FINAT

Linking the Label Community

FINAT PCF – INTRODUCTION TO MAIN CONCEPTS AND DEFINITIONS

Workshop 1 – Webinar 30 June 2025

Competition Law Statement

- We are here to discuss relevant issues for FINAT members. For this purpose we have put together an agenda. We will stick to the agenda and limit our conversation and the exchange of information to what is strictly necessary to achieve the scope mentioned in the agenda.
- We remind you that companies that have attended this meeting remain competitors in the broader scheme of things and operate independently. Attendance here is conditioned on your assurance and ongoing compliance with the requirement that none of you discuss with each other your commercial terms with any of your customers or with your own suppliers (including, without limitation: prices, rebates, freight, volumes, territories, or any other competitive or potentially competitive terms).
- We need to avoid and prevent the exchange of information or the entering into (formal or informal) agreements on matters such as (but not limited to): prices in the current market place (including any component of price, price levels, rates, discounts, rebates, costs etc.), allocating markets (by geography, product, customers), coordinating (pending or future) bid opportunities, jointly boycotting any customers or suppliers or distributors, current or future marketing plans or strategies (including production volumes), manufacturing or sales costs, R&D plans, sales forecasts, plans for territorial expansion or capital investment plans, or customer-specific detailed sales information or terms of contracts.
- The most important competition law do’s and don'ts are also available at https://www.finat.com/documents/690/finat-antitrust-guidelines-2020.pdf
- Further please always follow your company’s internal antitrust and competition policies. We expect you to consult with, and follow, your own company’s policies and any guidance you may have received.

The need

1. Labels & packaging are **essential components** of the fast-moving consumer goods (FMCG) value chain
2. Growing **environmental concerns** in society due to climate change
3. Growing demand for **objective, comparable and quantitative data** about environmental impact of products & processes
4. **Regulatory requirement** > corporations requiring harmonised data from SME suppliers
5. **Different calculation methods and tools** around, different interpretations
6. Need for **knowledge, understanding and guidance** among label converters

"Our clients are already asking for the CO2 balance of our labels and when we will be able to provide it. Do you have information you can provide us what the steps are to introduce it?....."

FINAT wondered…

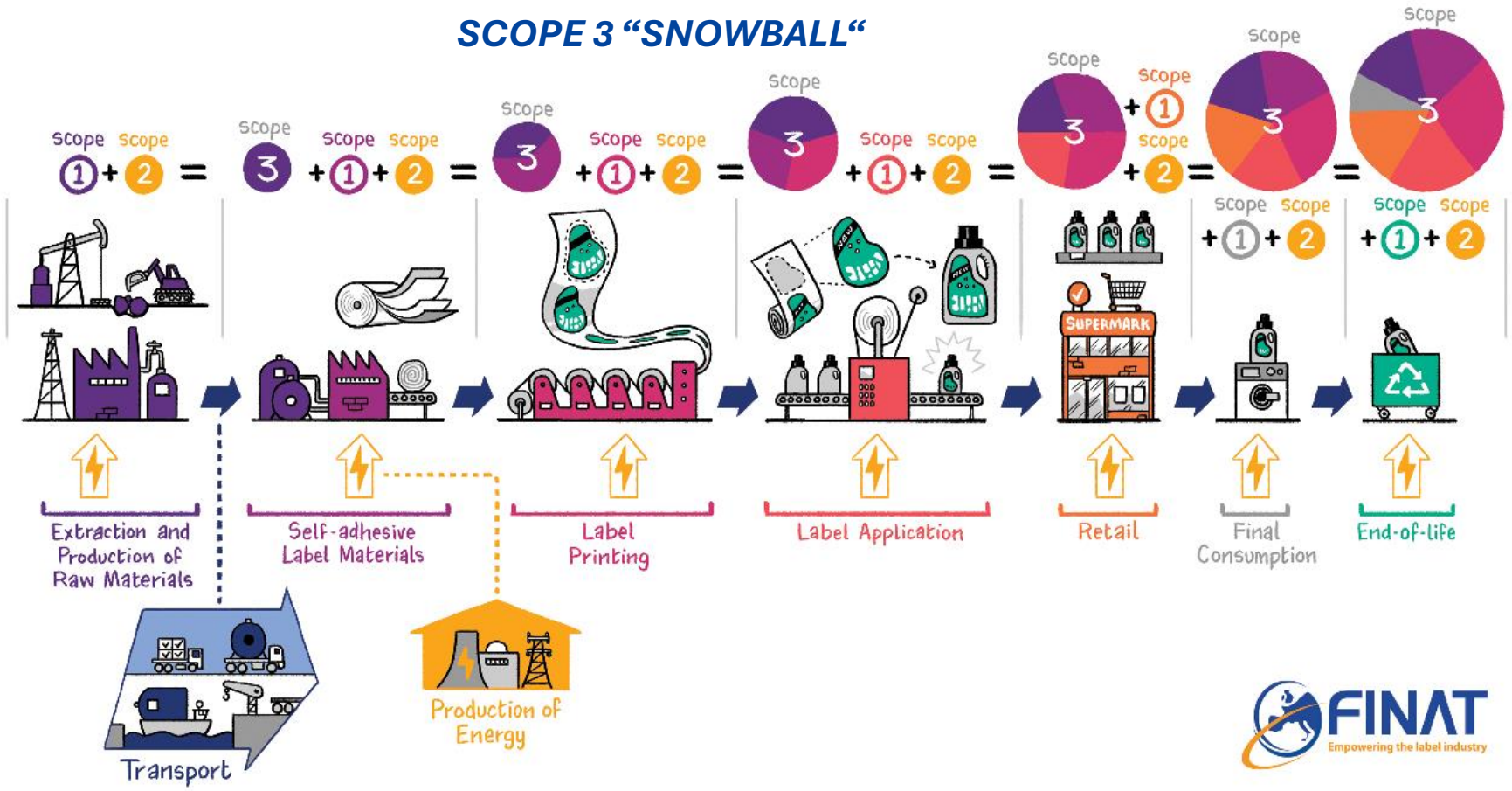
- **How can the label industry agree on common approach?**

And…

- **How can we measure and monitor it?**

It is all connected

SCOPE 3 "SNOWBALL"



Benefits of having an industry perspective

- ✓ Member companies can join forces and make a tailored tool
- ✓ As an association, FINAT can enhance the adoption of a harmonize approach
- ✓ Downstream users appreciate the unified approach
- ✓ SME can access to an affordable tool

PCF PROJECT

FINAT's **ultimate** target is a **harmonized approach** on the PCF calculation of a label laminate and a printed label.

What we have done so far:

LCA & PCF Introduction	Standards and Tools	Agree on structured/common approach for FINAT community	Prepare a FINAT Tool to share with self-adhesive label market
• **INFORM** members about the basics of Product Carbon Footprint and Life Cycle Analysis • ***RELEASED Q4 2023***	• **INVESTIGATE** and list the present Product Carbon Footprint calculation methods and tools relevant to the labels and packaging value chain • ***RELEASED Q1 2024***	• Understand and **AGREE** on the calculation methods and final outcome: • A calculation tool • ***TECH SEMINAR Q4 2024***	• Contacted Sphera to support us with the PCF tool. • ***WORKSHOPS 2025***

See more information here

sphera

Finat: A tool for PCF calculation - Workshop 1

Introduction to main concepts and definitions

Agenda

- Introduction to Sphera & the project
- Introduction to PCF / LCA methodology
- Standards & guidance:
  - ISO 14040/14044
  - ISO 14067
  - TfS
  - CEPI
  - Summary
- LCA Calculator tool

Introduction to Sphera & the project

Sphera is the leading global provider of **enterprise sustainability, risk and performance management** software, data and services.

ENVIRONMENT, HEALTH, SAFETY & SUSTAINABILITY

PRODUCT STEWARDSHIP

SUPPLY CHAIN TRANSPARENCY

OPERATIONAL RISK MANAGEMENT

SOFTWARE
Aggregate, digitize & monitor ESG risk & performance data.

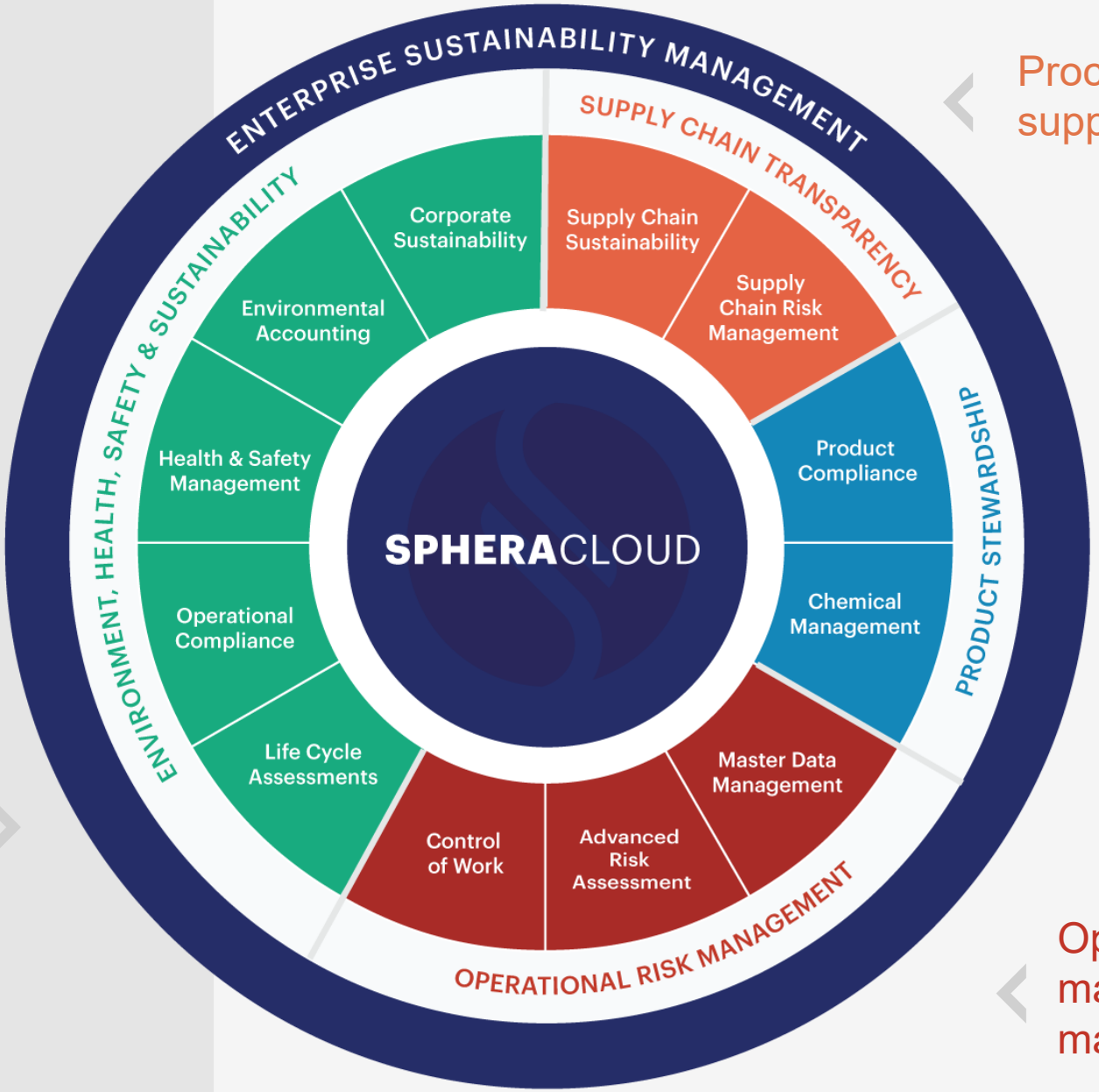
DATA ANALYTICS
Apply predictive & prescriptive analytics for scenario planning & benchmarking.

CONSULTING
Leverage insights to drive business outcomes & meet regulations.

OUR MISSION

To create a safer, more sustainable and productive world.

Enterprise Sustainability Management



Procurement / supply chain / supply chain sustainability

Product stewards / compliance managers

Operations / process safety managers / reliability & maintenance

Chief sustainability officer / EHS leader

Finat: A tool for PCF calculation

- Finat decided to support their members creating a harmonized tool for the calculation of the product carbon footprint of labels, according to the most relevant standards in the industry

- The tool will consider and be aligned with the following standards:

  - ISO 14040/14044
  - ISO 14067:2018
  - TfS
  - CEPI

- A series of workshops will enable scoping the tool:

  - Workshop 1: Introduction to main concepts and definitions
  - Workshop 2: Goal & Scope definition
  - Workshop 3: Laminate process
  - Workshop 4: Printing process

Finat: A tool for PCF calculation

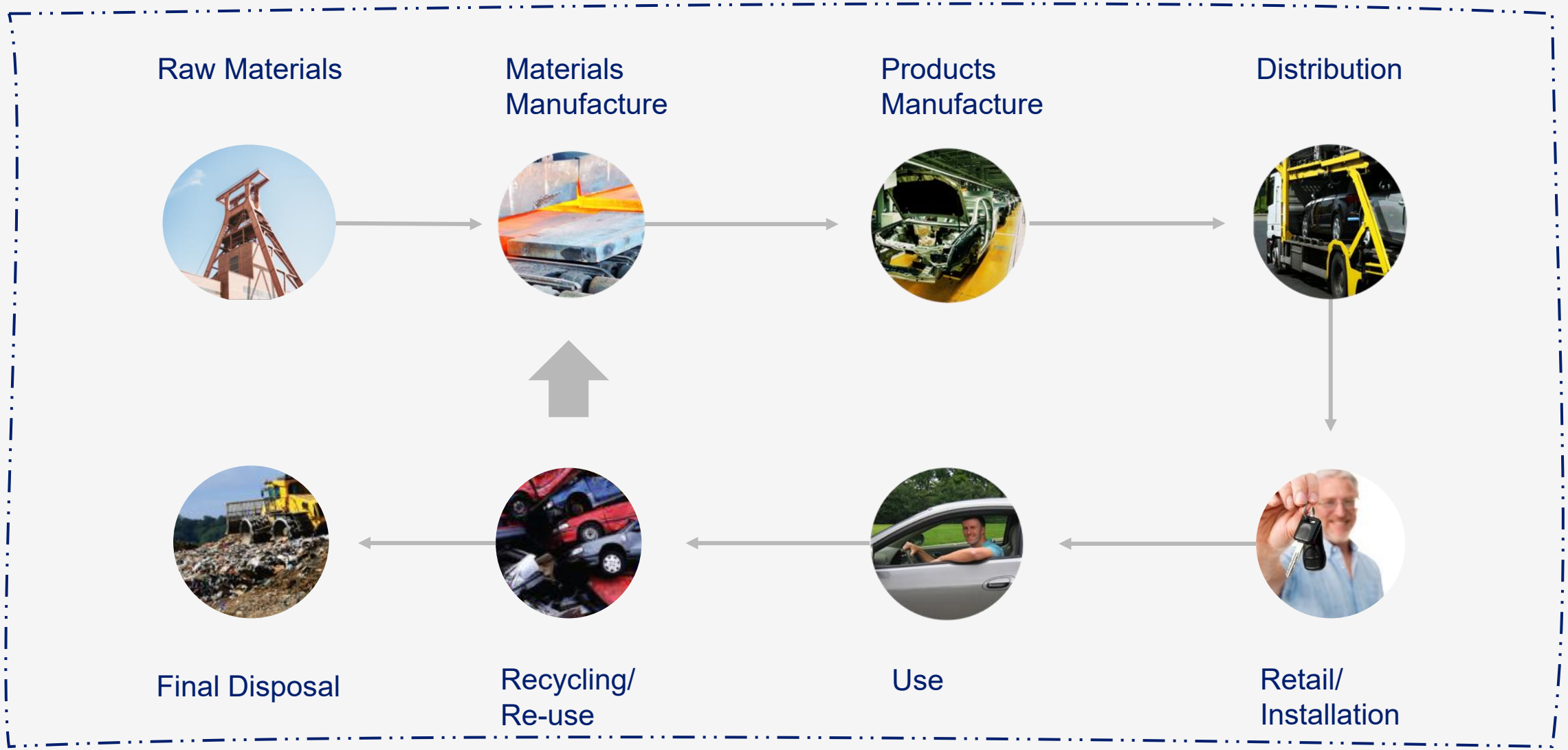
- The tool will be based in LCA Calculator software, underpinned with LCA for Experts software models, using the LCA Managed Content

- It enables:

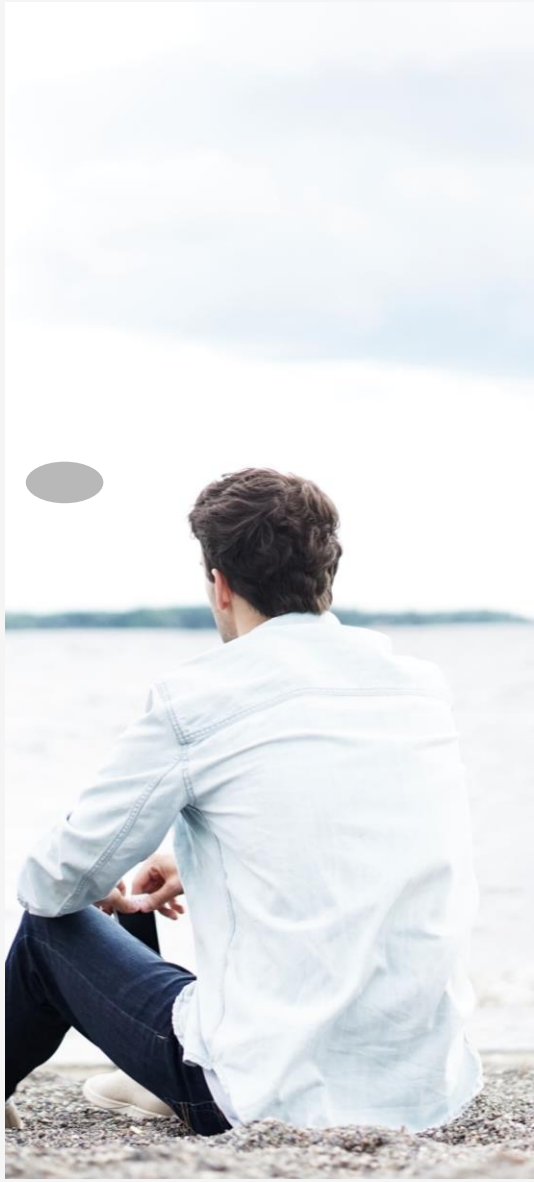
  - Harmonization of the calculations of PCF results across the industry
  - The companies to adjust the efforts depending to their needs (if needed, the tool can be integrated in their systems and automated)
  - Flexibility about the methodologies considered (e.g., if demand changes in the future, there are options to easily adjust the tool)
  - Cost-effective calculations

Introduction to PCF / LCA methodology

Life Cycle perspective



Life Cycle thinking



Why PCF / LCA?

PCF (Product Carbon Footprint) calculation is based on LCA (Life Cycle Assessment) methodology

- **Product development** & improvement
- **Choose better materials** & design features that lead to less harmful products and technologies
- **Design public policies** and incentives that improve sustainability (e.g., role in the European regulatory area, supporting the Green Deal and associated policies)
- Provide insights that guide you to **better purchasing decisions**
- **Increase knowledge** and identify “green washing” claims

Summary of the main standards applicable

- **ISO 14040** outlines the principles and framework for LCA (also basis for PCF), including goal and scope definition, inventory analysis, impact assessment, and interpretation. **ISO 14044** provides further requirements, including specifications for choosing impact categories, category indicators, and characterization models.

- **ISO 14067** is based on principles, requirements and guidelines identified in ISO 14040 and ISO 14044 and aims to set specific requirements for the quantification of product carbon footprints.

- **TfS initiative** developed a guideline to take a leading role in a more sustainable chemical industry by providing guidance in calculating PCFs and Scope 3 emissions.

- **CEPI (Confederation of European paper industries)** creates a framework with the aim of enabling companies to address their individual needs in a consistent way, and in alignment with guidance from ISO and the GHG Protocol.

Standards & Guidance: ISO 14040/14044

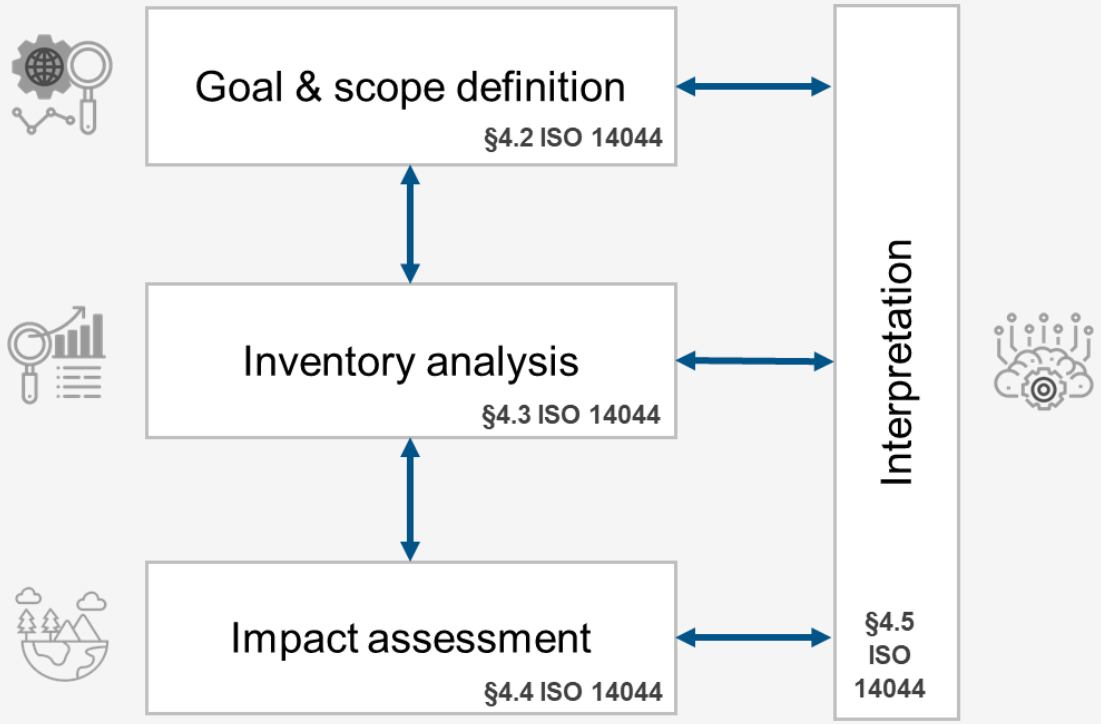
LCA | A Standardized Methodology

ISO 14040 and 14044

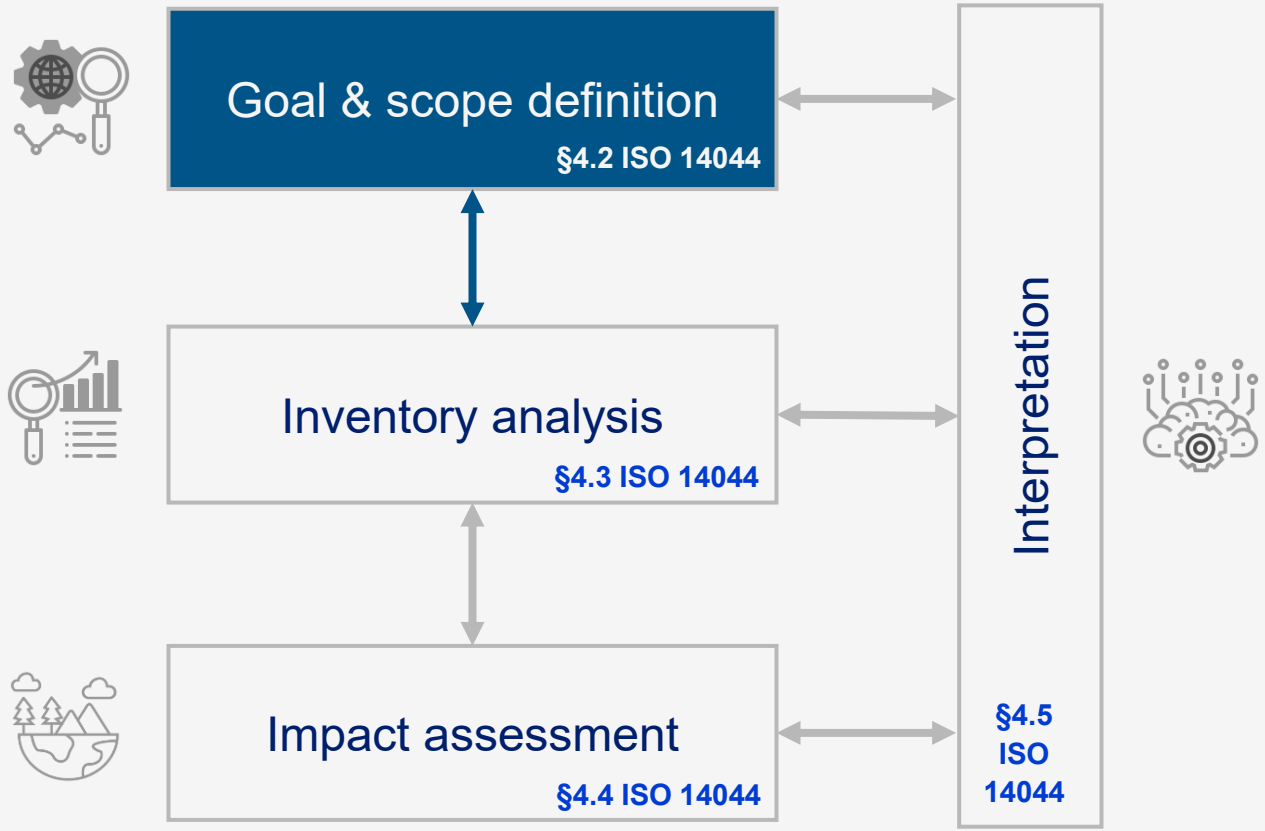
The ISO 14040 series of standards are a set of rules and guidelines for conducting LCA that have been developed and revised by the international LCA expert community.

According to this standard, the definition of LCA is a "*Compilation and evaluation of the inputs, outputs and the potential environmental impacts of a product system throughout its life cycle*"

(ISO 14040, section 3.2).



LCA Workflow | ISO 14040/44

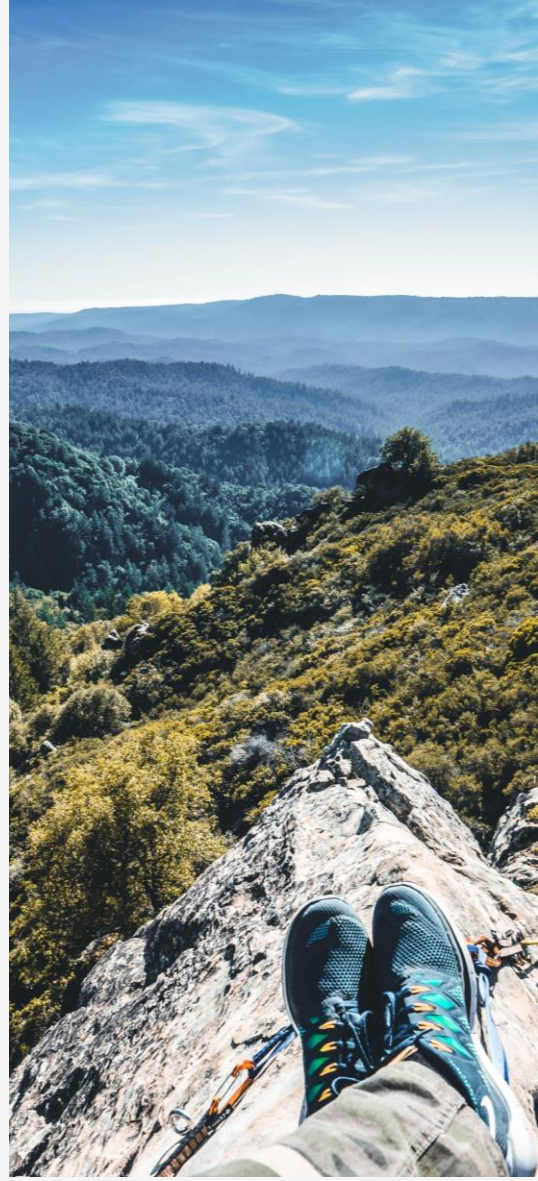


LCA Goal

The goal of an LCA states:

- the intended application,
- the reasons for carrying out the study,
- the intended audience, i.e. to whom the results of the study are intended to be communicated, and
- whether the results are intended to be used in comparative assertions intended to be disclosed to the public.

(ISO 14040)



LCA Scope

What Should the LCA Consider?

- Product system to be studied
- Functions of the product system
- Functional unit
- System boundary
- Allocation procedures
- Cut-off criteria
- LCIA methodology and types of impacts

- Interpretation to be used
- Data requirements
- Data quality requirements
- Report type and format
- Type of critical review

The scope should be sufficiently well defined to ensure that the breadth, depth and detail of the study are compatible and sufficient to address the stated goal. (ISO 14040).

LCA Scope: Function, Functional Unit & Reference Flow

Functional unit:

Quantified performance of a product system for use as a reference unit (ISO 14040)

Reference flow:

Measure outputs from processes in a given product system required to fulfil the function expressed by the functional unit. (ISO 14040)

Example: Paint

- *Function: to color and protect a surface*
- *Functional Unit: cover 10sqm of surface for 10 years*
- *Reference flow: 1l (high quality paint)*

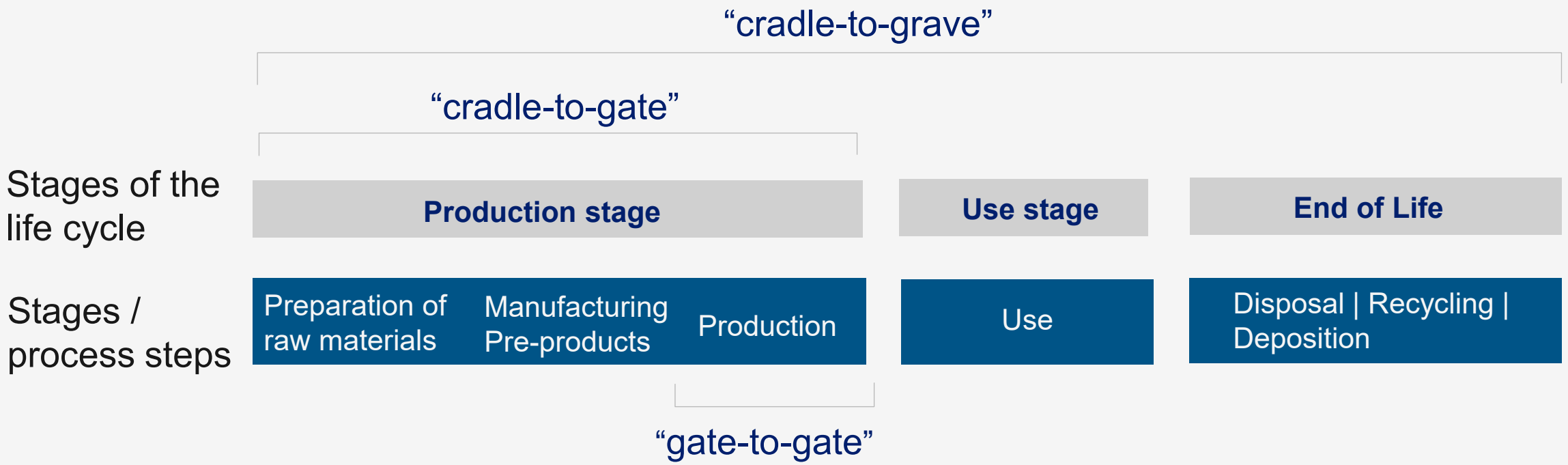
LCA Scope: System boundaries

Flow diagrams are usually simplified and aim to give a visual representation for the system boundary approach.

System boundaries should be clearly defined:

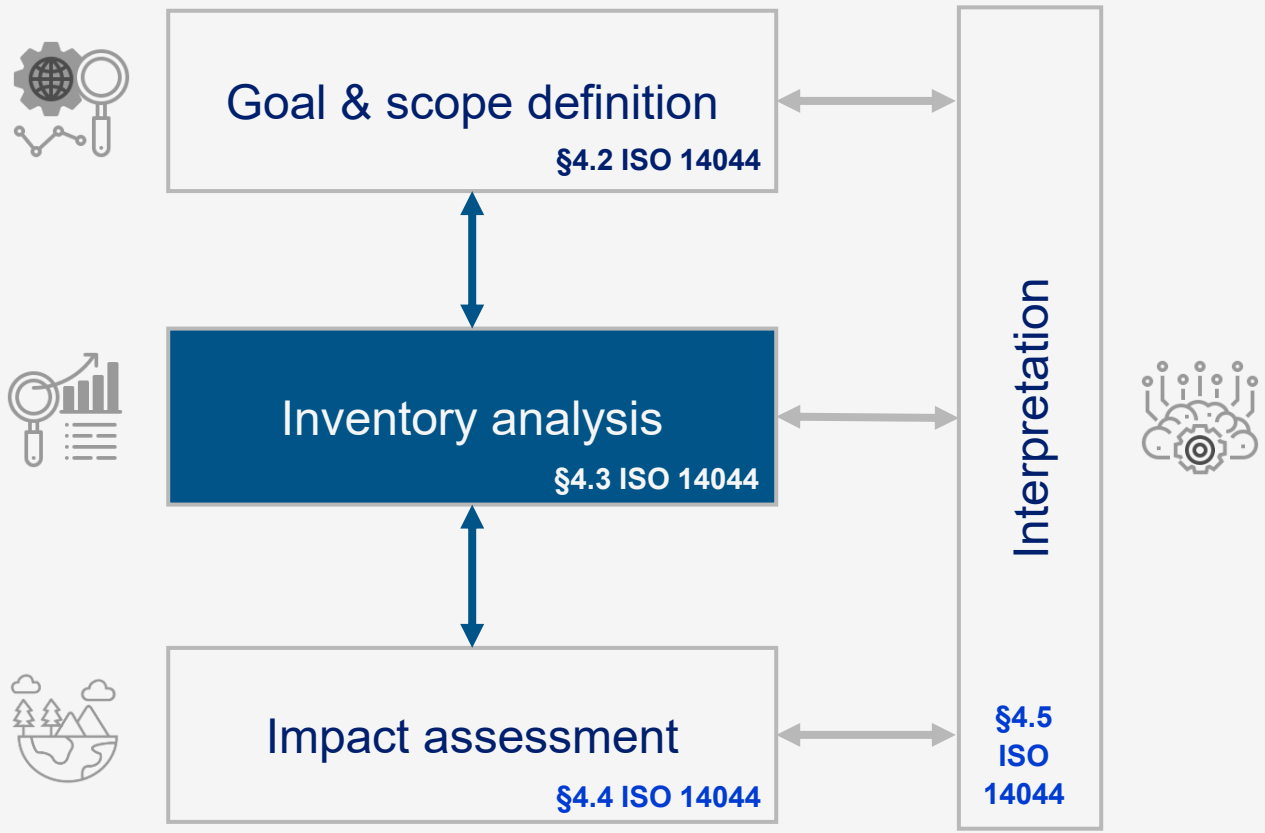
- The boundaries between nature and the system under study;
- The boundaries between included and excluded unit processes in the system under study; and
- The boundaries between the system under study and any related external systems that might share flows.

Life Cycle Assessment Scheme



Transport steps might be included between process steps and / or life cycle stages

LCA workflow | ISO 14040/44



Life Cycle Inventory analysis: Data Quality Requirements

Data collection is the basis of the Inventory Analysis.

- Often is a challenging procedure – usually the most time (and often cost) consuming part of an LCA.
- Demands detailed knowledge of processes included in the system boundary.
- Data quality requirements specify in general terms the characteristics of the data needed for the study. Descriptions of data quality are important to understand the reliability of the study results and properly interpret the outcome of the study (ISO 14040).
- In accordance to ISO, the data quality as to be clearly described, including aspects such as: time coverage, regional coverage, technology coverage, precision, completeness, representativeness, consistency, reproducibility, uncertainty and data sources.

Data Sources

Primary data:

- Collected directly from the process operators

Sources for primary data:

- Energy & raw material accounting
- Emission reporting
- Financial reporting
- Equipment specs
- Other

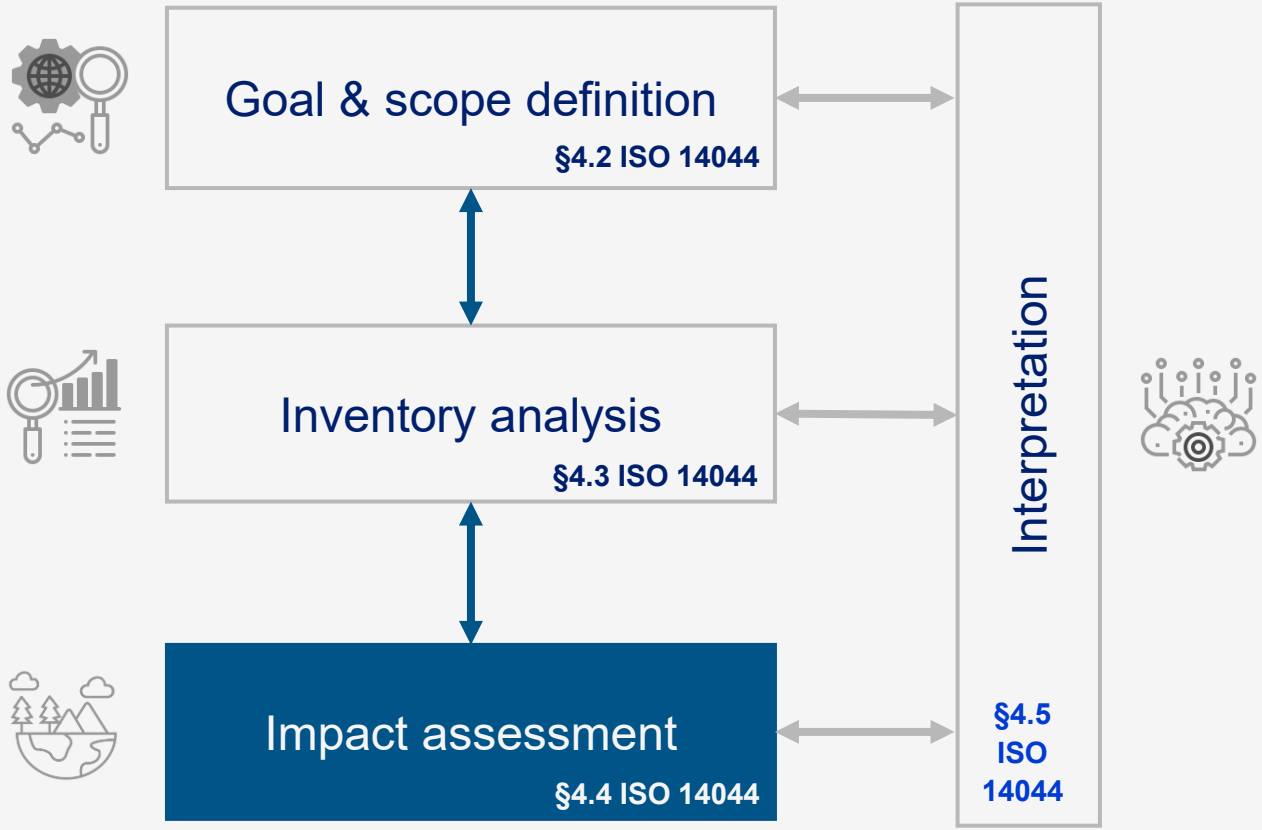
Secondary data:

- Collected from external sources

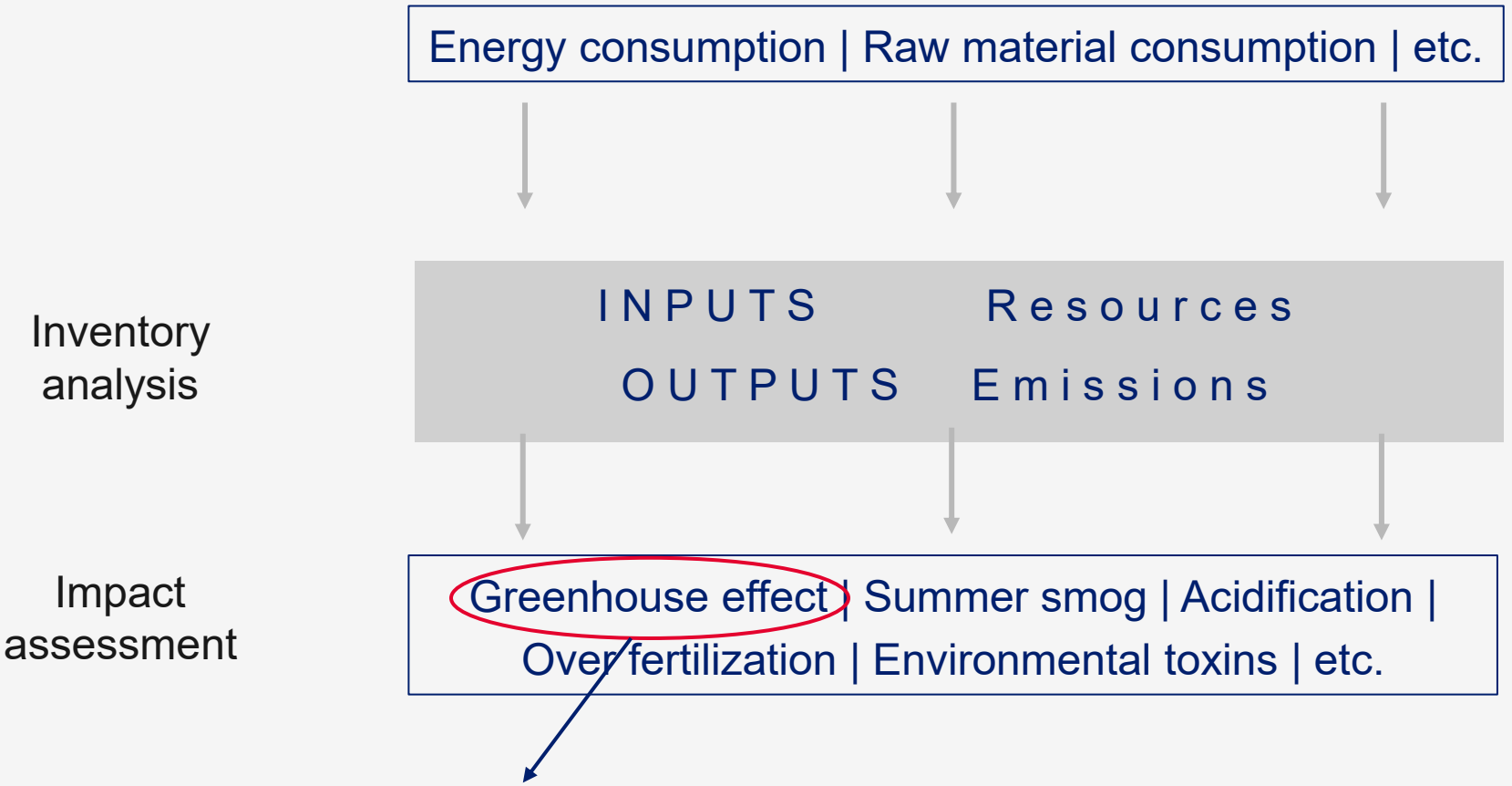
Sources for secondary data:

- Industry associations: AA, WorldSteel, ISSF, EUROFER, IAI, ACC, PlasticsEurope, etc.
- LCI databases
- Public
- Commercial
- Patents, BREF documents, etc.
- Scientific publications in journals / conferences
- Ullmann’s Encyclopedia of Technical Chemistry
- National economic input-output tables

LCA workflow | ISO 14040/44

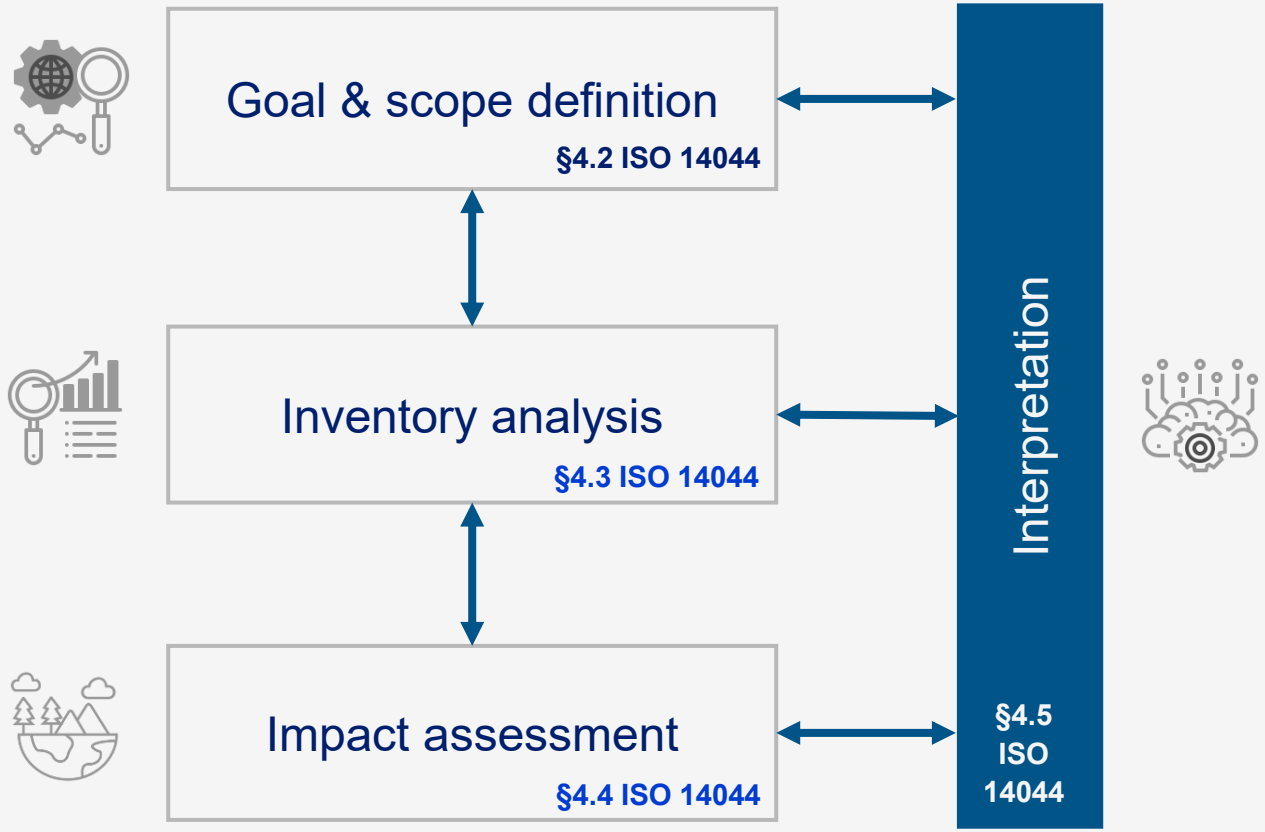


Life Cycle Impact Assessment (LCIA) Scheme



PCF (Product Carbon Footprint) of the product reflects the impact assessment of the Greenhouse effect and will be the only impact category considered within the scope of the Finat tool.

LCA Workflow According to ISO 14040/44



The interpretation phase delivers results that are consistent with the defined goal and scope and which reach conclusions, explain limitations and provide recommendations.

Standards & Guidance: ISO 14067

ISO 14067: Main aspects

- The ISO 14067 “specifies principles, requirements and guidelines for the quantification and reporting of the carbon footprint of a product (CFP), in a manner consistent with International Standards on life cycle assessment (LCA) (ISO 14040 and ISO 14044).”
- It addresses a single impact category: climate change.
- Allows cradle-to-gate and cradle-to-grave studies
- A CFP study in accordance with this document shall include the four phases of LCA (goal & scope definition; LCI; LCIA; interpretation).
- Where relevant PCR exists, it shall be applied; where no standard exists, the requirements and guidance of other internationally agreed sector-specific documents should be adopted.
- Goal of a CFP study: “to calculate the potential contribution of a product to global warming expressed as CO2e by quantifying all significant GHG emissions and removals over the product’s life cycle or selected processes, in line with cut-off criteria.”

ISO 14067: Summary of requirements and guidance

Table 1 — Specific GHG emissions and removals treatment in the CFP or the partial CFP and documented separately in the CFP study report

Sub-clause	Specific GHG emissions and removals[a]	Treatment in the CFP or the partial CFP			Documentation in the CFP study report	
		Shall be included	Should be included	Should be considered for inclusion	Shall be documented separately in the CFP study report	Shall be documented separately in the CFP study report, if calculated
6.4.9.2	Fossil and biogenic GHG emissions and removals[a]	X			X	
6.4.9.5	GHG emissions and removals occurring as a result of dLUC[a]	X			X	
6.4.9.5	GHG emissions and removals occurring as a result of iLUC[a]			X		X
6.4.9.6	GHG emissions and removals from land use[a]		X			X
6.4.9.3	Biogenic carbon in products[a]					X
6.4.9.7	Aircraft GHG emissions	X			X	

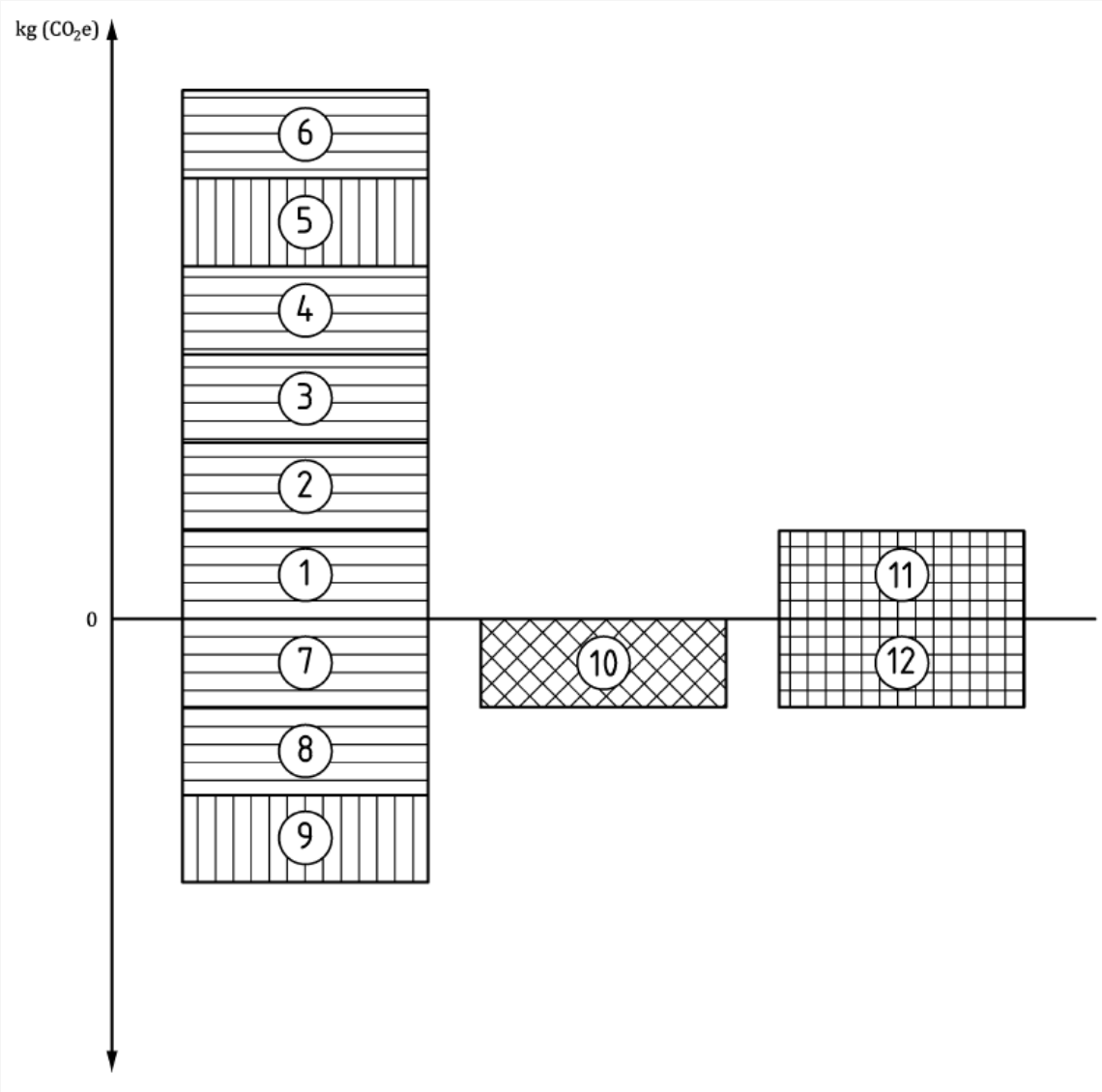
[a] For reporting of timing of emissions and removals, see 6.4.8.

Direct LUC: change in the human use of land within the relevant boundary.

Indirect LUC: change in the use of land which is a consequence of direct land use change, but which occurs outside the relevant boundary.

All GHG emissions and removals shall be calculated as if released or removed at the beginning of the assessment period without taking into account an effect of delayed GHG emissions and removals.

ISO 14067: Specific components of CFP and partial CFP



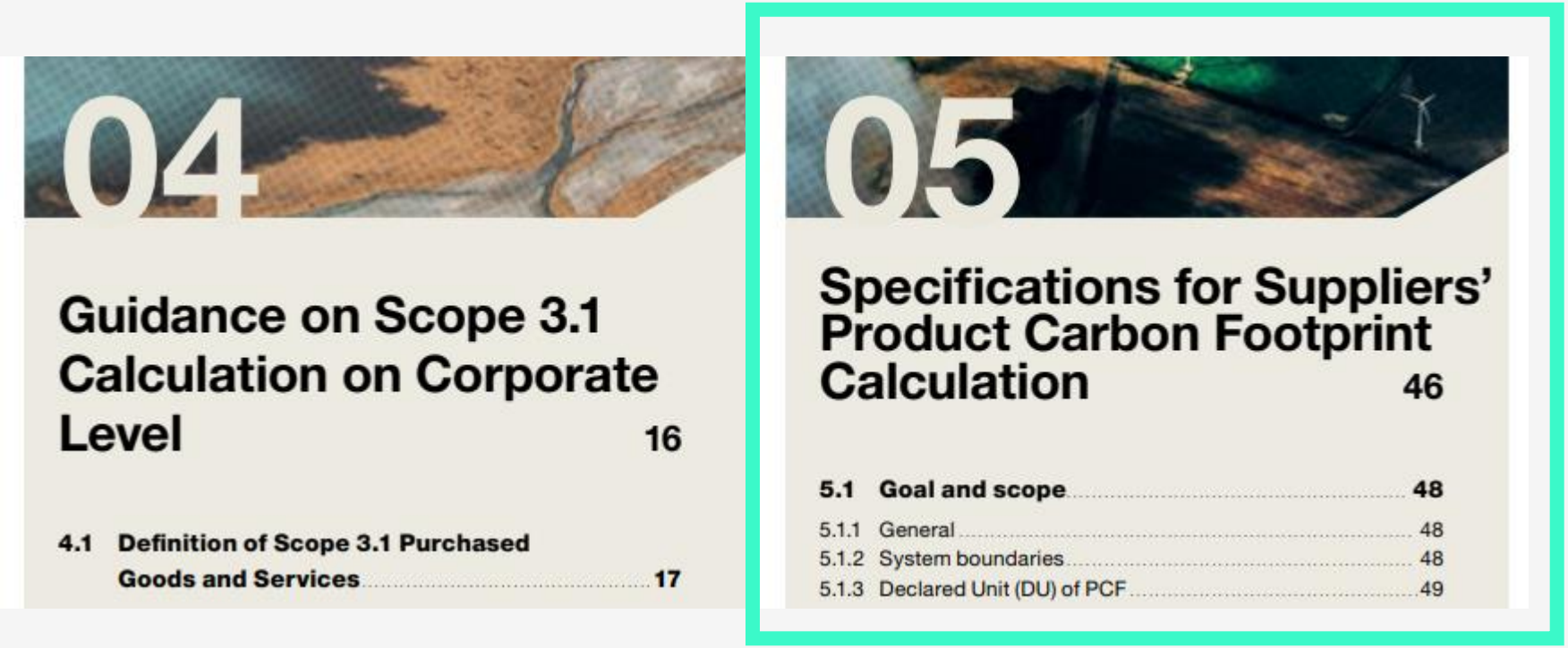
Key

	shall be included in the CFP or the partial CFP
	should be included in the CFP or the partial CFP
	shall be documented separately in the CFP study report if calculated, not included in the CFP
	should be considered separately
1	GHG emissions other than specified
2	aircraft emissions
3	biogenic GHG emissions
4	emissions from dLUC and change in the management of land
5	emissions from LU excluding change in management of land
6	net fossil GHG emission and removal
7	biogenic GHG removal
8	removal from dLUC and change in the management of land
9	removal from LU excluding change in the management of land
10	biogenic carbon in the product
11	iLUC emissions
12	iLUC removals

Standards & Guidance: TfS

TfS in a nutshell

- Global initiative of the chemical industry to standardize the corporate (Scope 3.1 or “upstream”) and product carbon footprint (PCF) calculation
- Latest version published in Dez 2024



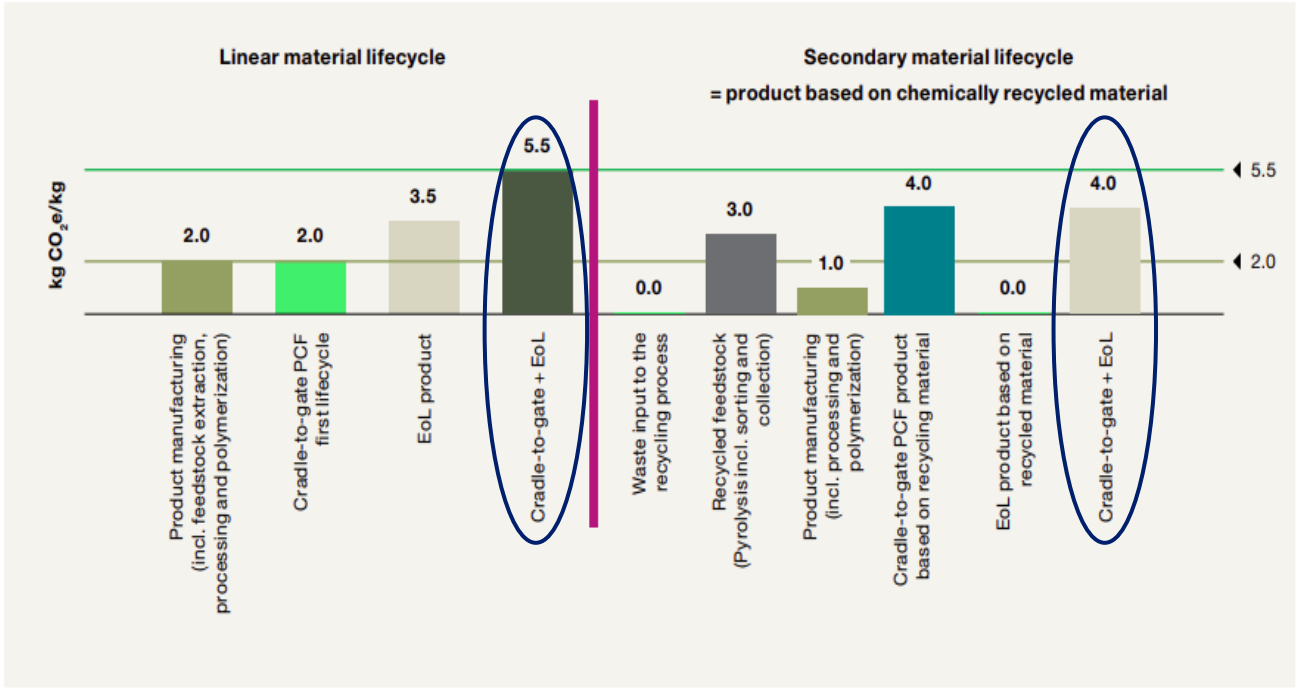
- You can find it here: TfS-PCF-Guidelines-2024.pdf

TfS in a nutshell

- Following ISO 14040/44 and fully compliant with GHG protocol and ISO 14067, but more specific and guiding in many decision points
- Focus on GHGs only (= PCF), not full product LCA at the present stage
- Applicable to “all chemical products, independent of their final use”
- Goal: Harmonization of PCF calculation approaches across the chemical industry to ensure the comparability and assessment of climate impacts - by consumers and the wider market
- System boundary:
  - Cradle – to – gate, but benefits of recycling can be shown → see next slide
  - No infrastructure to be included; packaging might be included (separately) depending on the cases
- Declared unit: 1 kg of unpacked product

TfS in a nutshell

Figure 5.14 Cut-off and additional information approach - exemplary data



Standard reporting for cut off as follows:
PCF linear material life cycle (cradle-to-gate first life cycle) = 2.0 kg CO_2e /kg
PCF secondary material (cradle-to-gate second life cycle) = 3.0 kg CO_2e /kg
Additional reporting information: PCF linear material life cycle incl. EoL = 5.5 kg CO_2e /kg
PCF secondary material incl. EoL = 4.0 kg CO_2e /kg

"The recycled content method or cut-off in the GHG Protocol for Products allocates the recycling process emissions and removals to the life cycle that uses the recycled material. Furthermore, the recycled content method can be used in open loop situations that include recycled material inputs and outputs."

Standards & Guidance: CEPI

CEPI in a nutshell

- CEPI is the Confederation of European Paper industries – represents the European pulp and paper industry
- Providing a guidance on carbon footprint calculation for paper-based products
- Aligned with ISO standards
- Identifies 10 key elements for a PCF for paper and board products, considering biomass removal and storage, biomass content, GHG from manufacturing, wood fibre production, energy sources, transportation, use phase and end of life
- Focus on recycling of used products and use different allocation approaches for recycling depending on industry sectors
- The protocol or guideline to be followed is left open

CEPI - 10 key elements

In the establishment of the different levels of carbon footprints of paper and board products, one can distinguish ten important elements – the **“Ten Toes”**:

1. **Biomass carbon removal** and storage in forests
2. **Biomass carbon** in paper and board products
3. **Greenhouse gas emissions** from paper and board product **manufacturing facilities**
4. **Greenhouse gas emissions** associated with **producing wood fibre**
5. **Greenhouse gas emissions** associated with producing **other raw materials/fuels**
6. **Greenhouse gas emissions** associated with **purchased electricity, steam, heat and 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. **Avoided greenhouse gas emissions**

Standards & Guidance: Summary

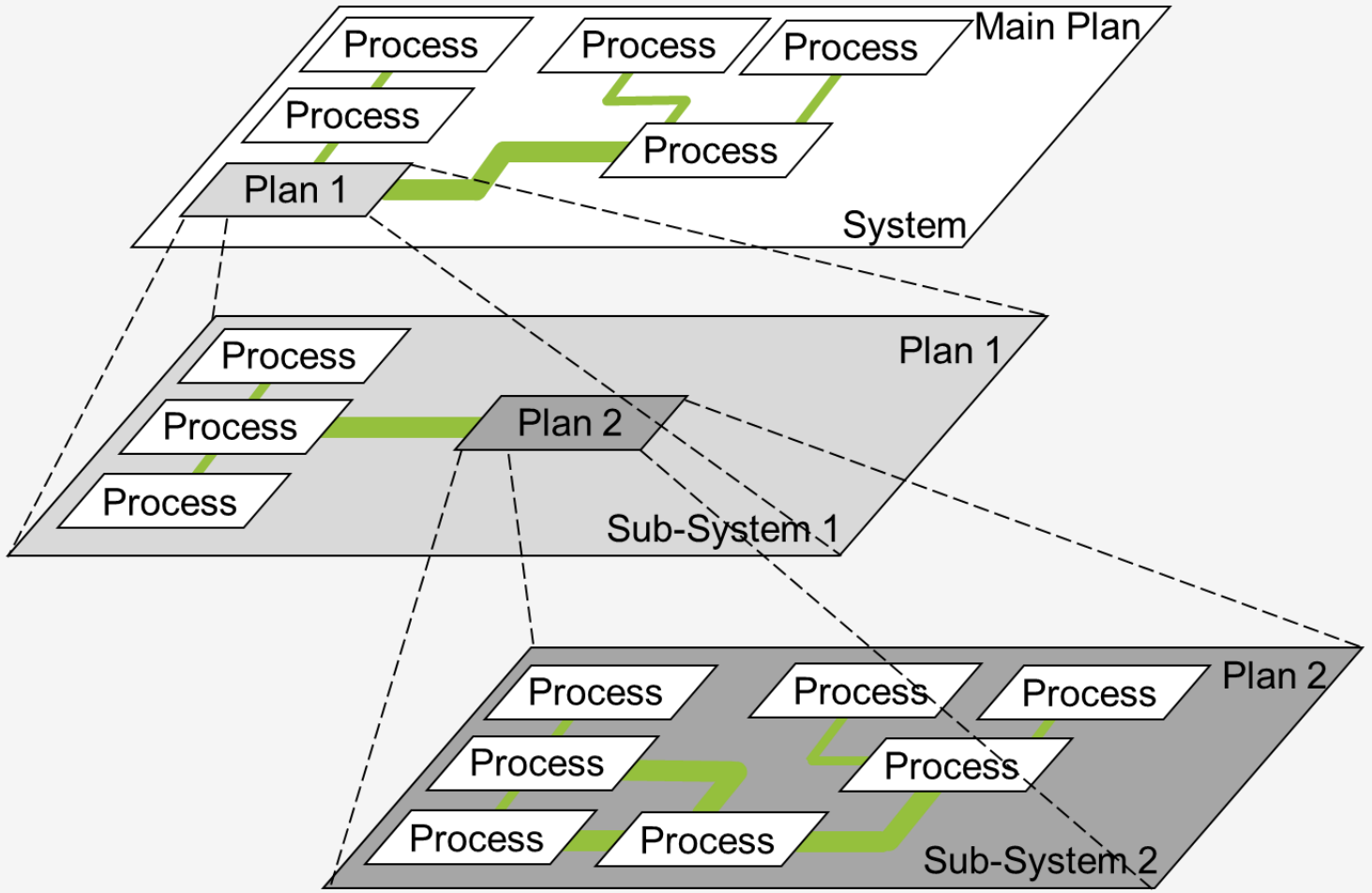
Summary

- TfS and CEPI guidelines have more specific requirements. They also don’t contradict each other and CEPI has a more high-level perspective, whereas TfS is more detailed on the approaches to be followed.
- TfS guidelines require a **cradle-to-gate** study; ISO and CEPI provide the option to use a **cradle-to-grave** system boundary.
- In the CEPI framework **10 key elements**, ‘10 toes’, are identified as important topics to examine at the beginning of a study of a paper or board product **but** the protocol or guideline to be followed is left open.
- There are no specific requirements for **cut-off criteria** according to ISO and CEPI. According to the TfS guidelines, **at least 97%** of the total mass inputs and **at least 97%** of the total energy inputs must be considered.

LCA Calculator tool

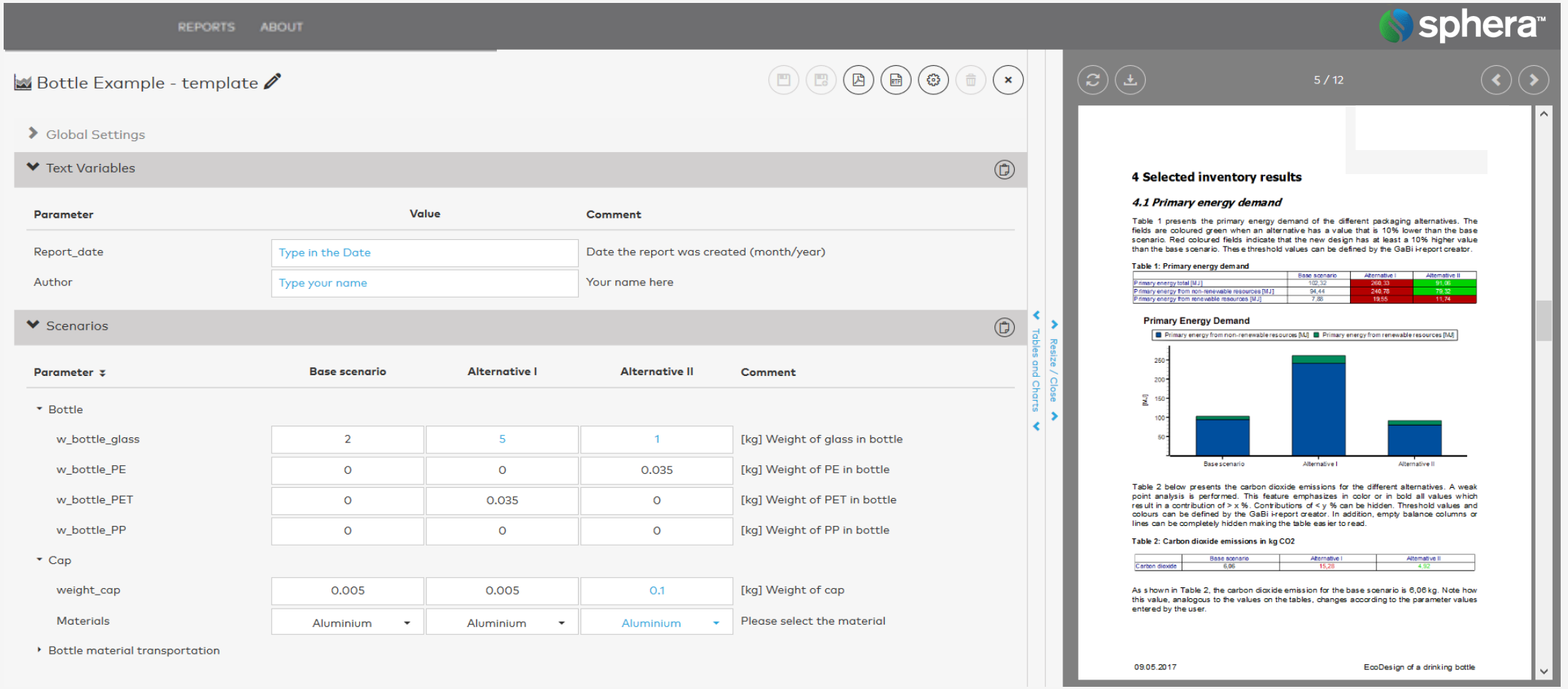
LCA for Experts (LCA FE)

- To be able to perform the impact assessment, Sphera uses the LCA FE Software, where a hierarchical modelling philosophy is applied



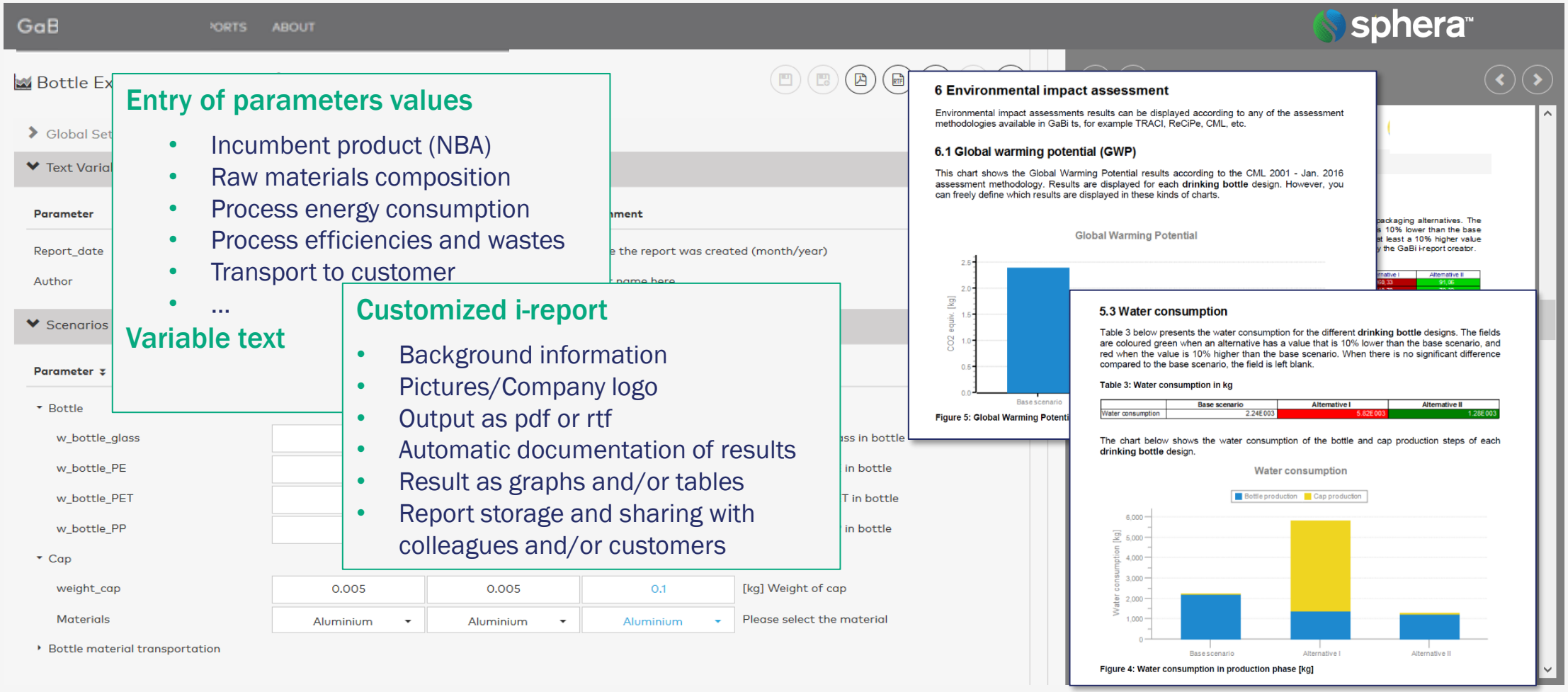
LCA Calculator

- The LCA FE models underpin the LCA Calculator tool, allowing cloud-based results calculation and scenario analysis including a customized report as output and user manual



LCA Calculator

Fast scenario analysis and reporting



LCA Calculator: data security aspects

- Application Security
  - Authentication, authorization, user roles & role permissions
  - Segregation of data/multi tenancy
  - Encryption & Logging
  - 3rd party components
  - Application Security Tests

- Hosting Security
  - Availability is guaranteed at 99%. The real availability is far above that.
  - LCA Calculator is available on a shared server – no data is shared between users

- Vendor Security
  - GDPR, ISO 27001, SOC II Type 2
  - Disaster Recovery and Business Continuity
  - Physical Protection
  - Personnel
  - IP Protection
  - Sphera Data Processing Policy & Security Regime (as defined in SLA)

TACK tool: An example

Project implementation – some insights

- Project was conducted by Afera and IVK in collaboration with Sphera
- **Goal**: To set up a Product Carbon Footprint (PCF) tool for calculating cradle-to-gate („ partial“) results for adhesives and adhesive tapes following ISO 14067 (meaning being also in line with 14040/14044) and Together for Sustainability (TfS) initiative guidelines for chemicals.
- The project had the following main phases:
  - **Scoping** in a workshops' series
  - **Data collection & inventory**, where qualitative data (no amounts or quantitative information requested - relevant for confidentiality) was collected from member companies and compiled by Afera and IVK
  - **Mapping & modeling** based on the information provided by member companies; models underpin the tool
  - **Tool & support materials** preparation

TACK tool: An example

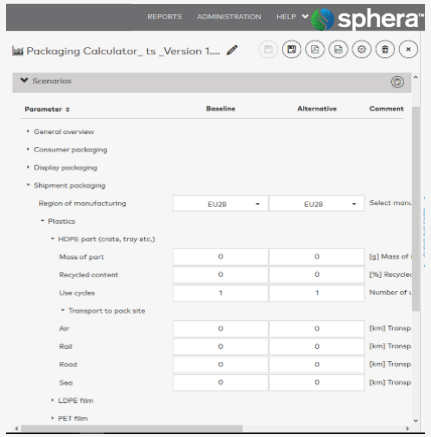
Workflow

Data input by tool user

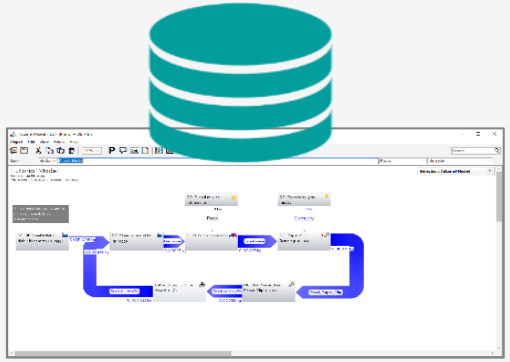
- Numeric parameters
- Text fields

TACK tool (pre-verified)

Input parameters



Calculation engine

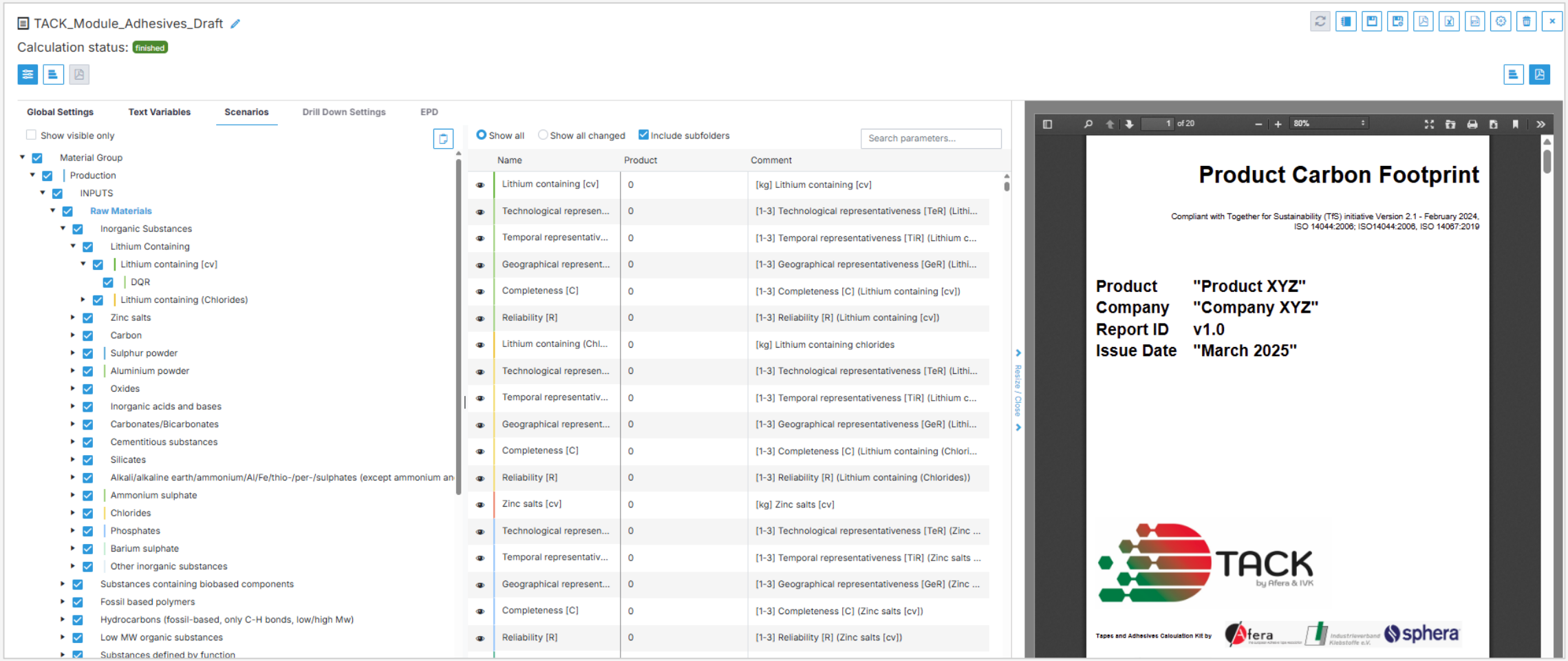


Verified models prepared and hosted by Sphera

Report

Automatically generated dynamic results

TACK tool: An example



Groups of parameters

Parameters

Dynamic report

Sphera is the leading global provider of integrated sustainability, risk & performance management software, data and services.

Margarida Gama
Sphera Solutions GmbH
Friedrichstr. 81
10117 Berlin

Phone
+49 711 21760832

Email
mgama@sphera.com