SLOVENSKI STANDARD
oSIST prEN 17837:2022

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Poštne storitve - Okoljski odtis pri dostavi paketov - Metode za izračun in navedbo podatkov o emisijah toplogrednih plinov in onesnaževal zraka pri storitvah logistične dostave paketov

Postal Services - Parcel Delivery Environmental Footprint - Methodology for calculation and declaration of GHG emissions and air pollutants of parcel logistics delivery services

Ökologischer Fußabdruck der Paketzustellung: Methodik zur Berechnung und Deklaration von THG-Emissionen und Luftschadstoffen von Paketlogistik-Lieferdiensten

Services postaux - Empreinte environnementale de la livraison de colis - Méthodologie pour le calcul et la déclaration des émissions de GES et polluants atmosphériques des services logistiques de livraison de colis

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03.240	Poštne storitve	Postal services
13.020.60	Življenjski ciklusi izdelkov	Product life-cycles

oSIST prEN 17837:2022   **en,fr,de**

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PREVIEW
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EUROPEAN STANDARD

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Postal Services - Parcel Delivery Environmental Footprint - Methodology for calculation and declaration of GHG emissions and air pollutants of parcel logistics delivery services

Services postaux - Empreinte environnementale de la livraison de colis - Méthodologie pour le calcul et la déclaration des émissions de GES et polluants atmosphériques des services logistiques de livraison de colis

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This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 331.

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European foreword

This document (prEN 17837:2022) has been prepared by Technical Committee CEN/TC 331 "Postal services", the secretariat of which is held by AFNOR.

This document is currently submitted to the CEN Enquiry.

Introduction

This document provides principles and rules for the quantification, allocation and reporting of environmental impacts from parcel logistics delivery services.

The consumer product and retail market continue to evolve as digitalization and consumer habits push for e-commerce. Traditional retail business models are expanding their online offerings and introducing new innovative digital based models, which create more consumer desire. As the retail sector is continuously growing and e-commerce is increasing, logistics services are critical. Traditional logistics value chains and related business models are disrupted by trends in digitalisation and new fulfilment technologies. At the same time, general considerations to sustainability are growing in importance also due to climate change, the trend towards global supply chains and increased stakeholder consciousness. Global supply chains, underlying IT and digital applications, marketing and branding activities, customer relationship models and related logistics services cause a degree of environmental impacts. Nowadays, measuring these impacts - along the entire value chain from manufacturing to end of life treatment of retail goods - and implementing meaningful mitigation measures becomes key in combating climate change.

Expectations in strong growth in e-commerce over the coming years will give rise to parcel logistics delivery activities and hence increased environmental impacts due to the distribution of retail goods. To understand those impacts, the entirety of activities in the parcel logistics and delivery service value chain should be looked at. Adoption of new fuel technologies, digital solutions, energy efficient operations, route optimization, supplier engagement and many other measures will need to be adapted to mitigate environmental impacts of the entire logistics value chain of parcel delivery. To choose the most effective mitigation strategies and to fully disclose the environmental impacts of parcel logistics and delivery services, solid monitoring methodologies, data sets and standard accounting and reporting approaches are essential.

This Parcel Delivery Environmental Footprint (PDEF) standard is hence aiming to describe a consistent and harmonized methodology for environmental footprinting across the supply chain of parcel logistics and delivery services. In the first instance, it will focus on the accounting of Greenhouse gas (GHG) and other air pollutant[1] emissions. But it opens up for the extension to additional impact indicators at a later stage. At present there are a variety of standards and methodologies for emissions accounting publicly available, but these are neither considering the entire supply chain nor focusing on parcel specific accounting.

The PDEF seeks to account for the emissions of the full logistics service supply chain for a delivery including all material transportation and operational activities. The standard allocates all emissions towards each specific parcel delivered. This is achieved through the description of a standard set of data points to be measured and a standard calculation and parcel specific allocation methodology.

The objective of this standard is to align with ISO 14083 in its current working draft format[2]. While the PDEF is built on the existing platform of the EN 16258 and the current working draft of ISO 14083[3] for GHGs, it provides an extended scope with its parcel specific nuanced approach, covering the entire parcel delivery value chain from collection round to final delivery. Further, the PDEF covers not just GHG emissions but also extends towards other air pollutants, based on the EMEP/EEA air pollutant emission inventory guidebook for air pollutants. Hereby it covers exhaust and non-exhaust related air pollutant emissions to cover health and biodiversity impacts more holistically. Finally, the PDEF has an extended scope by covering other indirect emissions than only for fuel, reflecting the current need to provide more transparency about direct and indirect environmental impacts along complex supply chains.

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[1] Carbon monoxide, nitrous oxides, particulate matters and sulfur oxides.

[2] The ISO/WD2 14083 Greenhouse gases — Quantification and reporting of greenhouse gas emissions arising from operations of transport chains, 30November 2020

[3] The EN 16258 provides the basis methodology for calculation and declaration of energy consumption and GHG emissions of transport services in the context of freight and passengers; the ISO 14083 is building further on EN 16258 with inclusion of transport and hub operations.

The PDEF is designed to be widely applicable across parcel logistics service providers and accessible to a diverse user group. Within this sector, it is recognized that parcel delivery service operations vary hugely, from multi-national organizations operating multiple transport modes to deliver parcel services across the globe, through to a small local operator. Consequently, the standard balances the desire for absolute precision and scientific rigor with a degree of pragmatism to achieve ease of use. Nonetheless, the requirements set out and guidance given are aligned with existing standards[4] and based on sound scientific methods.

Use of this standard will ensure that calculated emissions are fully accounted and allocated to a parcel. It enables disclosures of the parcel specific emissions to have greater consistency and comparability as a foundation for more transparency enabling more sustainable parcel delivery services in the future.

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[4] For example: EN 16258:2012, ISO 14064.

1 Scope

This document establishes a common methodology for the calculation and declaration of direct and indirect Greenhouse gas (GHG) as well as air pollutant emissions related to any parcel delivery service.

It only covers a part of the entire retail value chain usually consisting of creating the product, storing the inventory, distributing the goods and making the product available for consumers.

This document includes only the distribution of goods, but considers the entire value chain of the parcel transportation process flow, namely the collection and delivery rounds, the direct injection, the trunking and the operations due to processing and the physical handling of parcels. See Figure 1 below for a graphical illustration.

Key

C Collection Depot (Aggregation)

H Hub

T Transport

D Delivery Depot (Dis-aggregation/Distribution)
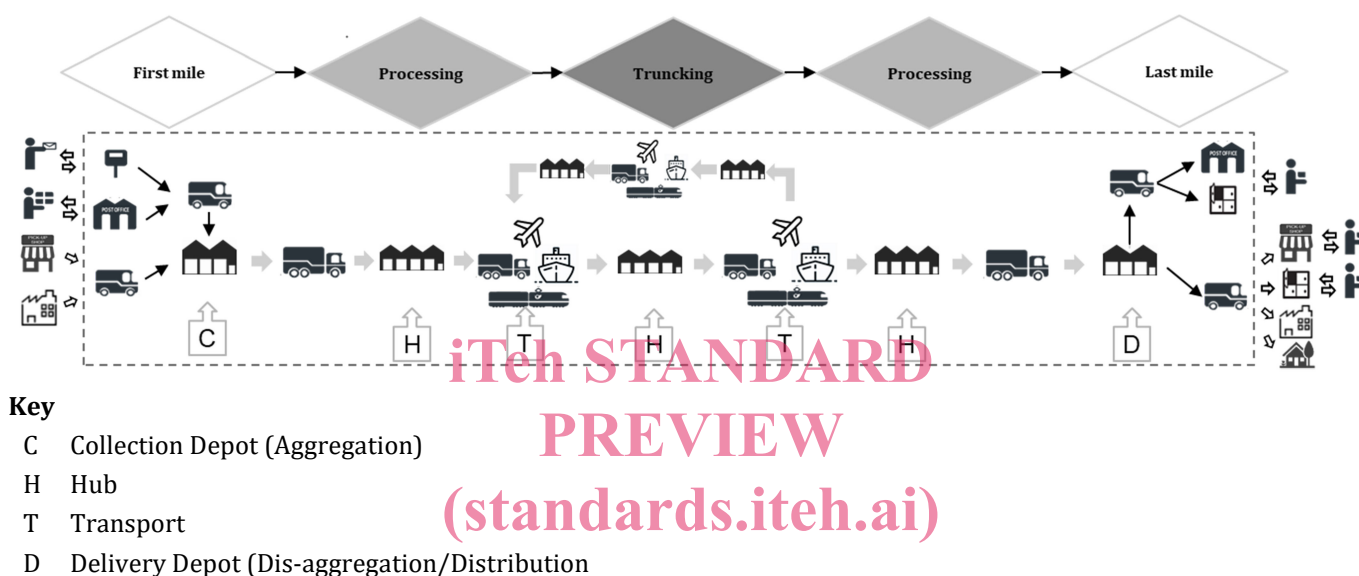
Figure 1 — Overview of parcel delivery operations

This document covers emissions associated with the up- and downstream transportation related activities as well as the operational activities for a parcel to be delivered. In more detail, it includes:

— the use of vehicles (for all transportation modes) during the delivery phase in terms of core trunking as well as first and last mile related transportation;

— all related direct and indirect emissions from the use of and processes in logistics sites, namely offices, sites and buildings where the virtual processing (data computing services), the administrative management and the physical handling operations of parcels are carried out;

— other operational activities needed to fulfil the parcel delivery service, e.g. required packaging materials (everything additional to the underlying parcel inherent packaging) provided by the parcel logistics service providers including e-commerce entity; and

— waste management from the sites of the parcel logistics service providers.

When quantifying GHG emissions, account is also taken of the GHG emissions associated with upstream energy processes for fuels and electricity used by vehicles and related operation infrastructure (including for example production and distribution of fuels). This ensures the standard covers and produces values for both direct and indirect emissions (including well-to-tank emissions). In addition, empty mileage can be considered too. As a result, calculation results allow the consistent comparison of possible different energy sources by parcel service providers, users, and other interested parties.

This document also covers the air pollutants carbon monoxide, nitrogen oxides, particulate matters 2.5 and 10, and sulfur oxides associated with the use of vehicles for all transportation modes for exhaust and non-exhaust emissions and all related direct and indirect emissions from the use of and processes in logistics sites, namely offices, sites and buildings.

It specifies general principles, definitions, system boundaries, calculation methods, parcel allocation rules and data requirements, with the objective to promote standardized, accurate, credible and verifiable declarations, regarding emissions quantified. It also includes examples on the application of the principles.

Potential users of this document are any person or organisation who needs to refer to a standardised methodology when communicating the results of the quantification of emissions related to a parcel delivery service, especially parcel logistics service providers and parcel service users (e.g. consignors and consignees).

This document presents the below elements:

— step by step guidance for quantifying emissions of parcel logistics services;

— calculation methodology for GHG emissions;

— calculation methodology for air pollutants (carbon monoxide (CO), nitrogen oxides (NOx), particulate matters (PM) 2.5 and 10, and sulfur oxides (SOx));

— allocation rules per item (parcel); and

— reporting frameworks and data to be shared with business customers or consignees.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

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

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— IEC Electropedia: available at https://www.electropedia.org/

— ISO Online browsing platform: available at https://www.iso.org/obp

3.1 General terms

3.1.1
allocation
partitioning the input or output flows of a process or a product system between the product system under study and one or more other product systems

Note 1 to entry: In this context, apportionment of energy consumption or emissions previously quantified, to the parcel.

[SOURCE: ISO 14040:2009, modified]

3.1.2
air pollution
presence of contaminant or pollutant substances in the air at a concentration that interferes with human health or welfare or produces other harmful environmental effects

[SOURCE: https://www.eea.europa.eu/help/glossary/eea-glossary]

3.1.3
air pollutant
any pollutant agent or combination of such agents, including any physical, chemical, biological, radioactive substance or matter which is emitted into or otherwise enters the ambient air and can, in high enough concentrations, harm humans, animals, vegetation or material

Note 1 to entry: Air pollutants is a term which then describes an air pollutant for which acceptable levels of exposure can be determined and for which an ambient air quality standard has been set. Examples include: carbon monoxide, nitrogen dioxide, sulfur dioxide, and particulate matters.

Note 2 to entry: This document considers carbon monoxide (CO), nitrogen oxides (NOx), particulate matters (PM2.5 and PM10) and sulfur oxides (SOx).

[SOURCE: https://www.eea.europa.eu/help/glossary/eea-glossary]

3.1.4
air pollutant activity data
quantitative measure of activity that results in the production or removal of air pollutants to or from the atmosphere. For transport operations this is primarily the combustion of fossil fuels or other type of energy consumption

3.1.5
booked transport service
agreement to carry goods in a specified manner between defined origin and destination locations

Note 1 to entry: For a cargo service this would be accompanied by the cargo unit's gross mass (in (kg) or (tonne)) and the distance between dispatching and receiving locations (indicated as zip codes, IATA codes, UN LoCodes or geo data) carried on the various chosen means of transport.

3.1.6
carbon dioxide equivalent
CO2e
unit for comparing the radiative forcing of a GHG to carbon dioxide

Note 1 to entry: The carbon dioxide equivalent is calculated using the mass of a given GHG multiplied by its global warming potential.

[SOURCE: ISO 14064-1:2018]

3.1.7
carbon offsetting
mechanism for compensating for carbon emissions of a process through the prevention of the release of, reduction in, or removal of, an equivalent amount of GHG emissions outside the boundary of that process, provided such prevention, removal or reduction are quantified, permanent and additional to a business-as-usual scenario

[SOURCE: ISO 14067:2018, modified]

3.1.8
cargo
collection / quantity of goods (carried on a means of transport) transported from one place to another

Note 1 to entry: Cargo can consist of either liquid or solid materials or substances, without any packaging (e.g. bulk cargo), or of loose items of unpacked goods, packages, unitised goods (on pallets or in containers) or goods loaded on transport units and carried on active means of transport.

[SOURCE: EN 14943:2005]

3.1.9
collection and delivery round
journey normally, but not necessarily, starting and ending at the same location, with the purpose to collect and/or deliver one or more consignment/parcel in different locations during the course of the journey

3.1.10
consignment
collection / quantity of goods in different aggregation forms (pallets, containers, metal cages, etc. carried on a means of transport) transported from one place to another

Note 1 to entry: A consignment can consist of liquid or solid materials or substances, without any packaging (e.g. bulk cargo), or of loose items of unpacked goods, packages, or unitized goods (on pallets or in containers) or goods loaded on transport units and carried on active means of transport or specified amounts of gas transported in a closed system.

3.1.11
direct emissions
emission from sources owned or controlled by the organization

Note 1 to entry: Direct emissions arise from the use of fuel or other energy carriers at the point of use where a transport service is provided, whether to power the vehicle or for some other purpose such as heating, ventilation, refrigeration, as necessary for the operation of that transport service. Typically, this would be the result of combustion of fuels from an engine or other power source on a vehicle but may also result from the release of greenhouse gases directly to the atmosphere.

[SOURCE: ISO 14064-3:2019, modified]

3.1.12
distance
distance between two locations (origin, destination) that could either be actual distance covered or network or planned distance

3.1.13
network distance
distance between two locations where there is a strict limitation in the possible routes due to the available infrastructure options

3.1.14
planned distance
distance of the shortest route between two locations according to the respective infrastructure and operational constraints for the journey and transport modes

3.1.15
empty trip
section of the route of a vehicle during which no cargo or parcel is transported

EXAMPLE   (Re)positioning trips and empty backhauls are examples of empty trips.

3.1.16
energy
electricity, fuels, steam, heat, compressed air and other similar media

Note 1 to entry: For the purposes of this document, energy refers to the various types of energy, including renewable, which can be purchased, stored, treated, used in an equipment or in a process, or recovered.

[SOURCE: ISO 50001:2018]

3.1.17
energy carrier
substance or phenomenon that can be used to transfer energy or to operate chemical or physical processes.

EXAMPLE   Such as electricity, combustible fuels, steam, heat and compressed air.

[SOURCE: ISO 13600:1997]

3.1.18
energy consumtion
quantity of energy applied

[SOURCE: EN ISO 50001:2018]

3.1.19
energy factor
factor relating activity data to energy consumption

3.1.20
energy use
manner or kind of application of energy

EXAMPLE   Vehicle propulsion, cooling, heating.

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[SOURCE: EN ISO 50001:2018, modified] PREVIEW

3.1.21
freight
(standards.iteh.ai)
goods, materials, commodities, parcels, etc. being transported from one location to another

oSIST prEN 17837:2022
[SOURCE: EN 14943:2005] https://standards.iteh.ai/catalog/standards/sist/79a93110-
5658-4596-b858-54d886edb8bf/osist-pren-17837-2022
3.1.22
fuel consumtion
quantity of fuel (as an energy carrier) used

Note 1 to entry: For reasons of simplification, this definition includes all energy carriers, such as electricity.

Note 2 to entry: Fuel consumption should be expressed in most commonly understood units for each type of fuel, whilst respecting scientific principles for accuracy of the calculation; normally this would mean volume (litres or gallons) for liquid fuels, mass for gaseous fuels and kWh for electricity.

Note 3 to entry: For transport using electric traction, the fuel consumption is the total quantity of energy supplied minus any energy returned by the vehicle and subsequently transmitted back to the energy grid or to other vehicles, when vehicles are used as distributed power sources. Energy is returned (to the contact line) when electric traction has regenerative braking or other types of reused energy such as waste heat recovery systems. The energy generated during braking may be stored on the vehicle in question, or in shared systems such as rail transport may be made available to other consumers connected to the contact line.

3.1.23
fuel emission factor
factors that relate the emissions produced to the amount of a specific fuel that is consumed

Note 1 to entry: Depending on its nature, a fuel may have a factor for both direct and indirect emissions.

Note 2 to entry: Depending on the production process, what are nominally the same fuels at point of use may have different indirect emission factors.

Note 3 to entry: Fuel emission factors should include both emissions that result from the feedstock production, transformation and distribution processes and, where applicable (e.g. some biofuels), a consequential approach to induced land use change.

Note 4 to entry: See Annex A for details on Energy and Emissions Factors.

3.1.24
global warming potential
GWP
factor describing the radiative forcing impact of one mass-based unit of a given greenhouse gas relative to an equivalent unit of carbon dioxide over a period of one hundred years

[SOURCE: ISO 14064-1:2018, modified]

3.1.25
greenhouse gas
GHG
gaseous constituent of the atmosphere, both natural and anthropogenic, that absorbs and emits radiation at specific wavelengths within the spectrum of infrared radiation emitted by the earth's surface, the atmosphere, and clouds

Note 1 to entry: For a list of greenhouse gases, see latest Intergovernmental Panel on Climate Change (IPCC) Assessment Report. In this standard, GHGs are limited to, carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulfur hexafluoride (SF_6).

[SOURCE: ISO 14064-1:2018, modified]

3.1.26
greenhouse gas activity data
GHG activity data
quantitative measure of activity that results in the production or removal of GHG to or from the atmosphere

Note 1 to entry: For transport operations this is primarily the consumption of energy but may also include other activities that can be translated into GHG emissions.

EXAMPLE   For example, amount of packaging material used, cloud services, waste produced, refrigerant leakage.

[SOURCE: ISO 14064-1:2018, modified]

3.1.27
GHG emission intensity factor
value relating GHG emissions to an activity, also including a coefficient relating GHG activity data with the GHG emission

EXAMPLE   For example, expressed as:

— mass CO_2e per tonne kilometre, or equivalent units, for (aggregated) parcel transportation;

— mass CO_2e per parcel for a depot parcel throughput.

3.1.28
indirect emissions
emission that is a consequence of an organization's operations and activities, but that arises from sources that are not owned or controlled by the organization

Note 1 to entry: These emissions occur generally in the upstream and/or downstream chain. For e.g. emissions considered within the fuel cycle arising e.g. from the construction, repair, maintenance and dismantling of the infrastructure, exploration, extraction, production and distribution of energy carriers.

[SOURCE: ISO 14064-3:2019, modified]

3.1.29
load
quantity or nature, by mass, of whatever is being transported (cargo and/or parcel)

[SOURCE: EN 14943:2005, modified]

3.1.30
load carrier
means for the creation of load or storage units with carrying function or with carrying and encasing function or with carrying, encasing and closing function

EXAMPLE   For example, pallet as carrying function; box pallet with carrying and encasing function; and container with carrying, encasing and closing function.

3.1.31
load factor
ratio of the actual load to the maximum legally authorized load of a particular vehicle

[SOURCE: EN 14943:2005, modified]

3.1.32
logistic site
place for keeping parcels at a location for processing, sorting, packaging, handling, storage and bridging the different transport modes too

3.1.33
location operator
entity responsible for or managing a logistics site

3.1.34
means of transport
particular vessel, vehicle, or other mobile device used for the transport of parcel and/or freight

[SOURCE: EN 14943:2005, modified]

3.1.35
transport by air
air transport
any movement of goods and/or passengers carried out by a machine that can derive support in the atmosphere from the reactions of the air other than the reactions of air against the earth's surface

Note 1 to entry: Transport includes all flight stages (positioning, take-off, cruising, landing and parking) for drones and aircraft movement between the place of loading and unloading