
# UNECE IWG A-LCA SG3

*16th Jan 2024*

# UNECE IWG A-LCA
## ORGANIZATIONAL TOPICS

4.1 Representative of SG3 party:

SG3 receives input which is not fully self explaining. To enable queries SG3 lead wants to name contact persons.

Contracting parties

- China ?
- Japan ?
- Korea Suhan Park
- UK Eleanore Deansmith

NGOs

- AECC Joachim Demuynck
- CLEPA Ansgar Christ
- ETRMA Alex van Gelderen
- ICCT Georg Bieker
- MECA ?
- NGVA Alberto Castagnini
- OICA Tina Detmer

# UNECE IWG A-LCA

## ORGANIZATIONAL TOPICS

4.2 Opinion poll:

Zoom does not offer a voting function. To obtain a clear picture of consent or rejection SG3 lead requests feed back from contact persons via e-mail on decision topics.

4.3 Decision record

Additional sheet added to SG3 timetable to keep track of decision status.


# UNECE IWG A-LCA SG3
# Drafting proposal for ‘Declared Unit’

*11th Dec 2023*

# UNECE IWG A-LCA

## DRAFTING PROPOSAL TEXT: DECLARED UNIT DESCRIPTION

LCA inventory results are provided in terms of **functional units** (used in ISO14044 & PEFCRs).

A functional unit describes the function of a product in question. Understanding the functional unit is essential for comparability between products with the same function, as it provides the reference to which the input (materials and energy) and output (such as products, by-products, waste) are quantified.

Intermediate products, i.e., products that will still be processed further to create a final product, can, however, have several functions based on their eventual end use. In this case (and where an LCA does not cover the full life cycle), the term **declared unit**, typically **referring to the physical quantity of a product**, can be used instead. Please note that cradle-to-gate PCFs typically use a “declared unit” approach.

The unit of analysis of the product serves as the basis for all data collection and inventory results. **Final PCF inventory results shall thus be disclosed as kg of CO2e per unit** of analysis (e.g., GHG emissions per 1 kg of product).

# UNECE IWG A-LCA

## DRAFTING PROPOSAL FIGURES: DECLARED UNIT

**Products**

For **countable products**, i.e., a component or part, the
**declared unit shall be 1 piece** as described in the part description,
**including a defined part identification** (e.g. part number) and weight (in kg).

e.g. 1 steel frame (part-ID)

**Materials**

For **materials**, i.e., mass products or commodities, the
**declared unit shall be 1 kg of products**,
regardless of its state (solid, liquid, gas), as its specific density is considered.,
**including a defined material identification** (e.g. material number).

e.g. 1 kg CAM (material-ID)

(CAM… cathode active material)

Pictures: https://www.magna.com/products/body-exteriors-structures/body-structures
https://batteriesnews.com/basf-selected-strategic-supplier-high-performance-cathode-active-materials-battery-manufacturer-ppes/


# UNECE IWG A-LCA SG3
# Drafting proposal for ‘Primay Data Share’

*16th Jan 2024*

# UNECE IWG A-LCA

## DRAFTING PROPOSAL TEXT: PRIMARY DATA SHARE

To create visibility on the share of primary data in PCF calculations, the primary data share (PDS) indicator in each data set shall be determined and shared. This can be done by calculating the proportion (percentage) of the total PCF in (kg CO2e per declared unit) that is derived using primary data.

$$PDS_{PCF} = \frac{Part\ of\ PCF\ based\ on\ primary\ data\ [kg\ CO_2\ e]}{Total\ PCF\ [kg\ CO_2\ e]}$$

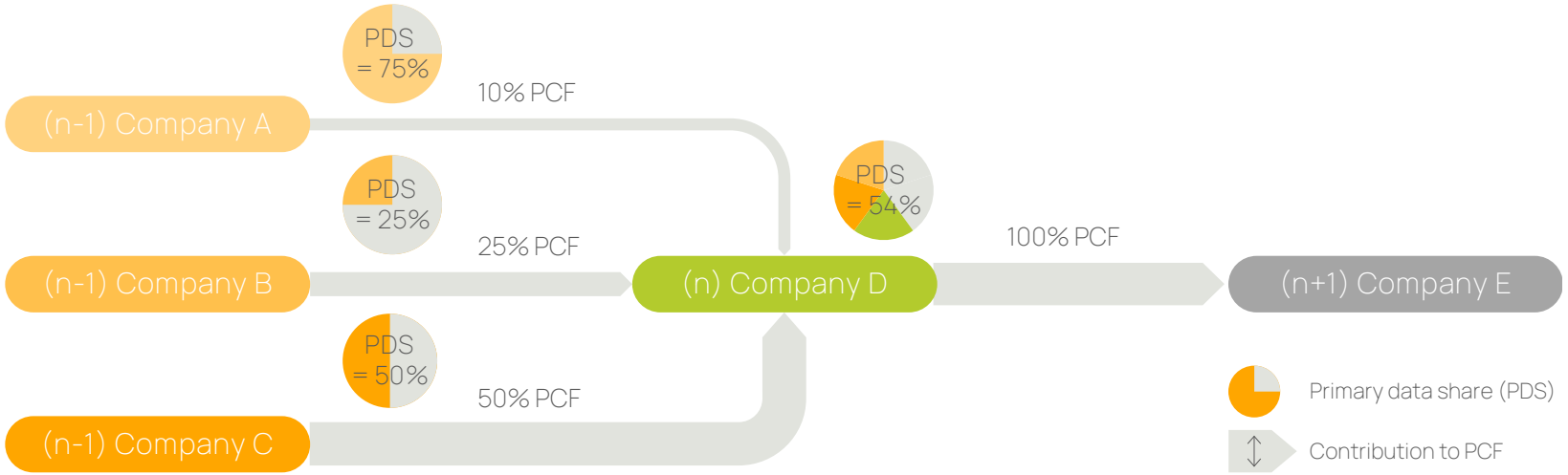
$$PDS = \frac{\sum(|PCF_i| \cdot\ PDS)}{Total\ PCF}$$

As an example for the PDS application in supply chain reporting, three suppliers, Company A, Company B and Company C, provide parts to Company D.
Each part has a different primary data share and contribution to the PCF of the part of Company D.

# UNECE IWG A-LCA

## DRAFTING PROPOSAL TEXT: PRIMARY DATA SHARE

According to formula, the primary data share of Company D's part is calculated from the primary data share and contribution to the PCF of the product of Company D .




| | PDS input | PCF share | PDS output |
|---|---|---|---|
| Tier A | 75% | 10% | 75% * 10% = 7.5% |
| Tier B | 25% | 25% | 25% * 25% = 6.3% |
| Tier C | 50% | 50% | 50% * 50% = 25% |
| Tier D | 100% | 15% | 100% * 15% = 15% |
| Total | | 100% | 7.5% + 6.3% + 25% + 15% ≈ 54% |

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## DRAFTING PROPOSAL TEXT: PRIMARY DATA SHARE

Note that the Product Carbon Footprint and Primary Data Share do not necessarily change in a congruent manner if a company works on the emission reduction. The effect is illustrated by the following example.

| Product | PCF | PDS |
|---|---|---|
| Input a | 5 | 0 |
| Input b | 15 | 100 |
| Company operations | 50 | 100 |
| Total | 70 | 92,8% |

| Product | PCF | PDS |
|---|---|---|
| Input a | 5 | 0 |
| Input b | 15 | 100 |
| Company operations | 20 | 100 |
| Total | 40 | 87,5% |

Therefor tracking the PDS over time is only meaningful reflecting also changes on the PCF.


# UNECE IWG A-LCA SG3
# Drafting proposal for ‘Data Quality Rating’

*16th Jan 2024*

# UNECE IWG A-LCA

## DRAFTING PROPOSAL TEXT: DATA QUALITY RATING

During the data collection process, companies shall assess the data quality of activity data, emission factors, and/or direct emissions data by using the data quality ratings (DQR).

The standard defines the five data quality indicators to use in assessing data quality. They are:

- **Technological representativeness**:
  The degree to which the data reflect the actual technology(ies) used in the process.
- **Geographical representativeness**:
  The degree to which the data reflects actual geographic location of the processes within the inventory boundary (e.g., country or site).
- **Temporal representativeness**:
  The degree to which the data reflect the actual time (e.g., year) or age of the process.
- **Completeness:**
  The degree to which the data are statistically representative of the process sites.
- **Reliability**:
  The degree to which the sources, data collection methods, and verification procedures used to obtain the data are dependable.

# UNECE IWG A-LCA

## DRAFTING PROPOSAL TEXT: DATA QUALITY RATING

Data quality shall be assessed for both primary and secondary data in terms of how well they represent the actual production of the product under study. In the case of secondary data, the data quality rating reported for the original data taken from a database may not be directly used. Instead, the reported data quality rating should serve as the basis to assess the representativeness of the product under study, i.e., how well the secondary data represents actual production in the supply chain.

The data quality of each PCF shall be calculated and reported. The DQR calculation shall be based on five data quality criteria where TeR is the technological representativeness, TiR is the time/temporal representativeness, GeR is the geographical representativeness, C is completeness and R is reliability.

The quality levels are expressed in three categories from 1 ‘Good’, 2 ‘Fair’ and 3 ‘Poor’. The data quality rating for activity data or an emission factor shall then be calculated from the five data quality indicators as an arithmetic mean:

$$DQR = \frac{TeR + GeR + TiR + C + R}{5}$$

# UNECE IWG A-LCA

## DRAFTING PROPOSAL TEXT: DATA QUALITY RATING

The data quality shall be propagated through the supply chain in the same manner as the primary data share (PDS).

The data quality rating of the PCF shall be calculated as a weighted mean with the product carbon contribution as weight:

$$DQR_{total} = \frac{\sum(DQR_i \cdot |PCF_i|)}{Total\ PCF}$$

| Data quality rating | 1 – Good | 2 – Fair | 3 – Poor |
|---|---|---|---|
| **Technology (TeR)** | Same or similar technology | Different technology | Unknown technology |
| **Time (TiR)** | Data less than 3 years old (creation date of dataset) | Data less than 6 years old (creation date of dataset) | Data more than 6 years old (creation date of dataset) |
| **Geography (GeR)** | Same region or country | Same continent | Global or unknown |
| **Completeness (C)** | All processes run by the company within the reporting period | <50% of processes run by the company within the reporting period or >50% processes run by the company for a shorter period | Less than 50% processes run by the company for a shorter period or unknown |
| **Reliability (R)** | Measured data | Data partly based on assumptions | Non-qualified estimate |


# UNECE IWG A-LCA SG3
# Drafting proposal for ‘GHGases’

*16th Jan 2024*

# UNECE IWG A-LCA

## DRAFTING PROPOSAL TEXT: GH GASES

The GHGs that shall be accounted for are carbon dioxide ($CO_2$), methane (CH4), nitrous oxide (N2O), hydrofluorocarbons (HFCs), perfluorinated compounds, sulfur hexafluoride ($SF_6$), nitrogen trifluoride (NF3), perfluorocarbons (PFCs), hydrofluoroethers (HFEs), perfluoropolyethers (e.g., PFPEs), chlorofluorocarbon (CFCs) and hydrochlorofluorocarbon (HCFCs).

The 100-year GWP characterization factors (GWP100y) according to the Intergovernmental Panel on Climate Change (IPCC) shall be used in the PCF calculations, based on the IPCC's Sixth Assessment Report (AR6, table 7.15 or 7.SM.7) or latest current version. These factors include climate carbon response for non-CO2 gases, i.e., carbon feedbacks and chemical effects.

Hydrogen shall be included in the list of GHGs, if IWG A-LCA brings forward evidence that the global warming potential of Hydrogen is substantial (>1)!


# UNECE IWG A-LCA SG3
# Input on 'Transportation'

*11th Dec 2023*

# UNECE IWG A-LCA

## CLEPA INPUT: TRANSPORT EMISSIONS – EXISTING STANDARDS

**Basic Frameworks**

- GLEC - Global Logistics Emissions Council - The global method for calculation and reporting of logistics emissions (introduction framework)
- WBCSD – World Business Council for Sustainable Development & Smart Freight Centre
  End-to-End GHG Reporting of Logistics Operations Guidance
- ISO14083 - Quantification and reporting of greenhouse gas emissions arising from transport chain operations (link to ISO)
- GHG protocol – Product Standard and reference to GLEC by GHG protocol

**Initiatives refering to above (non exhaustive selection):**

- WBCSD Pathfinder framework Guidance for the Accouning & Exchange of Product Life Cycle Emissions (link to Pathfinder 2023)
- Together for Sustainability PCF Guideline for the Chemical Industry (link to TfS HP)
- ECG & VDA Emissions Calculation & Reporting Guideline for Automotive Supply Chains (link to ECG HP)
- US EPA SmartWay (link to EPA HP)
- Global Green Freight Action Plan (UN level)
- EcoTransIT (methodology)
- Green Freight Initiatives (link to CCAC)
- Carbon Disclosure Project CDP (link to CDP HP)
- Science Based Targets Initiative SBTi (link to SBTi HP transport guidance)

The basic equation to calculate GHG emissions ($CO_2e$) for activity data is:

| Kg $CO_2e$ | = | Activity data (amount of activity) | × | Emission factor (kg GHG/ unit of activity) | × | GWP (kg $CO_2e$/ kg GHG) |
|---|---|---|---|---|---|---|

Courtesy to WBCSD Pathfinder

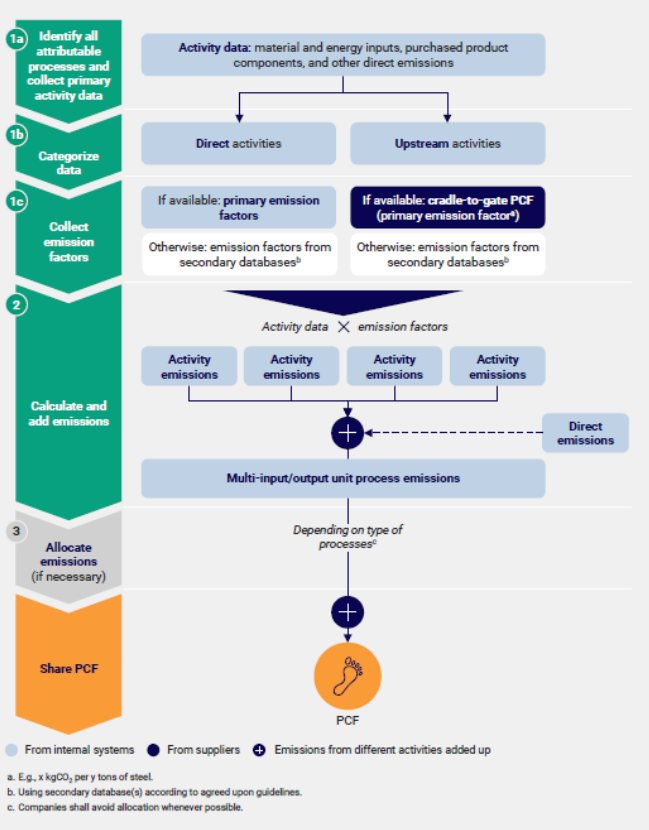
# UNECE IWG A-LCA

## TRANSPORT CARBON FOOTPRINT ACC. PATHFINDER PCF CALC. GUIDE

### 3.3 Guidance for calculating PCFs

This section provides guidance on how to calculate a PCF, which should be used in conjunction with existing methods and standards. Companies calculating their PCF in accordance with a PCR or sector-specific guidance may skip this section.

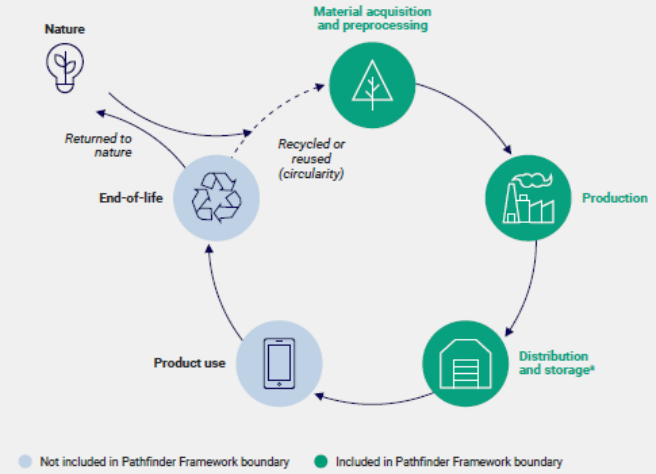
Figure 6: Overview of steps for PCF calculation




a. E.g., x $kgCO_2$ per y tons of steel.
b. Using secondary database(s) according to agreed upon guidelines.
c. Companies shall avoid allocation whenever possible.



Figure 5: Life cycle stages included in the boundary of the Pathfinder Framework




a. Contains product storage and shipping processes, including transportation within and between these life cycle stages.

### 3.2.4 Unit of analysis

The unit of analysis of the product serves as the basis for all data collection and inventory results. Final PCF inventory results shall thus be disclosed as kg of $CO_2e$ per unit of analysis (e.g., GHG emissions per 1 kg or 1 liter of product). Please note that cradle-to-gate PCFs typically use a "declared unit" approach (Box 3).

**Box 3: Distinction between functional and declared unit**

LCA inventory results are provided in terms of functional units.[a] A functional unit describes the function of a product in question. For example, for a laundry detergent, the functional unit could be defined as "washing 4.5 kg of dry fabric with the recommended dosage with medium-hard water." Understanding the functional unit is essential for comparability between products with the same function, as it provides the reference to which the input (materials and energy) and output (such as products, by-products, waste) are quantified.

Intermediate products, i.e., products that will still be processed further to create a final product, can, however, have several functions based on their eventual end use. In this case (and where an LCA does not cover the full life cycle), the term declared unit—typically referring to the physical quantity of a product, e.g., "1 liter of liquid laundry detergent with 30 percent water content"—can be used instead.

a. This term is used in ISO 14044 and PEFCRs.

#### A. Accounting for storage emissions

If material, calculation of storage emissions will be done by multiplying the percentage of the total area that is covered by the reference product with the total energy consumption of the storage facility, which in turn will be multiplied by the emission factors associated with the different energy sources used on site (see the formula below).

Should no information be available on the total energy usage of the facilities, companies may use industry benchmarks based on the site's total floor area.

$$\text{GHG emissions}_{\text{storage}} = \frac{\text{Area}_{\text{product}}}{\text{Area}_{\text{storage site}}} \times \text{Energy consumption}_{\text{site}} \times \text{Emission factor}_{\text{energy type}}$$

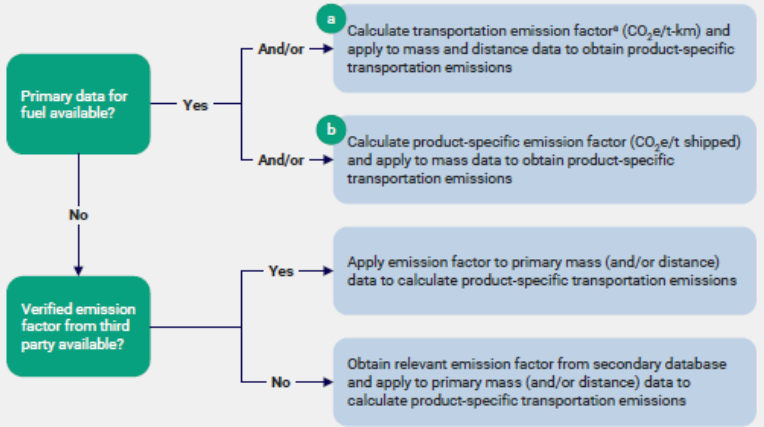
#### B. Accounting for transportation emissions

Calculation of product transportation emissions depends on the availability of data on fuel consumption, mass, distance, and load factor (Figure 13).

The prevalent unit of measure used for calculation and exchange of logistics emissions is ton-km, reflecting the mass of the shipment (in tons) and distance transported.

For further guidance, please refer to the Global Logistics Emissions Council (GLEC) Framework and GHG Protocol standards.

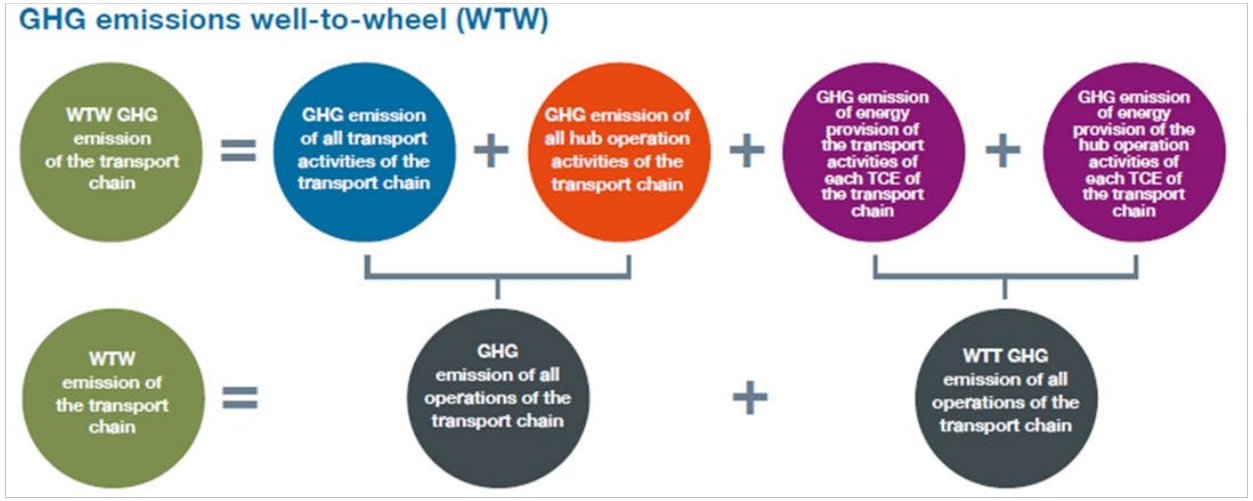
Figure 13: Steps for calculating product transportation emissions based on data availability




a. Emission factors are always per transportation mode and type.

# UNECE IWG A-LCA

## CLEPA INPUT: TRANSPORT EMISSIONS – WELL-TO-WAKE/WHEEL

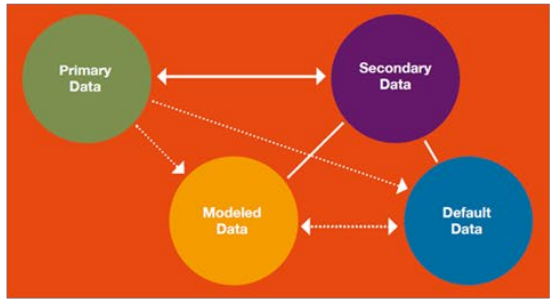



**WTW transport GHG emissions** = direct GHG emissions + indirect GHG emissions

GHG = Green House Gas
TCE = Transport Chain Element expressed in [tonne-km] or [tkm]
WTW emissions = Well to Wake or Well to Wheel expressed in [kg CO2e]

Courtesy to GLEC Framework 2023

**Data quality depends on level of application**
→ rules could be applied to levelling concept UN A-LCA
→ Secondary data for ‚planning' and technology comparisons
→ Secondary data to close data gaps in transport chain
→ Open to use primary data prefered for levels 3 & 4

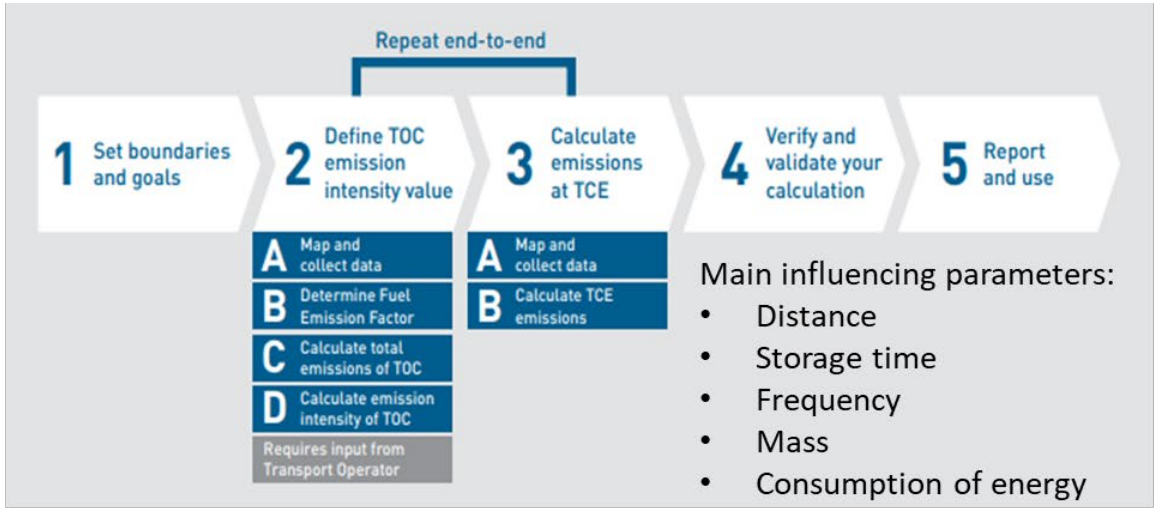



**All relevant modes of transport are covered**
→ selection could be reduced for concept UN A-LCA


**Excluding emissions caused by infrastructure construction or dismantling** (of hubs & facilities, roads, pipelines, vehicles …)

# UNECE IWG A-LCA

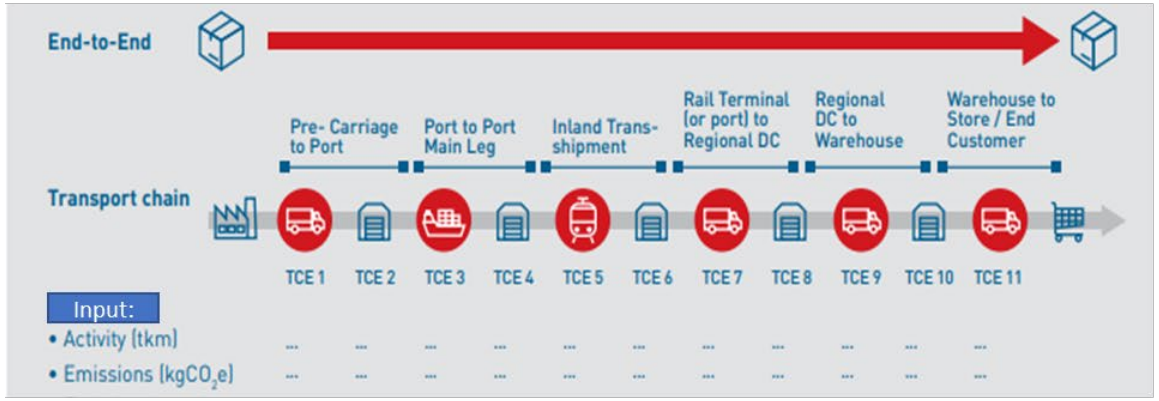
## CLEPA INPUT: TRANSPORT EMISSIONS




Courtesy to Smart Freight Centre

GHG = Green House Gas
TCE = Transport Chain Element
TOC = Transport Operation Category
HOC = Hub Operation Category
DC = Distribution Center
FEF = Fuel Emission Factor (e.g. acc. GLEC Framework)
**Emissions = Well to Wake & Well to Wheel emissions expressed in [kg CO2e]**
**Activity = TCE expressed in [tonne-km] or [tkm]**

$$\text{Emissions per product unit } [kgCO_2e] = \frac{\text{emissions per transport chain } [kgCO_2e]}{\text{number of product units}}$$




$$\text{Emissions of transport chain (end-to-end) } [kgCO_2e] = \sum_{1}^{n} \text{emissions of TCE}_n$$

$$\text{Transport activity of transport chain (end-to-end) } [tkm] = \sum_{1}^{n} \text{transport activity of TCE}_n$$

$$\text{Emission intensity of transport chain (end-to-end) } [kgCO_2e/tkm] = \frac{\sum \text{emissions of TCE}_n}{\sum \text{transport activity of TCE}_n}$$

**Excluding emissions caused by infrastructure construction or dismantling** (of hubs & facilities, roads, pipelines, vehicles …)

# UNECE IWG A-LCA

## CLEPA INPUT: TRANSPORT EMISSIONS

- Apply terms and explanations of selected existing standard(s) for transport carbon footprint
- Define ‚Well to Wheel' / ‚Well to Wake' for transport carbon footprint
- Exclude emissions caused by infrastructure construction or dismantling of hubs & facilities, roads, pipelines, vehicles …

- Define most relevant transport modes for automotive goods logistics
  - air, rail, road, sea, inland waterways included
  - include hub operations in automotive goods logistics

- Data quality rules to be defined for each level acc. levelling concept UN A-LCA
  - → Secondary data for ‚planning' and technology comparisons **levels 1 & 2**
  - → Use of primary data preferred for **level 3** (air freight), supplement with secondary data from existing logistics carbon footprint data providers for closing data gaps in transport chain
  - → Use of primary data required for **level 4**

→ TO BE DISCUSSED IN OVERARCHING LEADING TEAM GROUP (relevance for other Sub-Groups of UN IWG A-LCA)


CLEPA
European Association of Automotive Suppliers
Thank you