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International harmonized method(s) for a coherent quantification of CO_2e emissions of freight transport

Méthode(s) internationale(s) harmonisée(s) pour une quantification cohérente des émissions de CO_2e par le transport de fret

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2. www.iso.org/directives

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For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT), see the following URL: Foreword - Supplementary information

The committee responsible for this document is ISO/TMBG, *Technical Management Board Groups*.

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Introduction

Transport and logistics are based by 95 % on fossil fuels and currently contribute to an estimated 20 to 25 % of overall global CO_2 emissions (ITF International Transport Forum (2012): Greenhouse Gas Emissions: Country Data 2010. http://www.internationaltransportforum.org/Pub/pdf/10GHGcountry.pdf, Rodrigue J-P., Comtois C, Slack B (2009): The Geography of Transport Systems. New York: Routledge). Therefore, governments and industry are interested in improved efficiency of transportation and transport chains. Transport chains as considered within this IWA encompass the handling processes and transportation of goods from the producing entity to the next level(s). These transport chains connect industry and commercial processes. In order to identify best practice and to improve the efficiency of transport chains, an accepted and standardised method for calculating emissions values is needed together with a specification of data requirements. This IWA develops a framework and maps out requirements toward a global CO_2e emission calculation standard, based on existing standards.

As thorough analysis of existing standards and calculation methods has shown, there are several gaps within the currently existing methods, which leave space for interpretation in regards to calculation. A comparability of calculated results is therefore not necessarily given (see COFRET EU-project deliverables D 2.4 Methodologies for emission calculations[12], D 3.1 Assessment of typology of existing CO_2 calculation tools and methodologies[13], D 3.2 Methodology for integration of CO_2 emission calculation-tools[14] and D 3.3 Suggestions and recommendations towards global harmonization of carbon footprint calculation principles and comparable reporting[15]). Identifying these gaps and addressing them in a next standardization process step is important though, in order to ensure that ambiguities are eliminated and to achieve a compatible level of accuracy across all modes of transport as well as across all elements of the transport chain.

As analysis has shown, optimization of emissions for shipments and for networks of individual transport providers requires different approaches. All other things being equal, for isolated cargo direct routings are usually those with the lowest emissions. For transport service providers avoiding empty transportation space will often lead to optimization. Furthermore the characteristics of the various transportation modes need to be taken into consideration as well as those of handling processes, logistics hubs and transhipment centres. The calculation approach suggested in this document therefore distinguishes three levels of calculation: operation specific level, transport company network level and cargo level, reflecting the differing perspectives of carriers, logistics service providers and shippers. Transport chains are almost always very complex, often encompassing various modes of transport and handling processes or storage etc. In order to enable the calculation of emissions, this IWA suggests the approach of calculation of emissions of separate transport chain elements. Another emphasis within this IWA is given to the aspect of data quality. As tracked fuel consumption is not always available, the question of default data needs to be addressed.

Terms like logistics chain and supply chain are often used within the transport sector. For a better orientation Figure 1, originated from the COFRET project (see [11]), provides a generic example showing logistics operations as elements of the transport chain and transport chain within a supply chain. Each logistics operation forms a transport chain element (TCE), the sum of all TCEs builds the transport chain.

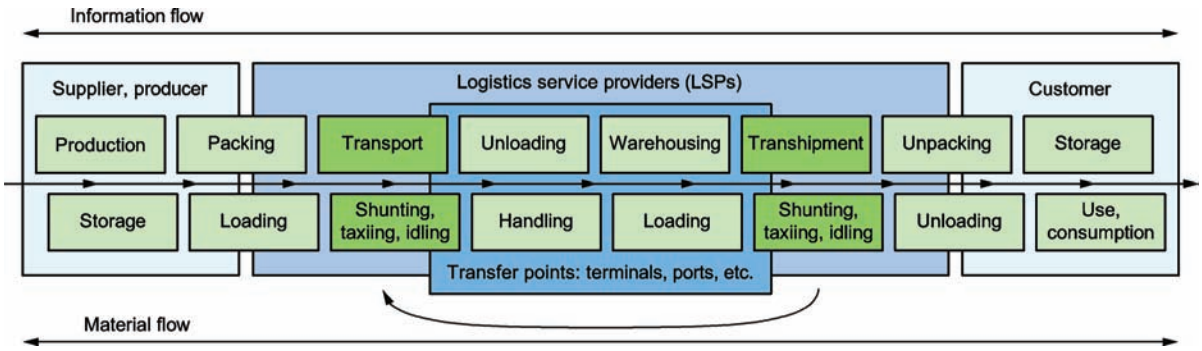

Figure 1 — Logistics operations as elements of the transport chain

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International Workshop Agreement IWA 16 was launched at a workshop held in Berlin, Germany, in July 2014, and approved at workshops held in Berlin, Germany, in September 2014 and in November 2014. All workshops were hosted by DIN, the German Institute for Standardization.

This IWA was developed in the following format:

1st and kick-off meeting on 2014-07-08: Adoption of the scope and objectives of the IWA, agreement on a two-tiered approach: (1) identification of recommended existing standards suitable as basis and gaps, (2) identification of suitable approaches for closure of identified gaps;

2nd meeting from 2014-09-01 to 2014-09-02: Discussion of gaps per mode and in general, summarizing and agreement on gaps;

3rd meeting from 2014-11-13 to 2014-11-14: Discussion of suggested approaches for closing gaps and summarizing recommendations on way forward.

Between the 2nd and 3rd meeting further consultation in the format of telephone conferences took place between the workshop participants in order to complete the mode specific gap analysis.

During meetings, findings were discussed and the content of the following document was agreed.

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International harmonized method(s) for a coherent quantification of CO_2e emissions of freight transport

1 Scope

This International Workshop Agreement (IWA) defines the framework for methods for coherent quantification of CO_2e emissions of freight transport (total and intensity) on the following three levels:

1) Level of operation of transport chain element (TCE).

2) Level of network including company level.

3) Level of cargo.

It provides a gap analysis identifying starting points and recommending further specification and possible alignment on mode specific and intermodal levels, including transhipment centres and warehouses. Consideration needs to be given to the practicality of the methods and the intended use of the outputs to the potential user groups, particularly providers of freight transport and logistic services as well as their customers.

2 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

2.1
vehicle operation system
VOS
set of vehicle operations

[SOURCE: EN 16258:2012, 2.2.22]

2.2
vehicle operation
deployment of a vehicle to fully or partially provide a transport service for one or more transport service users

[SOURCE: EN 16258:2012, 2.2.21]

2.3
vehicle
any means of transport

Note 1 to entry: Within this standard, this definition includes vessels (watercraft and aircraft like ships, boats and planes), for reasons of simplification only.

[SOURCE: EN 16258:2012, 2.1.19]

2.4
transport network
system of connections covered by transport organizers including connections covered by subsidiaries and subcontractors

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