

Paper Profile appendix

paper
profile

*Paper Profile isn't equal to CFs, LCAs or EPDs**



PAPER PROFILE OFFERS THE INDUSTRY

Uniform info sheet on pulp, paper and paperboard production and product parameters:

- Environmental management system
- Product composition
- Origin and certification of wood fibers
- Emissions to air and water, solid waste landfill and the consumption of purchased electricity
- Paper Profile covers the most impactful parameters sufficiently, with the exception of CO2

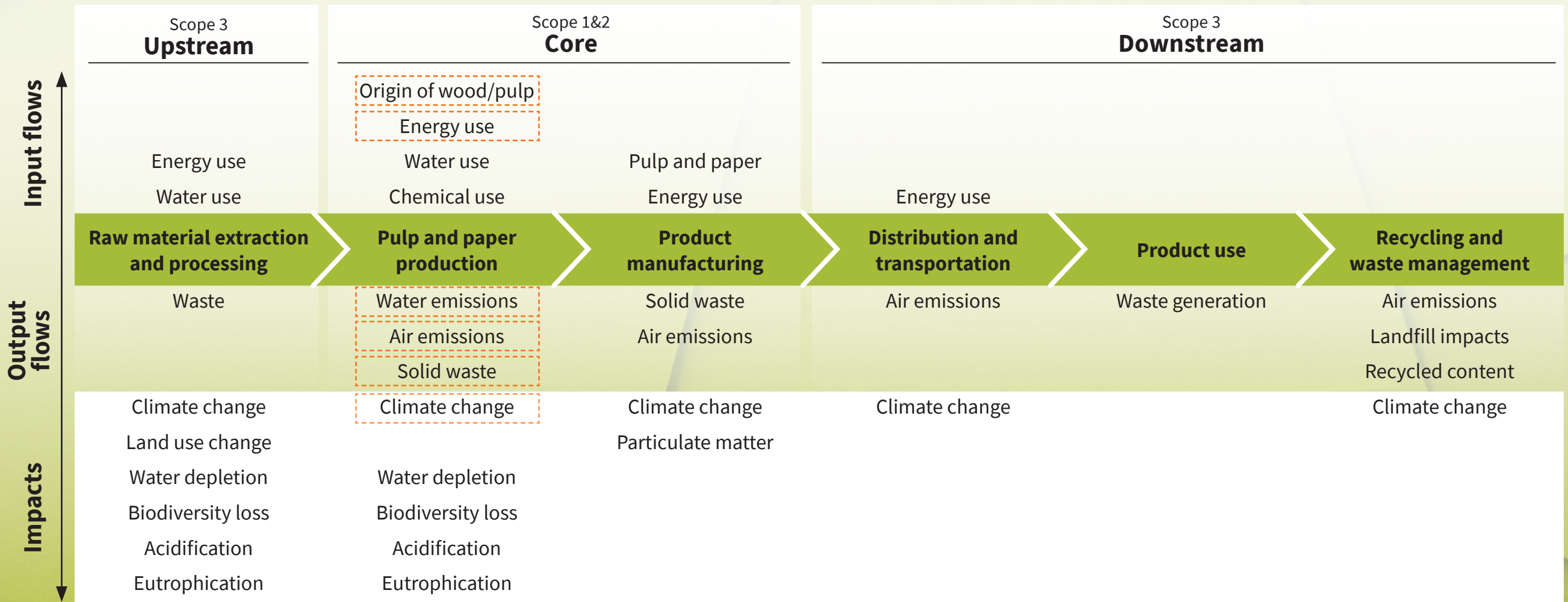


PAPER PROFILE DOESN'T REPRESENT

- The entire life cycle of paper or paperboard products
- Environmental impact results, such as impact to climate change

LCA = life cycle assessment, CF = carbon footprint calculations, EPD = Environmental product declaration

Paper Profile covers a snapshot of the value chain's flows*

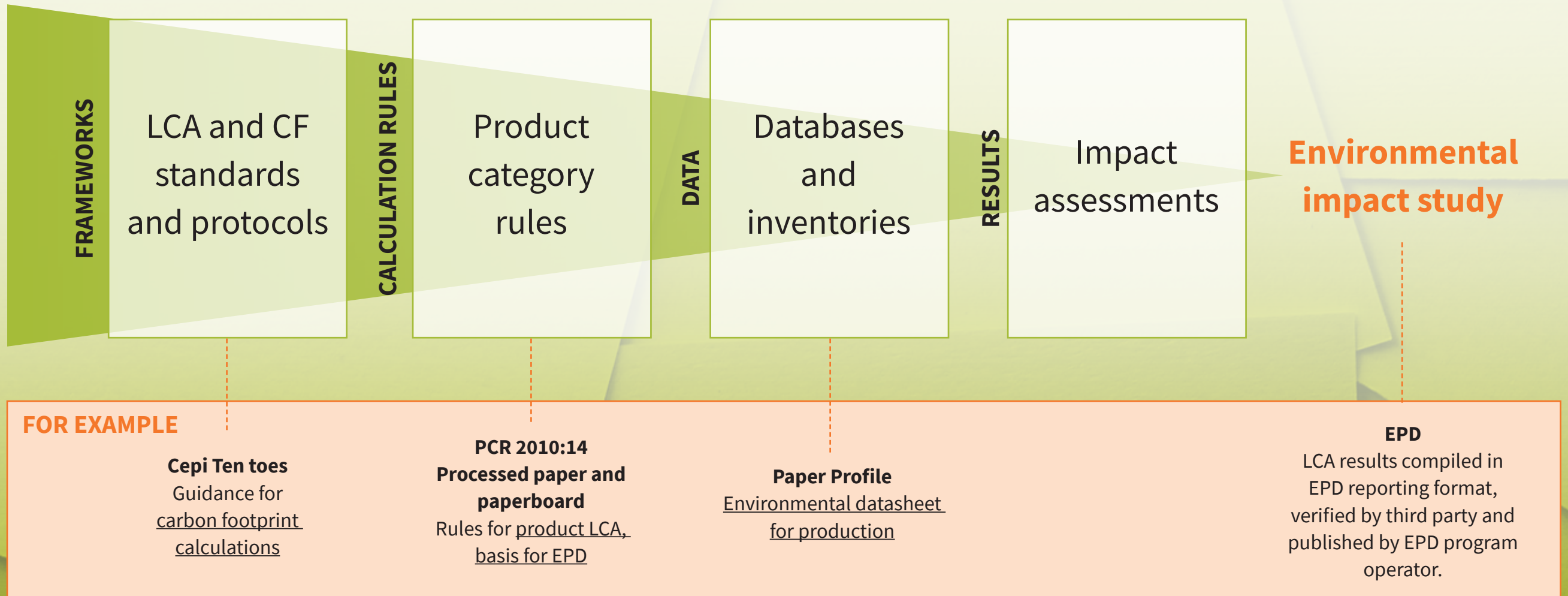


In Paper profile's scope

LCA calculations cover at least upstream + core impacts (Gradle-to-Gate), and might include downstream impacts as well (Gradle-to-Grave)

*The illustration provides a high-level overview of the value chain and related input, output and environmental impacts, but it is not an exhaustive list.

*Paper Profile offers data on certain input and output flows in production, while Ten toes by Ceperi gives guidance for carbon footprint calculations and PCR sets the rules for LCA**



*See appendix 2 for detailed comparison

***APPENDIX 2:
Comparison in detail***

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Factor	Ten TOES by Cepi	Processed paper and paperboard PCR	Paper Profile
General introduction	This tool provides a common approach for calculating carbon footprints of paper and board products. It offers guidance on ten key elements and ensures consistency with existing standards.	Product Category Rules (PCR) developed in the framework of the International EPD® System: a programme for type III environmental declarations according to ISO 14025:2006.	A Paper Profile product environmental datasheet , can be used for all pulp, paper and paperboard products. The datasheet provides information on the relevant environmental factors of the pulping and papermaking process.
Methodologies	Suggest many suitable methodologies for each factor, e.g., regarding cut off criteria or temporal boundaries.	ISO 14025 and ISO 14040/14044	NA
Unit of analysis	No direct demands, unit of analysis chosen per standard that is followed.	The declared unit shall be one tonne (1000 kg) of product, excluding packaging weight. It can be defined at different points in the supply chain. If it's intended for packaging, guidance is provided for converting it into a packaged volume or amount. The declared unit must also specify moisture content (in %) and grammage (in g/m ²).	Functional unit: one tonne (1000 kg) of product.
Temporal boundaries	The framework in this document doesn't require specific timing information for emissions and carbon removals, except for clear explanations of temporal boundaries . Mentions that Greenhouse gas flows in the paper and board industry occur over decades due to the time it takes for trees to grow and sequester carbon.	The life cycle inventory (LCI) data shall be representative for the year/time frame for which the EPD is valid (maximum five years).	Annual mean values based on one year should be used for the product in question. In the event of an introduction of new processes or internal improvements, data must be determined on the basis of at least 3 months consecutive samples .

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System boundaries	Either cradle-to-gate or cradle-to-grave , depending on whether the optional use phase and end-of-life processes are included. All products should be with the same system boundary.	Either cradle-to-gate or cradle-to-grave , depending on whether the optional use phase and end-of-life processes are included.	Emissions from pulp, paper and paper board production . All the operations of the mills from material receiving through wastewater treatment and waste disposal shall be included
Cut off criteria	Aim to include at least 90% of all emissions (on a CO ₂ equivalent basis) within the system boundaries in the carbon footprint of the product. Suggest to see ISO 14040, 14044 and GHG protocol for more information. The cut-off criteria should be defined consistently with the intended application and different protocols and framework will have different requirements.	Data for elementary flows to and from the product system contributing to a minimum of 99% of the declared environmental impacts shall be included (not including processes that are explicitly outside the system boundary). Cut off is done using expert judgement and sensitivity analysis.	Calculation must be production-line specific in such a way that emission (and other) figures of all co-processes add up to 100% of the total emission load of the site . Includes instructions contain information how to calculate and present environmental parameters when there is a lack of pulp data.

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Data sources	Doesn't require any specific databases. In all cases, the company should identify data sources.	Recommends certain databases: ELCD for miscellaneous, FEFCO for production of packaging, Plastics Europe for production of plastics and chemicals and Metsäteho for forestry.	Suppliers and own processes, primary data. Instructs what to do when supplier data is missing.
Data quality	Doesn't require any specific division between primary and secondary data. Recommends to use primary data when available.	In environmental assessments, the data should be highly specific and representative of the process under study, including materials and energy flows. Specific data must be used whenever available after assessing its quality, especially for core processes. However, for upstream, downstream processes, and infrastructure, generic data can be used when specific data is unavailable.	Emission data from external suppliers is deemed reliable if the supplier is EMS certified (e.g., ISO 14001, EMAS) or provides formal, signed statements from an authorized representative.
Verification / critical review* requirements	Verification or critical review of the footprint is recommended .	External verification required to verify the LCA calculation and results.	Verification of the datasheet by a certification body is recommended .

Critical review = process intended to ensure consistency between a life cycle assessment and the principles and requirements of the International Standards on life cycle assessment, done by third-party expert.

Verification = A process for evaluating a statement of historical data and information to determine if the statement is materially correct and conforms to criteria done by third-party expert.

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Required impact categories	<p>Ten elements of carbon footprint calculations:</p> <ol style="list-style-type: none"> 1. Biomass carbon removal and storage in forests. 2. Biomass carbon content in paper and board products. 3. Greenhouse gas emissions from the manufacturing facilities of paper and board products. 4. Greenhouse gas emissions related to the production of wood fiber. 5. Greenhouse gas emissions linked to the production of other raw materials and fuels. 6. Greenhouse gas emissions tied to purchased and sold electricity, steam, heat, hot and cold water. 7. Greenhouse gas emissions associated with transportation. 8. Greenhouse gas emissions associated with product use. 9. Greenhouse gas emissions associated with product end-of-life. 10. Optional assessment of avoided greenhouse gas emissions. 	<ol style="list-style-type: none"> 1. Global warming potential <ul style="list-style-type: none"> • GWP-fossil, • GWP-biogenic, • GWP-land use and land use change (luluc), • GWP-total 2. Acidification Potential 3. Eutrophication Potential 4. Photochemical Ozone Creation Potential 5. Ozone Depletion Potential 6. Abiotic Depletion Potential for Minerals 7. Abiotic Depletion Potential for Metals 8. Abiotic Depletion Potential for Fossil Resources 9. Water Deprivation Potential <p>As listed in: https://www.environdec.com/indicators</p>	<p>No impact categories reported, but environmental parameters:</p> <ol style="list-style-type: none"> 1. water emissions(Cod, Ntot, Ptot, AOX) 2. air emissions (SO², Nox, Co² (fossil) 3. solid waste landfilled 4. Purchased electricity consumption (The total amount of electricity procured from the grid (kWh/ton paper) both for the 5. Content of biogenic carbon on the paper produced.

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Allocation of by-products/co-products	Allocation of GHG emissions to co-products should be done for these co-products. ISO/TS 14067:2013 and the Product Standard allow for various co-products allocation methods.	For multifunctional products and processes: 1. Avoid allocation when possible, by collecting data for sub-processes separately. 2. If allocation is necessary, allocate inputs and outputs based on their physical relationships. 3. If physical relationships are unclear or time-consuming, consider economic factors, providing sensitivity analysis and updating as needed, using market prices from the same year as core module data modeling.	In a mill, allocate emissions and other data to specific production lines so that they account for 100% of the site's total emissions. Use a cause-effect approach, like allocating power plant emissions to paper machines based on steam usage. Annual average product composition information can also be used.
Allocation of energy	Toe 6 gives guidance on this. For sales of energy, there are 4 approaches to choose from: process subdivision, allocation to products and co-products, net purchase and avoided emissions.	Energy produced at the mill and sold externally is an outflow from the production system	Calculate electricity usage per ton of paper, accounting for both the paper and pulp mills, relative to the pulp used. Exclude surplus electricity from non-integrated pulp mills.