However, the PEF method includes at least eight impact categories that have an effect on biodiversity (i.e. climate change, eutrophication (aquatic freshwater), eutrophication (aquatic marine), eutrophication (terrestrial), acidification, water use, land use, ecotoxicity and freshwater).

See details in section 3.2.4 – of the EU recommendation on the use of PEF, Annex 1.

For example: If this is an area of interest because of the goal of the study, a sensitivity analysis could be conducted based on different impact assessment methods. In the future once a specific methodology has been agreed by the larger life-cycle assessment community it should be tested at large by the food and drink sector.

3.3 Identification of the most-relevant life-cycle stages

The most-relevant life-cycle stages are those that together contribute more than **80%** to any of the most-relevant impact categories identified. This shall start from the largest to the smallest contributions. The user of the PEF method may add more life-cycle stages to the list of the most-relevant ones, but none shall be deleted. At a minimum, the life-cycle stages described above shall be considered (cf. section 2.1).

If the use stage accounts for more than 50% of the total impact of a most-relevant impact category, the procedure shall be re-run, excluding the use stage. In this case, the list of most-relevant life-cycle stages shall be those selected through the latter procedure plus the use stage.

3.4 Identification of the most-relevant processes

Each most-relevant impact category shall be further investigated by identifying the most-relevant processes used to model the product in scope. The most-relevant processes are those that together contribute more than **80%** to any of the most-relevant impact categories identified. Identical processes taking place in different life-cycle stages (e.g., transportation, electricity use) shall be accounted for separately. Identical processes taking place within the same life-cycle stage shall be accounted for together. The list of most-relevant processes shall be reported in the PEF report together with the respective life-cycle stage (or multiple life-cycle stages if relevant) and the contribution in %.

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