GHG EMISSIONS CALCULATION

METHODOLOGY REPORT

This document describes how Adria kombi d.o.o. calculates greenhouse gas emissions in accordance with ISO 14083:2023 standard.

Scope of calculations

The GHG emission reports, that are automatically calculated by Adria kombi systems, mainly cover rail transport. The transport units usually consist of standard containers, transported by electric trains.

For informational purposes, the calculated emissions are compared to hypothetical road transport activities with the same distance and cargo mass than rail transport activities that were actually performed. This is meant to inform the user of amounts of GHG emissions, that were saved by transporting the cargo using rail instead of road transport.

Calculation parameters

Distances

The data about transportation distances is taken from our own databases according to performed transport activities. All distances used are in kilometers (km).

Freight weight

The freight weight data is expressed in tonnes (t) and taken from our databases. That includes weight of wagons, containers and transported cargo. If empty containers are transported, their weight is considered to be the weight of transported and handled freight.

Emission factors

The GHG emission factors are sourced from GLEC framework v3.2 (https://smart-freight-centre-media.s3.amazonaws.com/documents/GLEC_FRAMEWORK_v3.2_21_10_25_1.pdf).

Calculation method

The produced GHG emissions are calculated by determining the amount of energy consumed by the transport activity. This is done using formulas for electric train energy consumption available at EcoTransIT World Methodology Report Version 4.1 (https://www.ecotransit.org/wp-content/uploads/EcoTransIT_World_Methodology_Report_Version_4.1_V2.pdf).

We assume the type of freight is average / mixed.

In our databases we have no data about potential cooled freights or types of refrigerant used.

The calculated amount of energy is then multiplied by a WTW emission factor for electric trains. For the current implementation, the factor for average European electricity mix is used.

The emissions are calculated for each transport chain element (TCE). In our report documents for train and for specific shipment, the customer can see parts of the total transport route, as well as possible stops in between.

Emission intensity values

To calculate emission intensity values, the amount of emissions in tonnes of CO2e is divided by transport activity (distance * freight mass) in tkm units.

Hub activity

The amount of hub activity emissions is calculated by multiplying a fixed hub activity emission factor by the total mass of outbound cargo. For the current implementation, a fixed fallback value of 1.01 kg CO2e/t is used. This fallback was determined based on newer methodology sources, including GLEC Framework v3.2 (https://smart-freight-centre-media.s3.amazonaws.com/documents/GLEC_FRAMEWORK_v3.2_21_10_25_1.pdf) and EcoTransIT World Methodology Report Version 4.1 (https://www.ecotransit.org/wp-content/uploads/EcoTransIT_World_Methodology_Report_Version_4.1_V2.pdf).

Truck emission comparison

For the total amount of shipped cargo, truck emission comparison values are calculated for informational purposes only. Average Euro VI truck (26-40t) energy consumption and emission values are used as a benchmark road-transport comparison. The data is obtained from https://smart-freight-centre-media.s3.amazonaws.com/documents/GLEC_FRAMEWORK_v3.2_21_10_25_1.pdf and https://www.ecotransit.org/wp-content/uploads/EcoTransIT_World_Methodology_Report_Version_4.1_V2.pdf

The emission values are then subtracted from the rail transport emission values and displayed to the user for informational purposes.