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Session will be recorded!
C4L x gryn Webinar
05/10/2023
ISO 14083:
Navigating the New Standard
ISO 14083:
Greenhouse gases -
Quantification and reporting of greenhouse gas emissions arising from transport chain operations
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Welcome!

ISO 14083: Quantification and reporting of GHG emissions from transport chains

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AGENDA

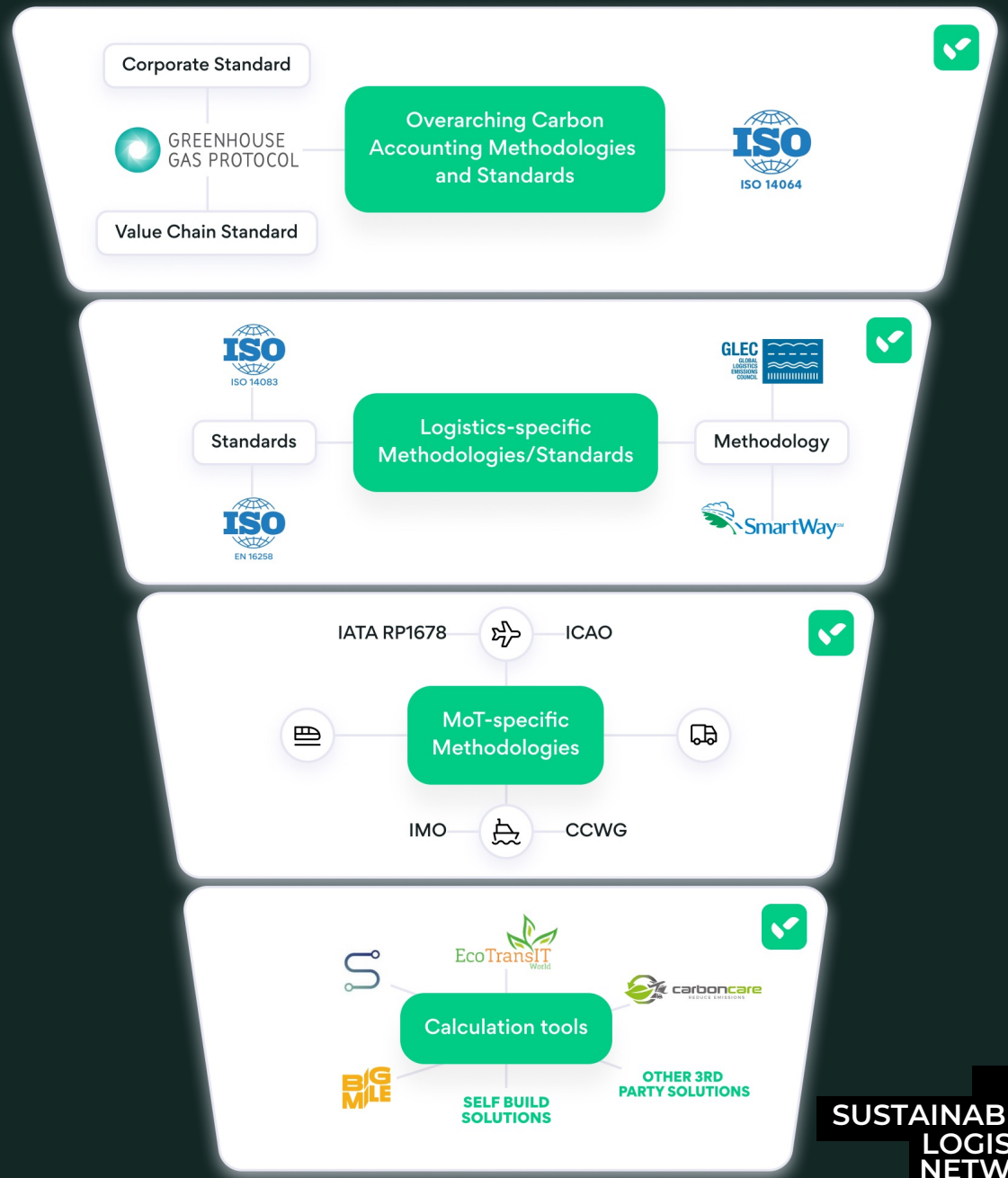
- Intro & Welcome
- Why ISO 14083
- Content of ISO 14083 in a nutshell
  - Structure & major content
  - Quantification actions
  - Reporting requirements
  - Major changes (ISO 14083 vs. EN 16258)
- Q&A

Why ISO 14083

Past (current) situation

- Different standards & guidelines
  - Overarching GHG accounting standards vs. sector guidelines
  - Transport: Multi-modal vs. mode of transport specific
  - Different focus regions: Europe vs. US

- Multimodal guidelines, such as GLEC, are not accepted as official industry standards for some stakeholders



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THE SUSTAINABILITY LOGISTICS NETWORK

Why ISO 14083

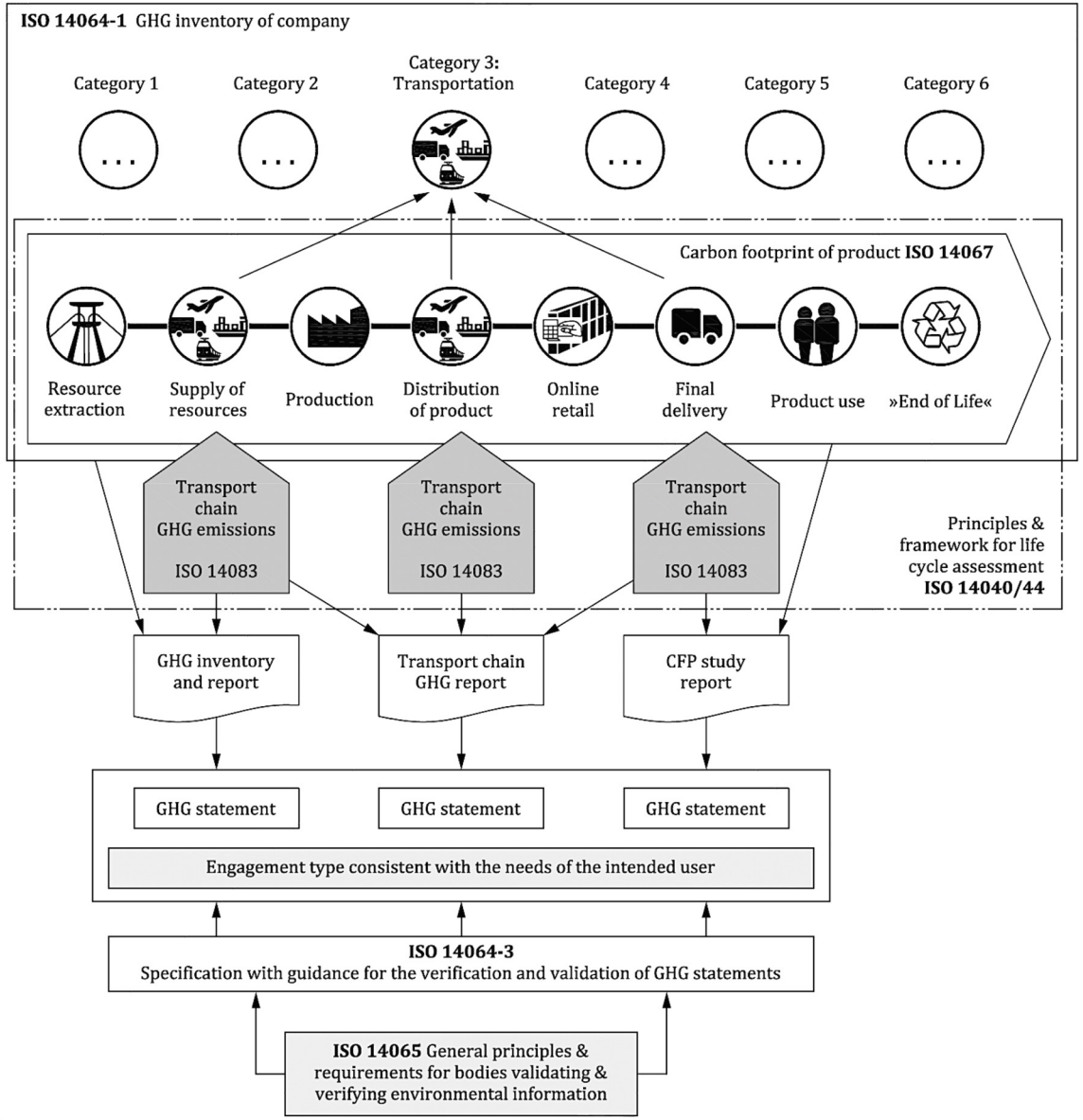
Objectives

- Global harmonization and standardization of emission calculation
  - Ensure industry, governments and investors use a single standard
  - Create visibility and comparability

- One standard for all (multi-modal, incl. hubs)
  - ISO 14083 contains GLEC principles

- Supplement to consisting norms
  - ISO 14064 (Corporate Carbon Footprint)
  - ISO 14067 (Product Carbon Footprint)
  - ISO 14040 series

→ ISO 14083 aims to facilitate auditability and comparability of GHG emissions



Source: ISO 14083

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THE SUSTAINABILITY LOGISTICS NETWORK

ISO 14083 in a nutshell: GHG calculation & reporting

INTRODUCTION

- Terms & definitions
- General principles of GHG accounting
- Operations and processes included

PROCESSES

- Operational & energy provision (vehicle & **hub**)
- Loaded & empty trips, Start-up & idling
- Combustion & leakage of energy carriers
- **Leakage** of **refrigerants**
- Full lifecycle (fuel+electr.) incl. **infrastructure**

OPERATIONS

For passenger & freight

- Air
- Inland waterway
- Rail
- Road
- Sea
- **Cable car**
- **Pipelines**
- **Hubs (DC, ports, terminals, warehouses)**

QUANTIFICATION ACTIONS

- Calculation of transport & hub activity
- Definition of TC, TCE, TO/HO and TOC/HOC
- Calculation of GHG emissions
- Allocation methods

REPORTING

- Reporting at organizational and transport service level
- Reporting template for freight transport emissions
- Template for transparent reporting of modelled & default data

ANNEX

- Specifications and examples
- Mode specific information & recommendations
- GHG emission factors & sources
- Guidance: emission modelling

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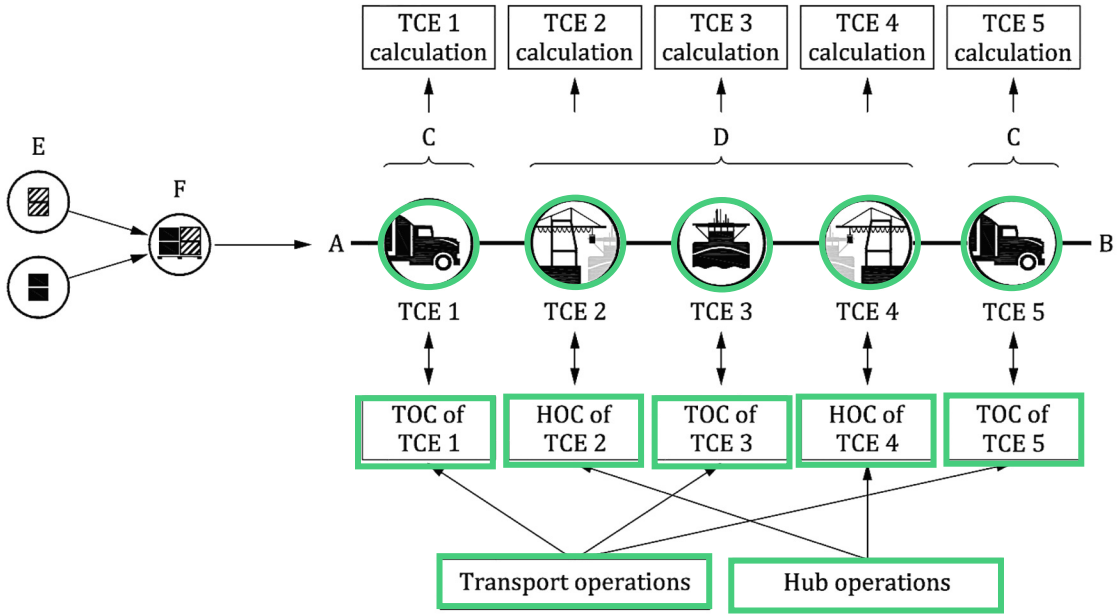
Quantification actions (1-3/6)



TC: Transport chain (Origin → Destination)
TCE: Transport chain element (TCE 1 – TCE 5)
TO: Transport Operation
TOC: Transport Operation Category: Group of transport operations that share similar characteristics in a defined period (1 y.)
Identification of TOC contributes to avoiding the need for calculating emission intensities for each individual transport.

Source: ISO 14083

1. Each transport chain shall be broken down into TCEs

2. Each TCE shall be related to a transport or hub operation

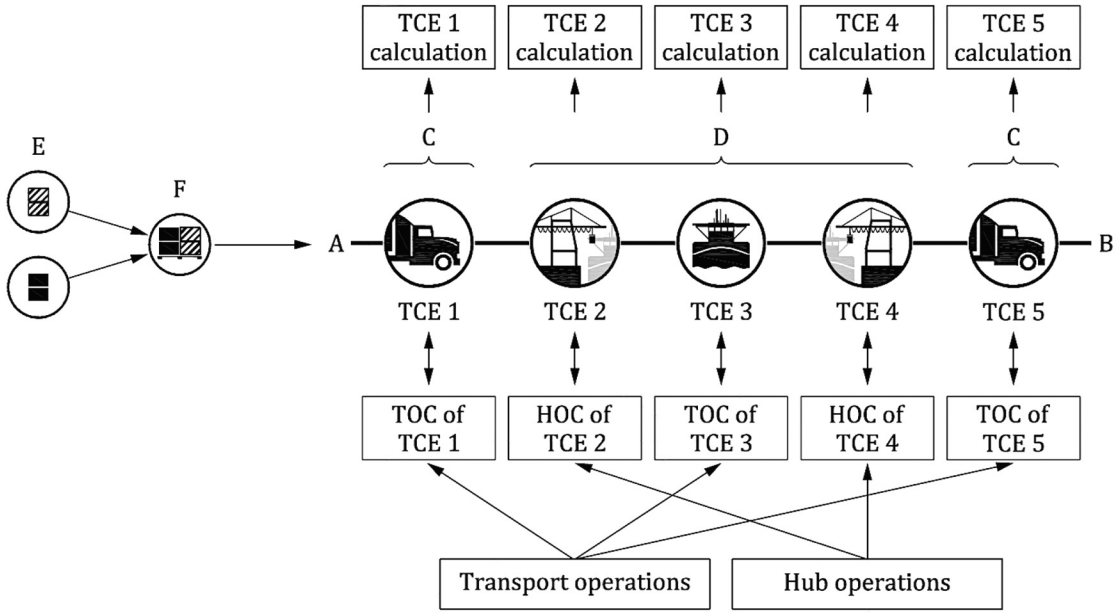
3. Each transport or hub operation shall be related to a TOC or HOC

Categorization of transport operations into TOCs

- Based on factors that affect the scale and composition of the TOC
  - Number and type of vehicles
  - Nature and consistency of the vehicle operations
  - Temperature control
  - Nature of freight carried

- TOC shall be identified as part of one of the following types
  - Freight only
  - passenger+freight
  - Freight only with multi-temperature vehicles etc.

Quantification actions (3/6)



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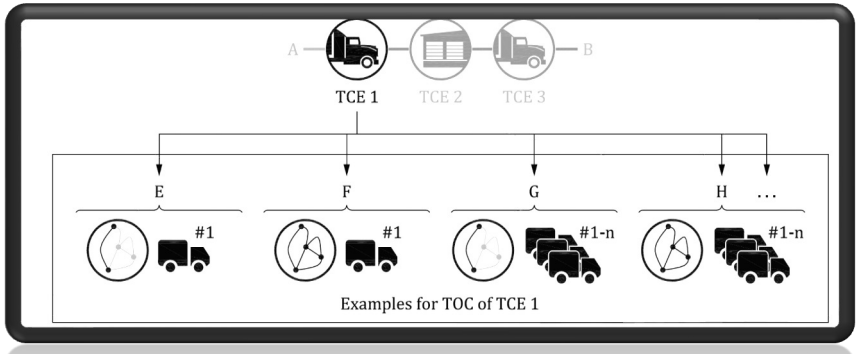
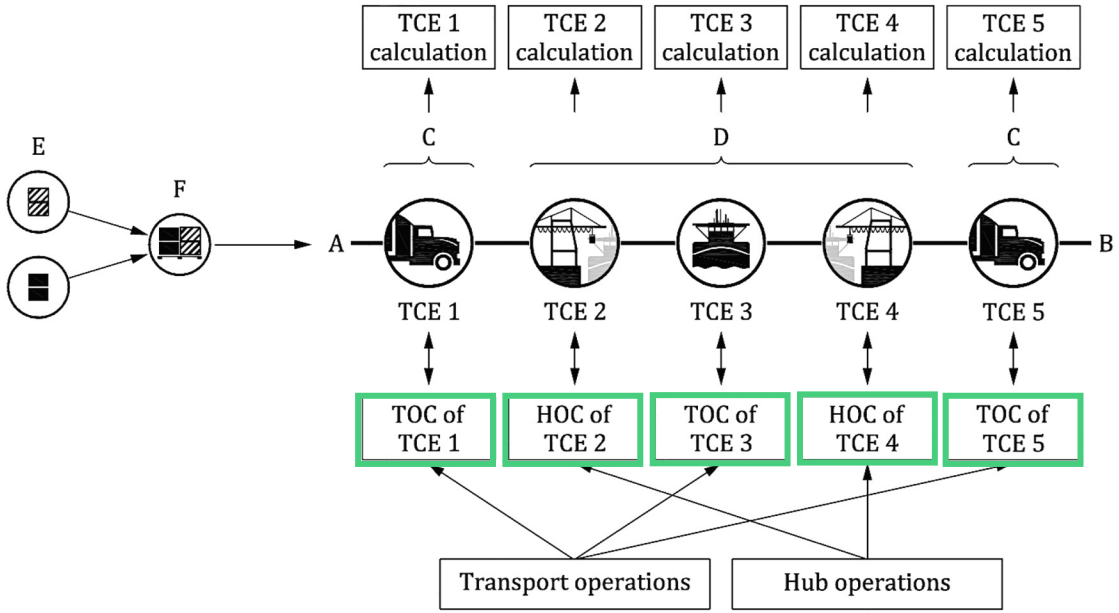
Levels of TOC granularity

- TOC of a single vehicle / specific vehicle type / specified group of vehicles
  - on a single journey or specific schedule
  - in multiple schedules / trade lanes



Quantification actions (4/6)



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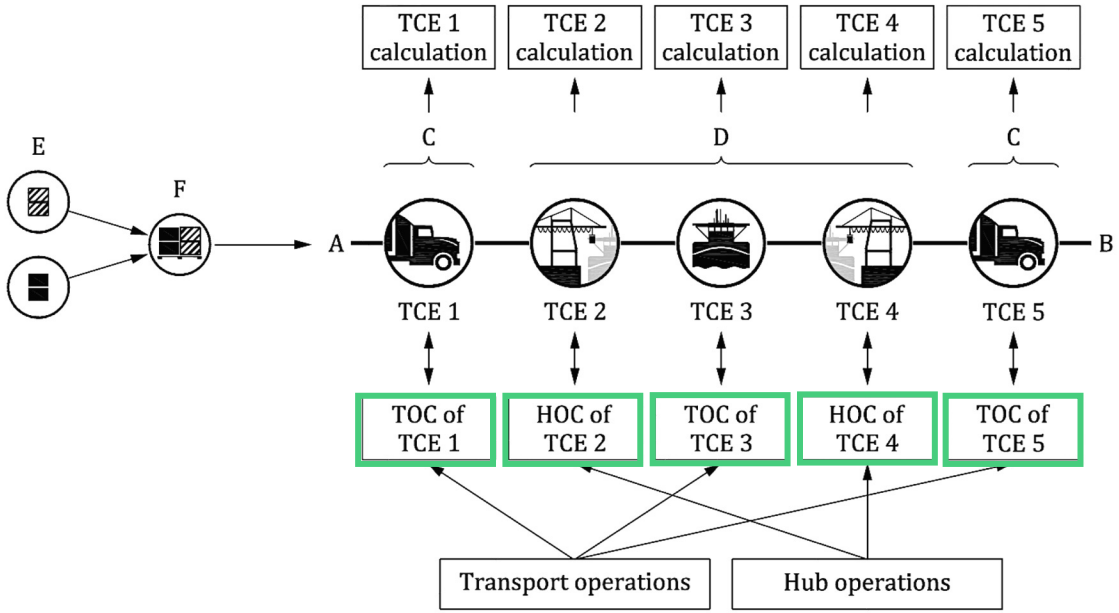
4. A GHG intensity shall be established or selected for each TOC or HOC

Options for establishing TOC emission intensity

1) Calculation with primary data (transport operators)
2) Calculation with a model
3) Selection of a value from a database of default values by considering TOC characteristics
4) Collection of a value from a contracted operator that has used option 1) or 2)

Quantification actions (4/6)



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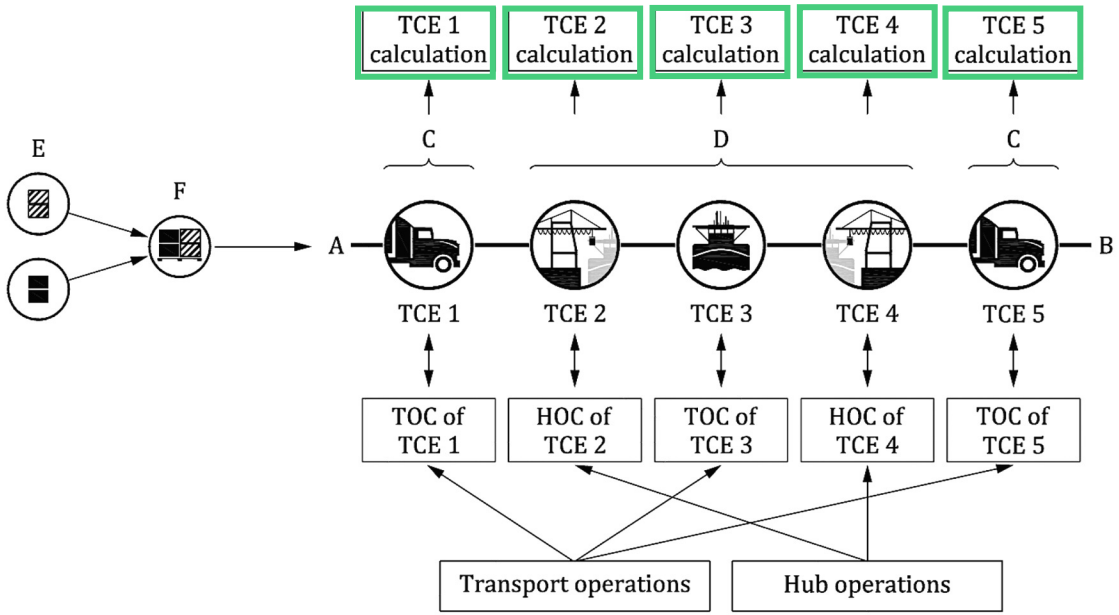
Establishing TOC emission intensity (primary data)

- For each TOC:
  - Collect GHG activity data from all GHG sources (fuel consumed, refrigerant leakage, etc.) and convert them to GHG emissions
  - Add these emissions from all sources to obtain emissions for TOC/HOC
  - Calculate corresponding transport activity (tkm) for TOC; use SFD or GCD if possible
  - Calculate GHG emission intensity (gCO2e/tkm)

Quantification actions (5/6)



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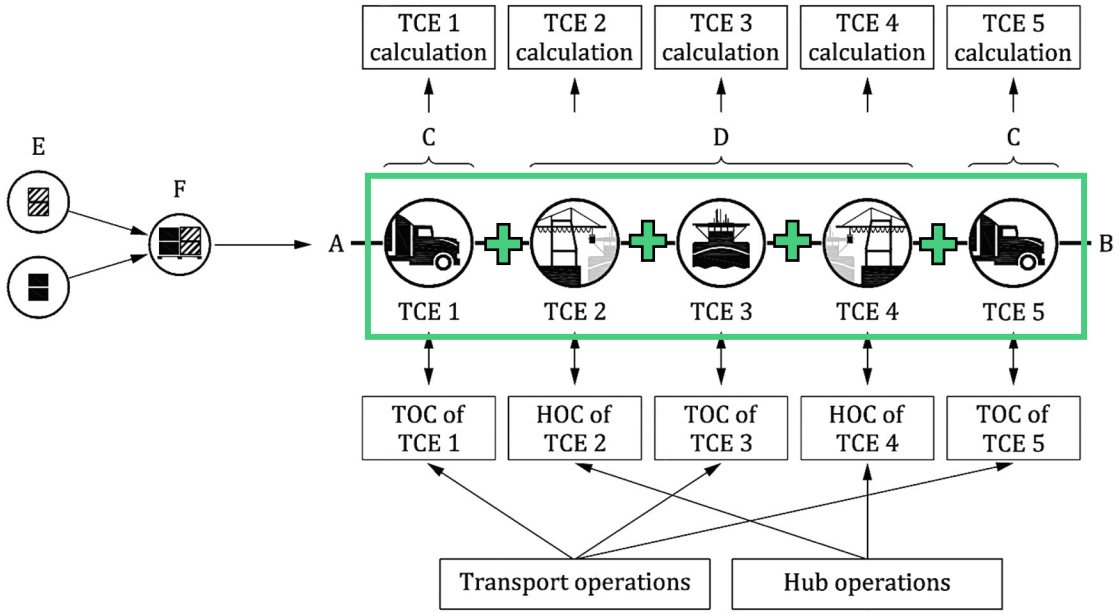
4. A GHG intensity shall be established or selected for each TOC or HOC

5. Calculation of GHG emissions of each TCE based on TOC emission intensity and the transport activity of this TCE

- Choose TOC emission intensity corresponding to operation
- Calculate transport / hub activity of TCE; use SFD or GCD
- Calculate GHG emissions = Emission intensity * transport activity (* DAF) (DAF in case TOC distance ≠ TCE distance)

Quantification actions (6/6)



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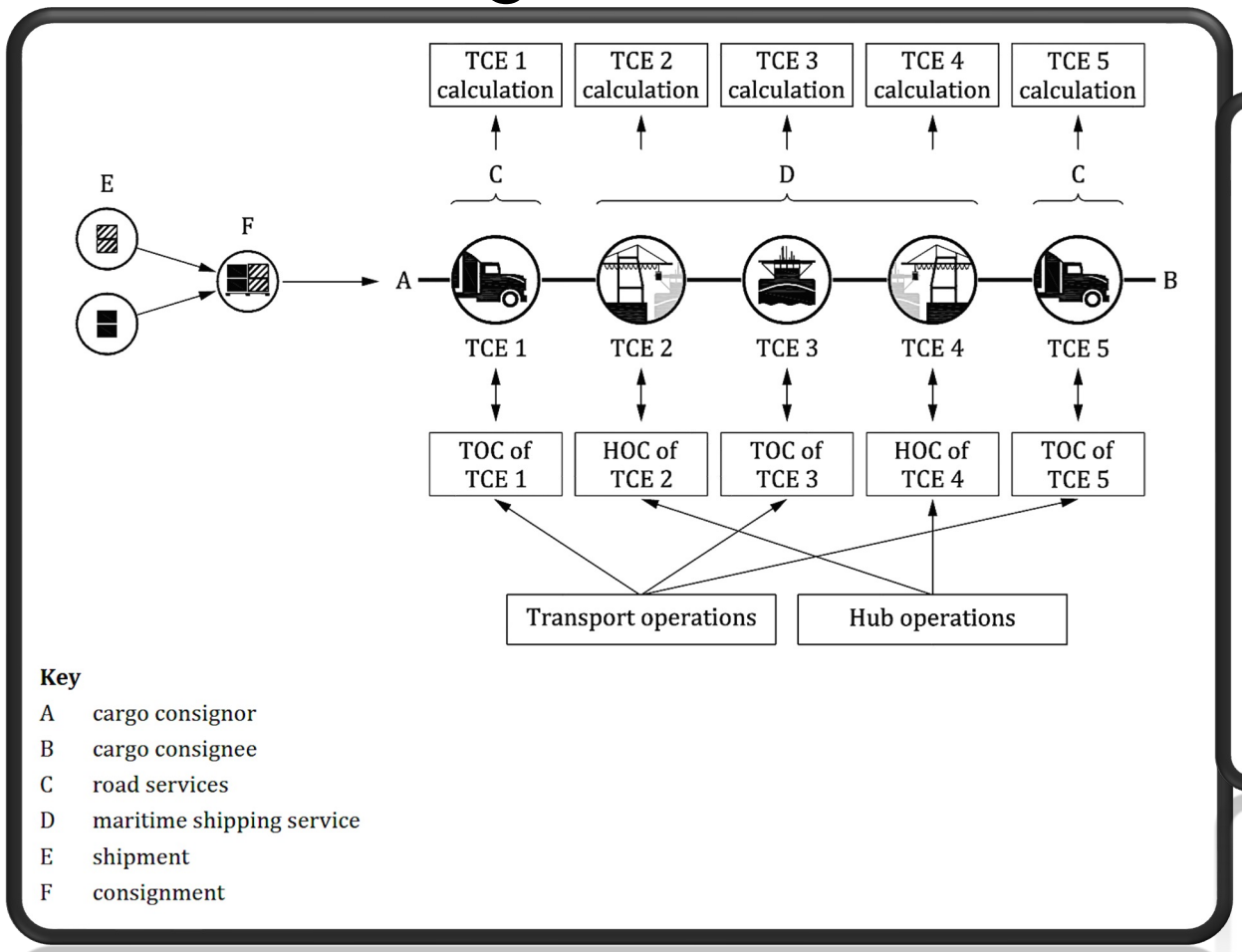
5. Calculation of GHG emissions of each TCE based on TOC emission intensity and the transport activity of this TCE

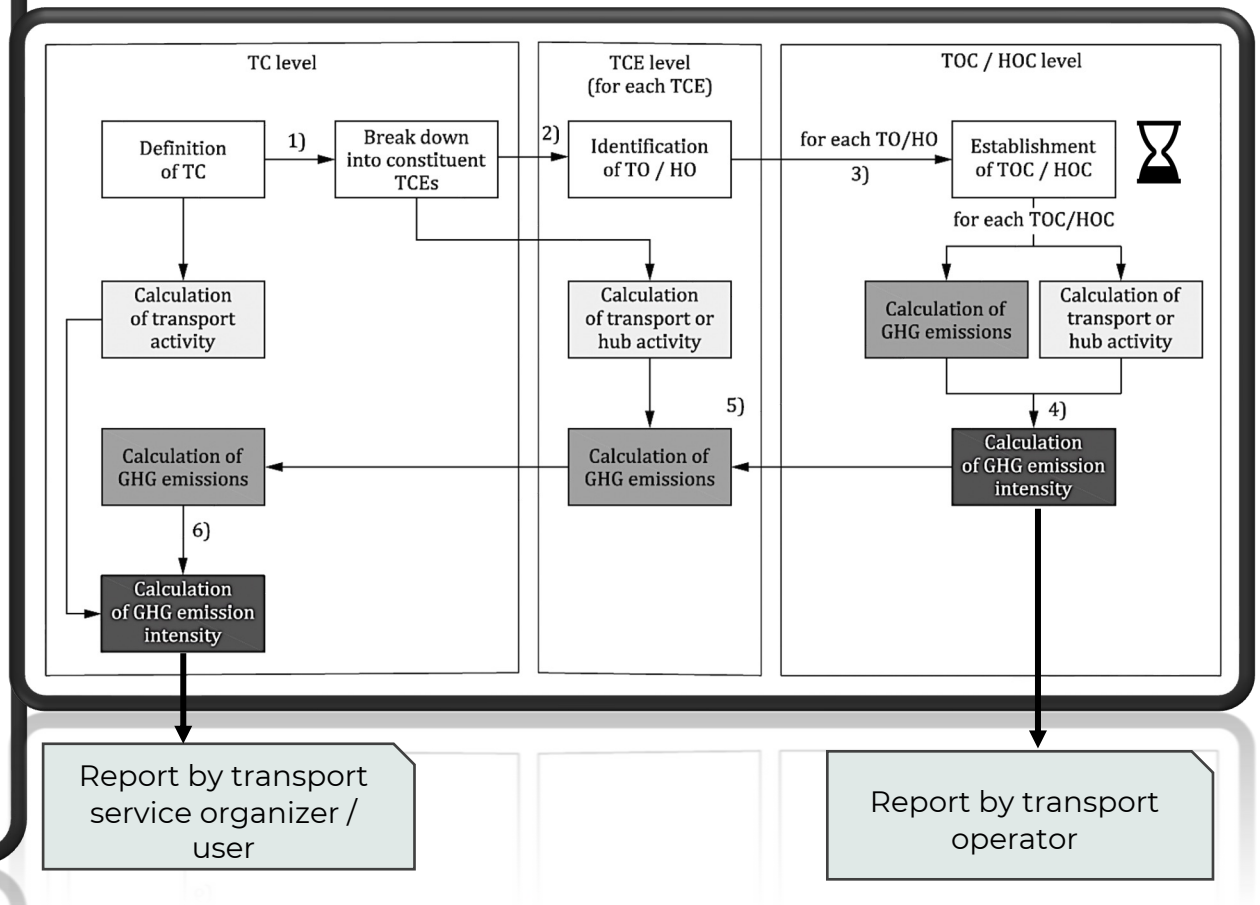
6. Calculation of GHG emissions of the transport chain (sum of TCE emissions)

- Sum of transport activity of all TCEs of TC
- Sum of GHG emissions of all TCEs of TC

› TC Emission Intensity

Quantification actions: Summary





Source: ISO 14083

Reporting

- **Reporting level:**
  - **Organizational** (all or part of transport chains operated and/or purchased by organization)
  - **Transport or hub service** (report service provider → service user)

Reporting requirements	Organizational level	Transport service level
Identification of transport chains/services	Report on all or part of transport chains operated by an organization	Identification of TCE(s) or transport chain(s) covered by the report
Reference to ISO 14083	Required	Required
GHG emissions	Required	Required
GHG emission intensity	Required, stating the type of distance used	Required, stating the type of distance used
GHG emissions for each mode of transport	Required	Required
Total GHG emission intensity for each mode	Required, stating the type of distance used	Required, stating the type of distance used
Reference to the location of supporting info	Required	Required
Report frequency	▪ Min. annual basis ▪ Covering all operations performed or purchased	▪ Min. annual basis ▪ Covering all operations performed or purchased
Data Quality	Specification of data quality applied (P, M, D)	Specification of data quality applied (P, M, D)
Specification of any deviation to standard processes	Required, including explanation for deviation and resulting impacts	Required, including explanation for deviation and resulting impacts
Additional details (recommended)	▪ Disaggregation of GHG emissions by mode of transport and by hub location ▪ Disaggregation of total GHG emissions into operational GHG and energy provision GHG emissions ▪ Breakdown of GHG emissions by energy carrier	▪ Disaggregation of GHG emissions by mode of transport and by hub location ▪ Disaggregation of total GHG emissions into operational GHG and energy provision GHG emissions ▪ Breakdown of GHG emissions by energy carrier

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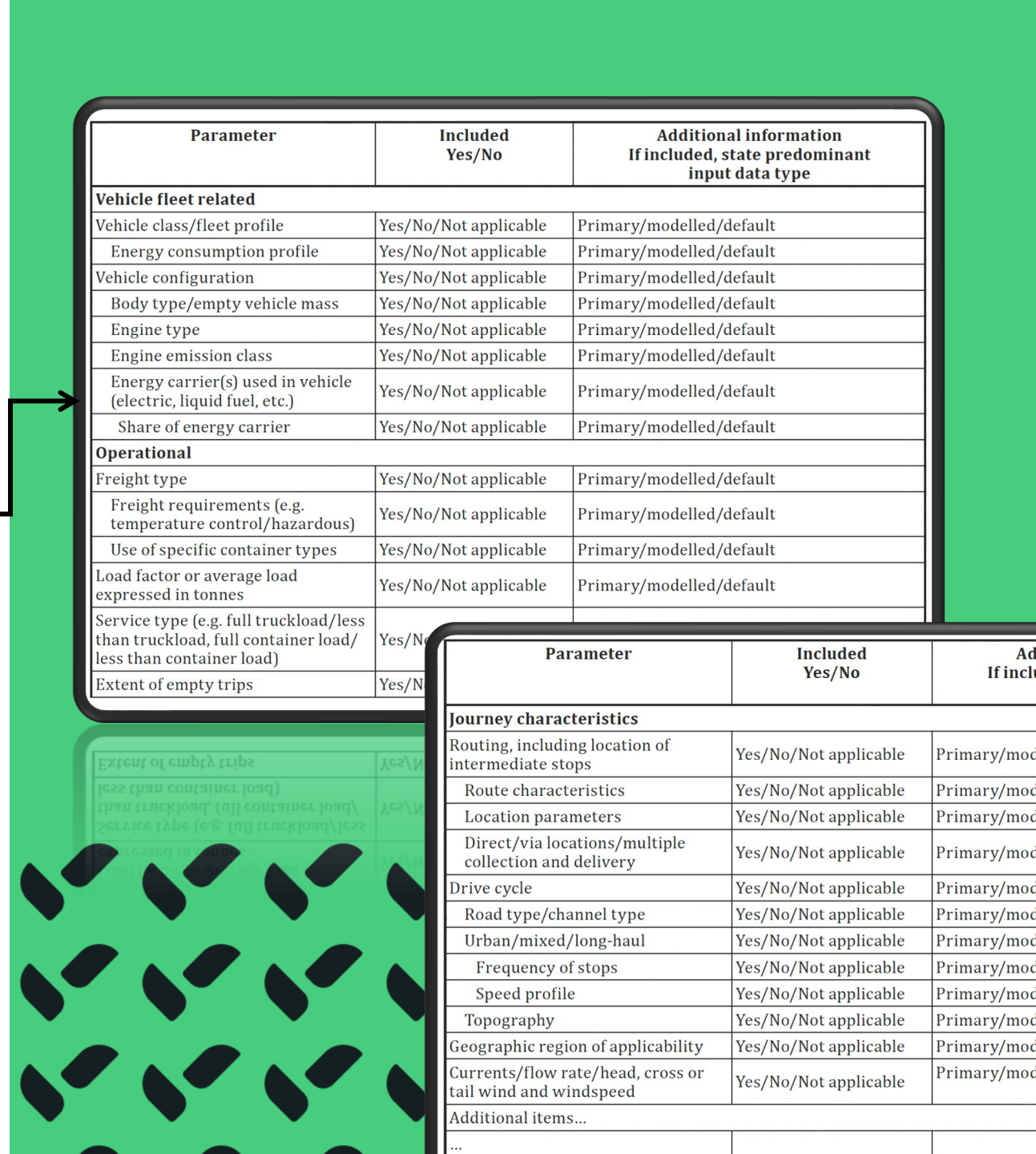
Reporting

Data types for the establishment of TOC emission intensities

1) Primary data
   - Especially for Scope 1 emissions
   - Conversion of GHG activity data (fuel consumption, refrigerant leakage,…) to GHG emissions and to calculate emission intensity
2) Modelled data (mix between D, M, P)
   - To model energy consumption and emissions by using available transport information
   - Accuracy of model depends on the level of detail
3) Default data (+ data source)

→ In practice: mixture of different data types
→ Data types need to be clearly stated (in % of reported emissions sourced from each data type or indication of main source)



Parameter	Included Yes/No	Additional information If included, state predominant input data type
Vehicle fleet related		
Vehicle class/fleet profile	Yes/No/Not applicable	Primary/modelled/default
Energy consumption profile	Yes/No/Not applicable	Primary/modelled/default
Vehicle configuration	Yes/No/Not applicable	Primary/modelled/default
Body type/empty vehicle mass	Yes/No/Not applicable	Primary/modelled/default
Engine type	Yes/No/Not applicable	Primary/modelled/default
Engine emission class	Yes/No/Not applicable	Primary/modelled/default
Energy carrier(s) used in vehicle (electric, liquid fuel, etc.)	Yes/No/Not applicable	Primary/modelled/default
Share of energy carrier	Yes/No/Not applicable	Primary/modelled/default
Operational		
Freight type	Yes/No/Not applicable	Primary/modelled/default
Freight requirements (e.g. temperature control/hazardous)	Yes/No/Not applicable	Primary/modelled/default
Use of specific container types	Yes/No/Not applicable	Primary/modelled/default
Load factor or average load expressed in tonnes	Yes/No/Not applicable	Primary/modelled/default
Service type (e.g. full truckload/less than truckload, full container load/ less than container load)	Yes/N	
Extent of empty trips	Yes/N	

Parameter	Included Yes/No	Ad If incl
Journey characteristics		
Routing, including location of intermediate stops	Yes/No/Not applicable	Primary/mod
Route characteristics	Yes/No/Not applicable	Primary/mod
Location parameters	Yes/No/Not applicable	Primary/mod
Direct/via locations/multiple collection and delivery	Yes/No/Not applicable	Primary/mod
Drive cycle	Yes/No/Not applicable	Primary/mod
Road type/channel type	Yes/No/Not applicable	Primary/mod
Urban/mixed/long-haul	Yes/No/Not applicable	Primary/mod
Frequency of stops	Yes/No/Not applicable	Primary/mod
Speed profile	Yes/No/Not applicable	Primary/mod
Topography	Yes/No/Not applicable	Primary/mod
Geographic region of applicability	Yes/No/Not applicable	Primary/mod
Currents/flow rate/head, cross or tail wind and windspeed	Yes/No/Not applicable	Primary/mod
Additional items…		
…		

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Major changes (EN 16258 vs. ISO 14083)

Aspects		EN 16258	ISO 14083
Transport type	Freight & passenger	✓	✓
Transport mode	Air, IWW, Sea, Rail, Road	✓	✓
	Pipelines, Cable Car		✓
Hubs	Transshipment (terminals, DC, ports), warehousing		✓
Emission sources	Energy consumption of vehicles (WTT, TTW)	✓	✓
	Emissions from auxilary processes		✓
	Fuel spills		
	Empty trips		
	Energy consumption of logistic site proc		
	Refrigerants leakage (transport and logi		
	IT services		
	Repackaging		
Emissions	GHG emissions (CO2e)		
Energy provision (emission factors)	Production and Distribution	✓	✓
	Production & dismantling o		✓
Transport activity distance	Great Circle Distance (GCD), Shortest Feasible Distance (SFD), Distance Adjustment Factors (DAF) for TCE if Actual Distance was used for TOC		✓
Reporting	Reporting requirements		✓
	Reporting templates		✓

Mode	Transport Activity Distance	Default DAF
Air	GCD	(GCD + 95km)/GCD
IWW	SFD (or GCD)	Not applicable
Rail	SFD (or GCD)	Not given
Road	SFD (or GCD)	1,05 (SFD +5%)
Sea	SFD (or GCD)	1,15 (SFD +15%)

Emissions (TCE) = DAF * Emission Intensity (TOC) * Transport Activity

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ISO 14083 Compliance

Conclusion

- Changeover to ISO 14083 will require resources in the beginning
- Facilitation of comparability & auditability of emission calculations & results
- ISO becomes self-imposed standard
- Major enterprises will adhere to ISO as of 2024
- **Complex Project** - do not wait! Start now the process for ISO compliance!

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Time to share your questions and thoughts

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