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myclimate Position Paper on Transport and Logistics Issues

Calculating CO2e emissions in the transport sector

Background:

When it comes to assessing the carbon footprints of companies and products, transport is a significant factor. As with any life-cycle assessment, the choice of system boundaries has a considerable influence on the results.
Various approaches have been developed to calculate transport emissions in recent years, some of which have differed significantly in terms of system boundaries and, therefore, results. In myclimate's view, there are weaknesses inherent in widely used standards like the GLEC framework, DIN 16258 and ISO 14083 in particular when it comes to completeness in terms of environmental science.

The issue:

Comparability of results is not guaranteed when different system boundaries have been selected. With emission values increasingly being used as a criterion in awarding contracts (e.g. tenders), there is a risk that a provider with an ecologically equivalent (or even superior) vehicle fleet appears less environmentally friendly if it selects more comprehensive system boundaries for calculating emissions. Such a competitive disadvantage is patently unacceptable.

Objective of the document:

The objective of this document is, therefore, to compare the various calculation approaches to ensure clarity regarding their respective strengths and weaknesses.
As myclimate sees it, understanding the differences in calculations is a prerequisite for an informed discussion of suitable system boundaries and the comparability of results.

Content of the document:

- This document outlines the different approaches to calculating CO2e[1] emissions in the transport sector.
- It describes myclimate's transparent approach to sharing information with logistics clients on the different ways to select system boundaries.

[1] The indicator used is the global warming potential over a period of 100 years according to (IPCC, 2021), expressed as CO_2 equivalents (CO_2e). The seven relevant greenhouse gases that contribute to climate change are carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons, perfluorocarbons, sulphur hexafluoride (SF_6) and nitrogen trifluoride. The various greenhouse gases contribute to global warming in different ways, which is why they are calculated as CO_2 equivalents (CO_2e).

Background:

- Large companies usually engage logistics providers to handle and ensure the transport of their goods. As transport activities come under the responsibility of the client company, the greenhouse gas emissions generated must be calculated as part of its carbon footprint (in accordance with the GHG Protocol and other international standards).

- The pressure to report and determine a greenhouse gas footprint is constantly increasing, driven by standards, norms and guidelines.

- In recent years, standards like the GLEC framework have emerged that describe how the CO_2e emissions of transport fleets should be calculated.

- Often, these calculation principles are not compatible with the analysis methodology used in life-cycle assessment (ISO 14044/ISO 14083).

- Greenhouse gas emissions calculated using the life-cycle assessment method are, on average, approx. 18–25% higher than those calculated using the GLEC framework.

Calculation methods:

- In recent years, it has become apparent that logistics companies that are required to report their greenhouse gas emissions often use (or stipulate the use of) the GLEC framework or the DIN 16258/ISO 14803 standards to calculate their emissions.
    - GLEC (Global Logistics Emissions Council): considers all WTW (well-to-wheel) emissions, BUT NOT emissions generated during production, maintenance/servicing and disposal of vehicles and their infrastructure (see ANNEX 1).
    - DIN Standard 16258: Same system boundaries as GLEC (see ANNEX 2).
    - ISO 14083: replaces DIN Standard 16258, with the same system boundaries as GLEC (see ANNEX 3)

- myclimate adheres to the system boundaries of ISO standards for life-cycle assessments (ISO 14040/ISO 14044), which apply a life-cycle approach: In other words, all emissions throughout the entire life cycle of a transport activity are considered, including, proportionally, the manufacturing and disposal of the transport vehicle, maintenance and road infrastructure (see, for example, the ecoinvent database or Mobitool calculation methods). Simply put, this approach strictly follows the question of which emissions are generated in order to accomplish a specific transport activity.

myclimate approach for transport companies:

- When speaking to clients, myclimate is careful always to highlight the various current approaches to calculating greenhouse gas emissions from transport and to clearly outline the differences between them.

- myclimate can perform calculations according to GLEC, DIN 16258 or ISO 14083. The standard used for the calculation is explicitly stated. In practice, this means that:
    - the system boundaries or calculation bases underlying the results are clearly and explicitly declared on the CO2e footprint calculated by myclimate, as well as on the transport/logistics provider's website and any other communication channels it uses
    - as the myclimate "Engaged for Impact" label indicates that emissions have been comprehensively calculated and a corresponding contribution to climate protection has been made, it can only be issued to companies that consider the entire life cycle as a system boundary (including vehicle and infrastructure components).

- If a customer only has GLEC/DIN 16258/ISO 14083 calculations but wishes to make a voluntary climate contribution with myclimate equivalent to the transport emissions of its fleet/business, a supplement of 18–25 per cent is added to these values, depending on the type of transport.

- Calculating the greenhouse gas emissions of goods transported by plane requires a special type of analysis. For air transport, the scientific community believes the RFI (Radiative Forcing Index) should be used, which takes account of the climate warming caused by non-CO_2 emissions[2] in the upper atmosphere. This RFI is not included in calculations performed according to GLEC, DIN 16258 or ISO 14083 (see ANNEXES 1 and 2), but is always applied by myclimate.

We would be happy to advise you on your specific transport issues and the most appropriate approach for calculating your emissions.

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[2] Based on current information, contrails and the resulting formation of high, thin (cirrus) clouds have the most impact on the climate of non-CO_2 emissions – considerably greater than the effect of CO_2. [Neu U (2021) Die Auswirkungen der Flugverkehrsemissionen auf das Klima. (The climate effects of aviation emissions.) Swiss Academies Communications 16(3).]

ANNEX 1:

GLEC framework: what's missing for a complete CO_2e footprint from a life cycle perspective: https://www.feport.eu/images/downloads/glec-framework-20.pdf, p. 19

Exclusions from the GLEC Framework

The following items may contribute additional climate impacts for logistics activities but are not addressed by the GLEC Framework at this time for reasons of data availability, practicality or other issues. These exclusions may be revised in future updates to the Framework as new information becomes available.

- Direct emissions of GHGs resulting from fuel spills and leakages (unless already embedded within fuel emission factors).
- Additional climate impacts from the combustion of aviation fuels in high atmosphere such as radiative forcing, contrails, cirrus, etc.
- Processes at the administrative level of organizations, such as staff commuting, business trips, computer systems, and the operation of office buildings unrelated to the moving, storage and handling of freight within a logistic site.
- Emissions from construction, maintenance and scrappage of vehicles or transport infrastructure.
- The production and maintenance of vehicles.
- The construction and maintenance of transport infrastructure.

ANNEX 2:

DIN EN 16258 standard: Methodology for calculation and declaration of energy consumption and GHG emissions of transport services (freight and passengers);
English version EN 16258:2012,
English translation of DIN EN 16258:2013-03 (→ Note: this is a paid-for publication)

4.3 Processes not included

The assessment of energy consumption and GHG emissions of a transport service shall not include, in particular:

— direct emissions of GHG resulting from leakage (of refrigerant gas or natural gas for example) at the vehicle level;

— additional impacts of combustion of aviation fuel in high atmosphere, like contrails, cirrus, etc.;

— processes consisting of short-term assistance to the vehicle for security or movement reasons, with other devices like tugboats for towing vessels in harbours, aircraft tractors for planes in airports, etc;

— processes implemented by external handling or transhipment devices (for freight), or by external movement devices (for passengers, like elevators and moving walkways), for the movement or transhipments of freight or the movement of passengers. In express delivery services and other transport services organised in networks, handling operations that take place inside platforms, and consisting of loading and unloading of parcels or pallets, belong to this category of processes;

— processes at the administrative (overhead) level of the organisations involved in the transport services. These processes can be operation of buildings, staff commuting and business trips, computer systems, etc;

— processes for the construction, maintenance, and scrapping of vehicles;

— processes of construction, service, maintenance, and dismantling of transport infrastructures used by vehicles;

— non operational energy processes, like the production or construction of extraction equipments, of transport and distribution systems, of refinery systems, of enrichment systems, of power production plants, etc. so as their reuse, recycle and scrap.

ANNEX 3:

ISO 14083: Greenhouse gases – Quantification and reporting of greenhouse gas emissions arising from transport chain operations (first edition 2023-03)

5.2.4 Processes not included

The quantification of GHG emissions of a transport chain shall not include, in particular:

— production and supply processes of refrigerants;

— waste produced;

— processes at the administrative (overhead) level of the organizations involved in the transport services;

— processes for the construction (e.g. embedded GHG emissions associated with vehicle production), maintenance, and scrapping of vehicles or transhipment and (de)boarding equipment;

— processes of construction, service, maintenance, and dismantling of transport infrastructures used by vehicles (e.g. roads, inland waterways, rail infrastructure) or transhipment and (de)boarding infrastructure;

— businesses co-located within a hub such as retail and hospitality services, whose functions are severable and incidental to the transportation operation of the hub.

5.2.7 Carbon offsetting and GHG emissions trading

Outcomes from carbon offsetting actions or GHG emissions trading (e.g. under the European Union Emissions Trading System (EU ETS)[31]) shall not be taken into account for quantification and reporting of GHG emissions from transport operations.