Sphera® GaBi Documentation for Duty Vehicle Processes in GaBi 2022

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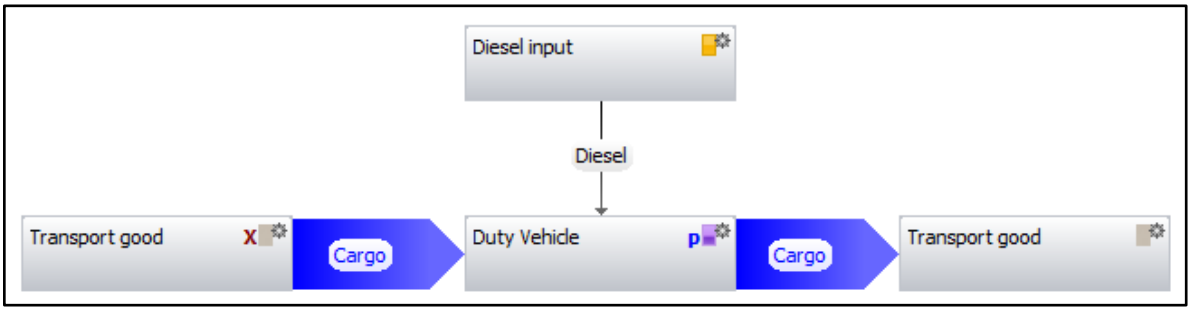
Table of Contents

General Description of Processes

This documentation describes transportation processes for utility vehicles for the transportation of cargo in mass. The processes comprise the use stage with fuel demand and emissions released; production and end-of-life of this vehicle class is of small relevance, hence not considered. The default functional unit is the transportation of 1 kg of cargo over the distance of 100 km. The following parameters are variable: distance, utilization (=load/payload), share of road categories (urban/rural/motorway) and, if required, sulphur content in fuel, biogenic C content in fuel and total payload. Emissions of the vehicles are based on the HBEFA 3.3 values [14]. Figure 1 one shows how the transport processes are used in GaBi.

Figure 1: Use of duty vehicles for transport in GaBi

Note that the “Cargo” flow instance name can be locally overwritten with the actual name of the good, by setting the respective flow as dominant when connecting to the transport process.



Process Characterization / Abbreviations / Naming

In general, processes are named according to the following system:

Vehicle class, Emission standard, gross weight / payload capacity

An example for the nomenclature is:

Truck, Euro 5, 28 - 32t gross weight / 22t payload capacity

Frequently used terms are:

Truck	=	single truck without trailer
Truck-trailer	=	truck and trailer combination
Light duty vehicle	=	Commercial transport vehicle of size class N1-III
Gross weight	=	total weight of the vehicle
Payload	=	maximum vehicle load capacity
Utilization	=	actual load divided by maximum load

A list of all available processes is appended at the end of this documentation.

Classification

Size Categories (see [8], [9], [14])

- Light duty vehicle < 3.5 t

- Truck < 7.5 t
- Truck 7.5-12 t
- Truck 12-14 t
- Truck 14-20 t
- Truck 20-26 t
- Truck 26-28 t
- Truck 28-32 t
- Truck > 32 t
- Truck-trailer < 28 t
- Truck-trailer 28-34 t
- Truck-trailer 34-40 t
- Truck-trailer 50-60 t

Emission Categories (see [4], [14], [13], [11])

- Average 1980s (pre-Euro)
- Euro 1
- Euro 2
- Euro 3
- Euro 4 EGR
- Euro 5 SCR (non tampered)
- Euro 6 SCR (non tampered)
- Mix Euro 0-6

For the emission categories values for SCR technology, tampered options are available in HBEFA (marked with *). This tampering on the vehicles hard and/or software (e.g. removing the particle filter or filling water instead of AdBlue in the SCR tank) leads to advantages for the vehicle owner but result in a massive deterioration of the emission behavior. For the emission of these processes, it is assumed that the vehicle has not been tampered with.

Road Categories (see [14])

- Average Motorway (MW)
- Average Rural (RU)
- Average Urban (UR)

The default distribution between road categories stated in the GaBi processes is based on the values for the traffic situations in HBEFA 3.3 for the year 2017 [14].

Emissions Calculation

The emission calculations are derived from emission factors from literature (HBEFA 3.3) [14] which are based on measurements. Additional calculation principles are explained below.

General Emissions Calculation

With the assumption that the utilization rate influences the emissions linearly [2], the emission factors (EF) [g/km] are referenced to 1 kg of cargo via the following equation:

$$Emission = \frac{EF_{empty} + (EF_{loaded} - EF_{empty}) \cdot utilisation}{payload \cdot 1\,000 \cdot utilisation} \qquad \left[\frac{g}{km \cdot kg}\right]$$

EF_{empty}	Emission factor for empty run [g/km]
EF_{loaded}	Emission factor for loaded run [g/km]
Utilization	Utilization referred to mass [-]
Payload	Maximum payload capacity [t]

The variable parameters *payload* and *utilization* can be specified within the process and set individually by the user.

For light duty vehicles (<3.5t) it is not differentiated between emission factors for the empty and the loaded run.

The total emissions for each pollutant refer to 1 kg cargo and the transportation distance is to be calculated based on the driving share (Motorway = MW_{share}, Rural = RU_{share}, Urban = UR_{share}) [-], the specific emissions (Motorway = MW_{Em}, Rural = RU_{Em}, Urban = UR_{Em}) in [g/(km*kg)] and the distance [km].

$$Total\text{–}Emission_X = \left(\left(\mathrm{MW}_{share} \cdot MW_{Em}\right) + \left(RU_{share} \cdot RU_{Em}\right) + UR_{share} \cdot UR_{Em}\right) \cdot \mathrm{distance}$$

x	Index for a specific pollutant [-]
MW_{share}	Driving share on motorway [%]
MW_{EM}	Motorway specific emissions [g/(km*kg)]
RU_{share}	Driving share on rural road [%]
RU_{EM}	Rural specific emissions [g/(km*kg)]
UR_{share}	Driving share on urban road [%]
UR_{Em}	Urban road specific emissions [g/(km*kg)]

Calculation of CO2

The calculations for carbon dioxide emissions are based on the emission factors according to equations (1)[1], and [2], whereas a constant relation of 3.18 kg CO2/kg Diesel for the fuel consumption is assumed. With a medium density of 0.83 kg/l (diesel) this is equal to a ratio of 2.64 kg CO2/l Diesel.

Calculation of SO2

For sulphur dioxide, a complete stoichiometric conversion of the sulphur contained in the fuel and of oxygen into SO_2 is assumed. The sulphur content in the fuel is a variable parameter, which can be set individually by the user.

$$EF_{SO_2} = x_{ppm_S} * \frac{64\ kg_{SO2}}{32\ kg_S} * fuel_{consumption}\ [\frac{m_{SO2}}{m_{Cargo}}]$$

EF_SO2	Emission factor for SO_2
x_{ppm_S}	Mass share of sulphur in fuel in $\frac{m_s}{m_{fuel}}$
$fuel_{consumption}$	Fuel consumption in $\frac{m_{fuel}}{m_{cargo}}$

Particle emissions from tyres and brakes

Notable addition to truck transport datasets is a switch for non-exhaust particle emissions (such as from brakes, tires,…). The default setting is zero (i.e. no such emissions), as the uncertainty for this is very large. However, the user has the possibility to see what potential impacts those emissions could have in their model.

Variable Parameters

Parameter Name	Comment	Unit
share_MW	Driving share on motorway (MW)	-
share_RU	Driving share rural (RU)	-
share_UR	Driving share urban (UR)	-
utilization	Utilization ratio based on mass	-
distance	Distance from start to end	km
payload	Maximum payload capacity	t
ppm_sulfur	Mass share of sulphur in fuel	ppm
share_CO2_bio	Share of biogenic C in fuel	-

Inputs

Valuable Substances

Flow	Flow Group	Unit
Diesel	Crude Oil Products	kg
Cargo	Others	kg

Outputs

Valuable Substances

Flow	Flow Group	Unit
Cargo	Others	kg

Emissions

Flow	Flow Group	Unit
Ammonia	Inorganic Emissions to Air	kg
Benzene	Group NMVOC to Air	kg
Carbon Dioxide	Inorganic Emissions to Air	kg
Carbon Dioxide (biotic)	Inorganic Emissions to Air	kg
Carbon Monoxide	Inorganic Emissions to Air	kg
Dust (PM2.5)	Particles to Air	kg
Methane	Organic Emissions to Air (Group VOC)	kg
Nitrogen Dioxide	Inorganic Emissions to Air	kg
Nitrogen Monoxide	Inorganic Emissions to Air	kg
Nitrous Oxide (Laughing Gas)	Inorganic Emissions to Air	kg
NMVOC (unspecific)	Group NMVOC to Air	kg
Sulphur Dioxide	Inorganic Emissions to Air	kg

Systems and Emissions that are not considered

The datasets only include the emissions from the combustion of the fuel. The following aspects are not considered. They are jointly contributing little and can hence be disregarded without affecting decision support in studies that use these datasets as background data for transport:

- Vehicle production, repair, maintenance
- Vehicle recycling
- Infrastructure (roads etc.)
- Noise
- Diurnal losses and refuelling losses (see [15])
- Hot-Soak-Emissions
- Oil use
- Cold-Start Emissions
- Emissions from air conditioning (relevance < 1 %, see [12])
- Antifreeze and detergent use and emissions from window washers

Application

Input Parameters

The vehicle processes can be adapted to specific conditions by changing the variable parameters.

Distance

The distance represents the real driven distance of the vehicle from start to end. This should be modified by the user.

Load based on Mass (parameter: utilization)

The utilization factor represents the relation of transported cargo to payload capacity. The former value of 0.85 (= 85 %) [1] used until the 2017 Edition, has been adapted to size-specific utilization factors ranging from 0.50 to 0.61 based on statistics provided by the German Federal Motor Transport Authority [10].

If the capacity is not fully used, including if cargo with low density is transported (e.g. expanded polystyrene or foam materials), the parameter utilization should be adapted (reduced) accordingly. Only utilization values between 0 and 1 are permitted. See also chapter 2.6.

Minimum value: “utilization” = 1/“payload” [kg] (equal to empty run)

Maximum value: “utilization” = 1 (equal to full load).

Size Category	Utilization (default value) [-]
Light duty vehicle < 3.5 t	0.53
Truck < 7.5 t	0.53
Truck 7.5-12 t	0.51
Truck 12-14 t	0.51
Truck 14-20 t	0.53
Truck 20-26 t	0.55
Truck 26-28 t	0.55
Truck 28-32 t	0.61
Truck > 32 t	0.61
Truck-trailer < 28 t	0.53
Truck-trailer 28-34 t	0.61
Truck-trailer 34-40 t	0.61

Size Category	Utilization (default value) [-]
Truck-trailer 50-60 t	0.50

Payload

The payload of a vehicle is the total weight minus the actual weight of the vehicle and is equal to the vehicle load capacity [t]. The predefined standard value represents the typical situation in each case, in accordance with the transportation process name. In special cases, trucks with superstructures that are particularly heavy (e.g. a refrigeration unit) or particularly light (e.g. a simple platform) can be represented by adjusting this parameter.

Sulphur Content of Fuel (parameter: “ppm_sulfur”)

The sulphur content in diesel fuel varies significantly worldwide; the transport processes can be adapted accordingly. The following table shows possible values [16], [17], [18], [19]. When modeling transport in specific countries please refer to primary sources as this table only gives an indication and may be outdated.

Country	Sulphur Content by mass [ppm]
EU	10 ppm
Japan	50 ppm
China	up to 2000 ppm
Indonesia, Pakistan	up to 5000 ppm, reductions are planned
Singapore	50 ppm
India, Philippines, Thailand	up to 500 ppm
Australia	50 ppm
Latin America (general)	> 2500 ppm
Brazil	Dominant fuel for transport 10 ppm, 500 ppm available in some areas.
USA	15 ppm
Canada	15 ppm
South Africa	50 ppm
Saudi Arabia	50 ppm
Other Arab countries	Up to 11.000 ppm

Driving Shares for Motorway, Rural, Urban (respective parameters: “share_mw”, “share_ru”, “share_ur”)

The driving shares for Motorway (MW), Rural (RU), Urban (UR) can be adapted to specific boundary conditions. The predefined standard values represent the shares for Germany for the respective vehicle. The shares must add up to 1 in total.

Empty Run of a Whole Truck

When considering an empty run, the process provides emissions according to the empty run Emission Factors EF_{empty} [g/km] without carrying cargo. In a GaBi model, this situation can be modelled with a fixed and non-connected transport process in the transport chain. The following conditions must be applied:

- Scaling factor = 1
- Process is not connected to other processes
- Utilization = 1/payload in kg

A utilization = 0 is an invalid value, as it leads to a division by 0.

Example: empty run for “Truck, Euro 4, 7.5 t - 12t gross weight / 5t payload capacity” (see also 0).

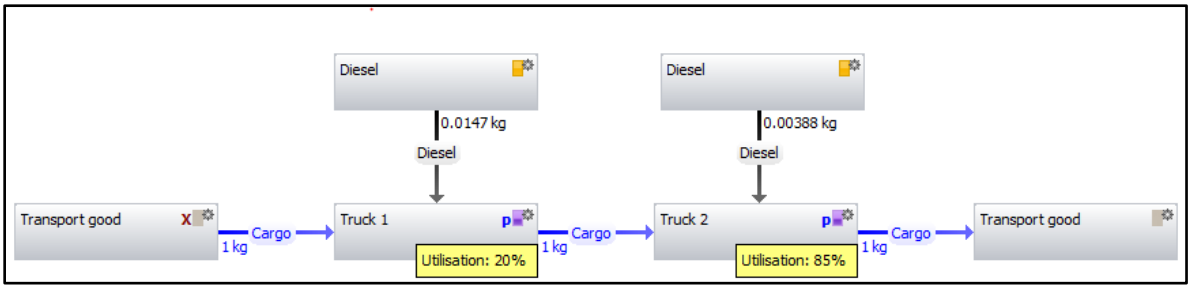
- fixing to scaling factor = 1
- payload = 5 t = 5000 kg → utilization = 1/5000 = $2*10^{-4}$.

Forward and Return Trips with Different Utilization Factors

If the forward trip and return trip are driven with different utilization factors this is to be modelled in GaBi with two consecutive transport processes of the same vehicle. The diesel consumption (and correspondingly the other emissions) are higher for the trip with a lower utilization as the emissions are allocated to less cargo. The suggested modeling in GaBi can be seen in Figure 2.

Figure 2: Modeling of transports with different utilizations for forward and return trip in GaBi

This modeling approach is not valid for empty return runs. Empty return runs are modelled as described in the following section.



Empty Return Trip

Empty return trips (with the same distance for both the forward and return trip) can be modelled with a single transport process with following utilization:

$$utilisation_{empty\ return} = \frac{utilisation_{forward\ trip}}{2} \quad \textbf{(1)}$$

Note: The distance must be set to the one-way distance.

Transport of Specifically Lightweight Goods

In case of transportation of specifically lightweight goods, the standard utilization ratio should be reduced.

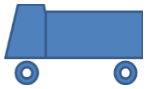
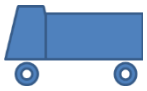
Example: transport of expanded polystyrene (EPS), density 20 kg/m^3, with “Truck-trailer, Euro 4, 34 - 40t gross weight / 27t payload capacity” and 90 m^3 volume capacity

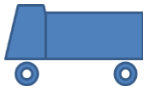
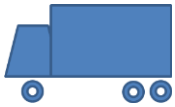
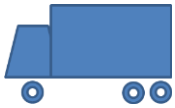
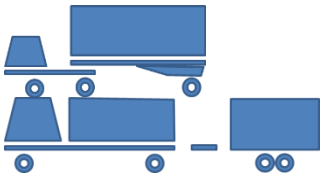
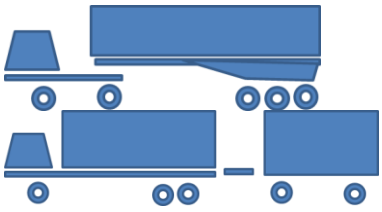
- goods should be identified as specifically lightweight goods (low density, high air content)
- max load 1.8 t < payload 27 t; volume capacity reached before weight capacity; utilization ratio should be reduced
- new utilization factor $\frac{load}{payload\ capacity} = \frac{1.8t}{27t} \approx 0.07$ (7%)

Choice of Correct Vehicle

To choose the correct vehicle the following aspects should be considered:

- the total weight of the vehicle

Total weight		Comment
Light duty vehicle < 3.5 t		Van for commercial activities
Truck < 7.5 t		Big van or very small truck
Truck 7.5-12 t		Small truck for short-haul and distribution transport
Truck 12-14 t		Medium truck for short-haul and distribution transport

Truck 14-20 t		Medium truck for short-haul and distribution transport
Truck 20-26 t		Heavy-duty national and international long-haul transport
Truck 26-28 t		Heavy-duty national and international long-haul transport
Truck 28-32 t		Heavy duty truck for construction works
Truck > 32 t		Heavy duty truck for construction works
Truck-trailer < 28 t		Medium to heavy-duty national and international long-haul transport
Truck-trailer 28-34 t		Heavy-duty national and international long-haul transport
Truck-trailer 34-40 t		Heavy duty long-haul transports, tanks

- The EURO standard:

Emission standard	Year
1980s	before 1992
Euro 1	01.01.1992
Euro 2	01.10.1998
Euro 3	01.10.2000
Euro 4	01.10.2005
Euro 5	01.10.2008
Euro 6	01.01.2013
Euro 0-6 Mix	average mix of trucks in operation in 2017 (Germany)

Representativeness

Technological

The emission classes from ‘pre-Euro’ to ‘Euro 6’ are covered. The technologies are representative Europe-wide and can be adapted for worldwide locations with some minor restrictions. There is a need to identify the corresponding emission classes.

Spatial

The reference locations are Germany, Austria and Switzerland. However due to the similarity of the vehicle structures and the same emissions limit values, the models are representative for the entire EU. The model can be transferred to conditions in other countries worldwide with minimal uncertainty. Note: uncertainty increases with the increase of deviation of the vehicle structure, the road categories and the utilization behavior – these can be adapted by modifying the driving share (MW/RU/UR) as well as the utilization ratio and Sulphur content in the fuel for individual conditions.

Temporal

The reference year of the data sets is 2020; representativeness may be assumed for the period of 2020 to 2023.

Modification of the age structure of vehicles for each emission class leads to changes in the emission profile. The validity of the data set is given for approximately 3 years (until 2023). Findings in HBEFA [14] based on comprehensive time series (1994-2020) report that there is no change in emission profiles within a certain size class, emissions class or road category. Only a different composition of a total vehicle fleet results in changes over time.

Parameter Variations – Examples

The following section shows some examples to highlight the influence of the single parameters.

Variation of Utilization Ratio

Figure **3** shows the specific carbon dioxide emission in [g CO2/(kg Cargo*km)] for different truck sizes each driven on motorway if the utilization ratio is varied in equation [1]

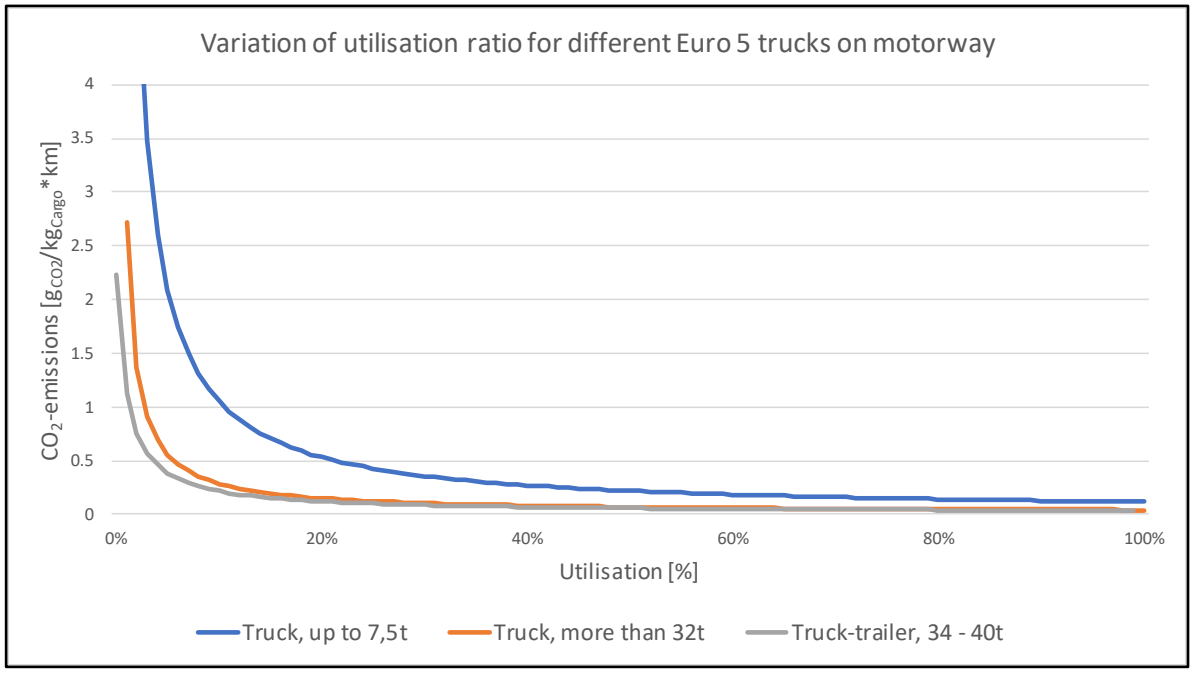


Figure 3: Variation of utilization ratio between 1 % and 100 %

With convergence to 0 % utilization ratio, the specific emissions increase according to the mathematical function towards infinity (division by zero). The minimal utilization ratio (empty run) is the reciprocal value of the payload in [kg]. For high utilization ratios the specific emissions change only slightly.

Variation of Payload

Figure 4 shows the specific carbon dioxide emission in [gCO2/(kgCargo*km)] for different truck sizes each driven on a motorway if the payload is varied in equation [1].

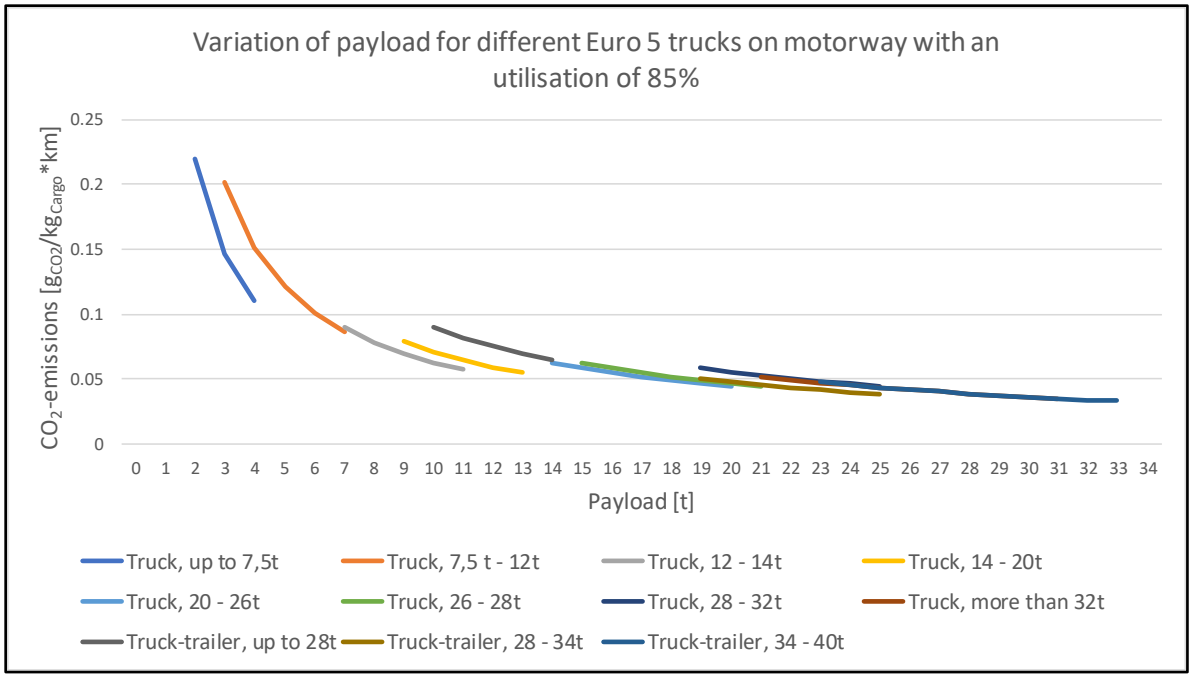


Figure 4: Variation of payload (Euro 5 trucks)

Particularly for smaller trucks, a clear influence of variations in payload on CO_2-emissions, and hence the fuel consumption, can be identified. If the truck has a lower payload caused by a heavy superstructure (e.g. a refrigeration unit), the specific emissions per kg of cargo increase.

Variation of shares on different Road Categories

Heavy trucks are optimized for rural and motorway travels (RU/MW) (see Figure 6), and therefore have the lowest specific emissions on motorway travel and clearly higher specific emissions in urban travel (see Figure 5 and Figure 7).

Small trucks have their lowest specific emissions in rural travel; the overall level of specific emissions is higher than for heavy trucks (see Figure 5, Figure 6 and Figure 7).

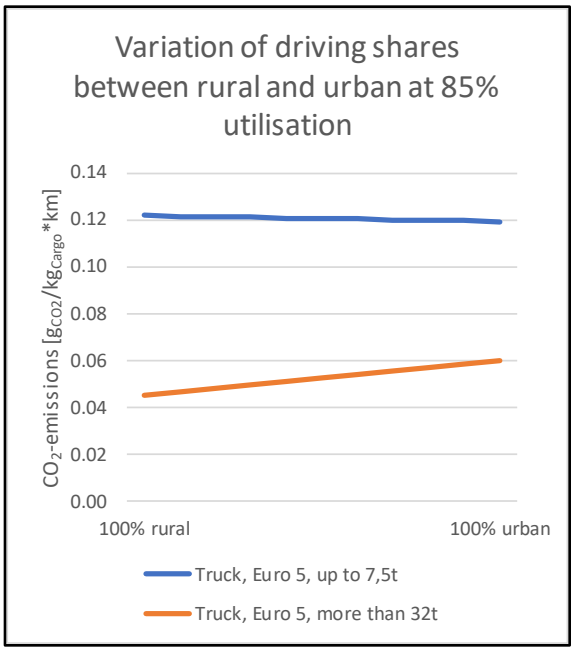


Figure 5: Specific fuel consumption: rural - urban

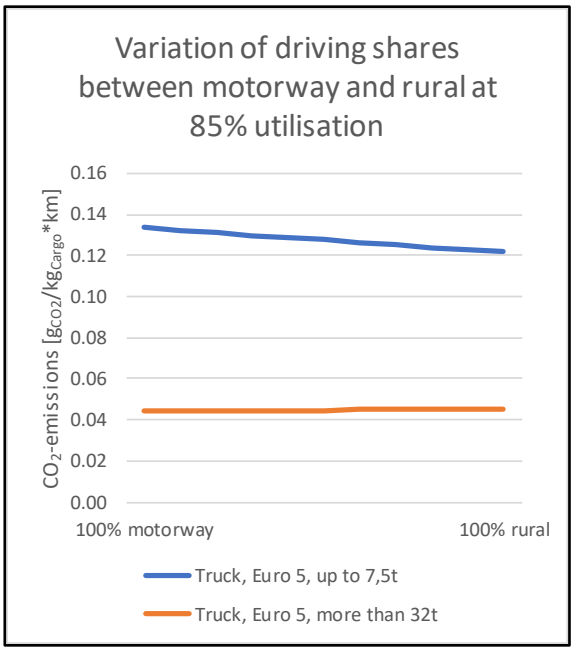


Figure 6: Specific fuel consumption: motorway - rural

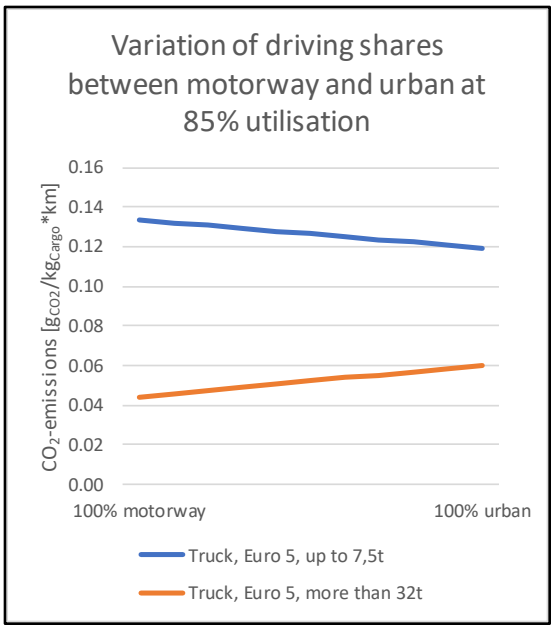


Figure 7: Specific fuel consumption: motorway - urban

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Process List (GaBi)

Global processes

Region	Category	Standard	Type	Gross weight/payload
GLO	Light duty vehicle	diesel driven, 1980s, cargo	Consumption mix	up to 3.5t gross weight / up to 1.5 t payload capacity
GLO	Light duty vehicle	diesel driven, Euro 1, cargo	Consumption mix	up to 3.5t gross weight / up to 1.5 t payload capacity
GLO	Light duty vehicle	diesel driven, Euro 2, cargo	Consumption mix	up to 3.5t gross weight / up to 1.5 t payload capacity
GLO	Light duty vehicle	diesel driven, Euro 3, cargo	Consumption mix	up to 3.5t gross weight / up to 1.5 t payload capacity
GLO	Light duty vehicle	diesel driven, Euro 4, cargo	Consumption mix	up to 3.5t gross weight / up to 1.5 t payload capacity
GLO	Light duty vehicle	diesel driven, Euro 5, cargo	Consumption mix	up to 3.5t gross weight / up to 1.5 t payload capacity
GLO	Light duty vehicle	diesel driven, Euro 6, cargo	Consumption mix	up to 3.5t gross weight / up to 1.5 t payload capacity
GLO	Truck	diesel driven, 1980s, cargo	Consumption mix	up to 7.5t gross weight / 2.7t payload capacity
GLO	Truck	diesel driven, Euro 1, cargo	Consumption mix	up to 7.5t gross weight / 2.7t payload capacity
GLO	Truck	diesel driven, Euro 2, cargo	Consumption mix	up to 7.5t gross weight / 2.7t payload capacity
GLO	Truck	diesel driven, Euro 3, cargo	Consumption mix	up to 7.5t gross weight / 2.7t payload capacity
GLO	Truck	diesel driven, Euro 4, cargo	Consumption mix	up to 7.5t gross weight / 2.7t payload capacity
GLO	Truck	diesel driven, Euro 5, cargo	Consumption mix	up to 7.5t gross weight / 2.7t payload capacity
GLO	Truck	diesel driven, Euro 6, cargo	Consumption mix	up to 7.5t gross weight / 2.7t payload capacity
GLO	Truck	diesel driven, Euro 0 – 6 mix, cargo	Technology and consumption mix	up to 7.5t gross weight / 2.7t payload capacity
GLO	Truck	diesel driven, 1980s, cargo	Consumption mix	7.5 t - 12t gross weight / 5t payload capacity
GLO	Truck	diesel driven, Euro 1, cargo	Consumption mix	7.5 t - 12t gross weight / 5t payload capacity
GLO	Truck	diesel driven, Euro 2, cargo	Consumption mix	7.5 t - 12t gross weight / 5t payload capacity
GLO	Truck	diesel driven, Euro 3, cargo	Consumption mix	7.5 t - 12t gross weight / 5t payload capacity
GLO	Truck	diesel driven, Euro 4, cargo	Consumption mix	7.5 t - 12t gross weight / 5t payload capacity
GLO	Truck	diesel driven, Euro 5, cargo	Consumption mix	7.5 t - 12t gross weight / 5t payload capacity
GLO	Truck	diesel driven, Euro 6, cargo	Consumption mix	7.5 t - 12t gross weight / 5t payload capacity
GLO	Truck	diesel driven, Euro 0 – 6 mix, cargo	Technology and consumption mix	7.5 t - 12t gross weight / 5t payload capacity
GLO	Truck	diesel driven, 1980s, cargo	Consumption mix	12-14t gross weight / 9.3t payload capacity
GLO	Truck	diesel driven, Euro 1, cargo	Consumption mix	12-14t gross weight / 9.3t payload capacity

Region	Category	Standard	Type	Gross weight/payload
GLO	Truck	diesel driven, Euro 2, cargo	Consumption mix	12-14t gross weight / 9.3t payload capacity
GLO	Truck	diesel driven, Euro 3, cargo	Consumption mix	12-14t gross weight / 9.3t payload capacity
GLO	Truck	diesel driven, Euro 4, cargo	Consumption mix	12-14t gross weight / 9.3t payload capacity
GLO	Truck	diesel driven, Euro 5, cargo	Consumption mix	12-14t gross weight / 9.3t payload capacity
GLO	Truck	diesel driven, Euro 6, cargo	Consumption mix	12-14t gross weight / 9.3t payload capacity
GLO	Truck	diesel driven, Euro 0 – 6 mix, cargo	Technology and consumption mix	12-14t gross weight / 9.3t payload capacity
GLO	Truck	diesel driven, 1980s, cargo	Consumption mix	14 - 20t gross weight / 11.4t payload capacity
GLO	Truck	diesel driven, Euro 1, cargo	Consumption mix	14 - 20t gross weight / 11.4t payload capacity
GLO	Truck	diesel driven, Euro 2, cargo	Consumption mix	14 - 20t gross weight / 11.4t payload capacity
GLO	Truck	diesel driven, Euro 3, cargo	Consumption mix	14 - 20t gross weight / 11.4t payload capacity
GLO	Truck	diesel driven, Euro 4, cargo	Consumption mix	14 - 20t gross weight / 11.4t payload capacity
GLO	Truck	diesel driven, Euro 5, cargo	Consumption mix	14 - 20t gross weight / 11.4t payload capacity
GLO	Truck	diesel driven, Euro 6, cargo	Consumption mix	14 - 20t gross weight / 11.4t payload capacity
GLO	Truck	diesel driven, Euro 0 – 6 mix, cargo	Technology and consumption mix	14 - 20t gross weight / 11.4t payload capacity
GLO	Truck	diesel driven, 1980s, cargo	Consumption mix	20 - 26t gross weight / 17.3t payload capacity
GLO	Truck	diesel driven, Euro 1, cargo	Consumption mix	20 - 26t gross weight / 17.3t payload capacity
GLO	Truck	diesel driven, Euro 2, cargo	Consumption mix	20 - 26t gross weight / 17.3t payload capacity
GLO	Truck	diesel driven, Euro 3, cargo	Consumption mix	20 - 26t gross weight / 17.3t payload capacity
GLO	Truck	diesel driven, Euro 4, cargo	Consumption mix	20 - 26t gross weight / 17.3t payload capacity
GLO	Truck	diesel driven, Euro 5, cargo	Consumption mix	20 - 26t gross weight / 17.3t payload capacity
GLO	Truck	diesel driven, Euro 6, cargo	Consumption mix	20 - 26t gross weight / 17.3t payload capacity
GLO	Truck	diesel driven, Euro 0 – 6 mix, cargo	Technology and consumption mix	20 - 26t gross weight / 17.3t payload capacity
GLO	Truck	diesel driven, 1980s, cargo	Consumption mix	26 - 28t gross weight / 18.4t payload capacity
GLO	Truck	diesel driven, Euro 1, cargo	Consumption mix	26 - 28t gross weight / 18.4t payload capacity
GLO	Truck	diesel driven, Euro 2, cargo	Consumption mix	26 - 28t gross weight / 18.4t payload capacity
GLO	Truck	diesel driven, Euro 3, cargo	Consumption mix	26 - 28t gross weight / 18.4t payload capacity
GLO	Truck	diesel driven, Euro 4, cargo	Consumption mix	26 - 28t gross weight / 18.4t payload capacity
GLO	Truck	diesel driven, Euro 5, cargo	Consumption mix	26 - 28t gross weight / 18.4t payload capacity

Region	Category	Standard	Type	Gross weight/payload
GLO	Truck	diesel driven, Euro 6, cargo	Consumption mix	26 - 28t gross weight / 18.4t payload capacity
GLO	Truck	diesel driven, Euro 0 – 6 mix, cargo	Technology and consumption mix	26 - 28t gross weight / 18.4t payload capacity
GLO	Truck	diesel driven, 1980s, cargo	Consumption mix	28 - 32t gross weight / 22t payload capacity
GLO	Truck	diesel driven, Euro 1, cargo	Consumption mix	28 - 32t gross weight / 22t payload capacity
GLO	Truck	diesel driven, Euro 2, cargo	Consumption mix	28 - 32t gross weight / 22t payload capacity
GLO	Truck	diesel driven, Euro 3, cargo	Consumption mix	28 - 32t gross weight / 22t payload capacity
GLO	Truck	diesel driven, Euro 4, cargo	Consumption mix	28 - 32t gross weight / 22t payload capacity
GLO	Truck	diesel driven, Euro 5, cargo	Consumption mix	28 - 32t gross weight / 22t payload capacity
GLO	Truck	diesel driven, Euro 6, cargo	Consumption mix	28 - 32t gross weight / 22t payload capacity
GLO	Truck	diesel driven, Euro 0 – 6 mix, cargo	Technology and consumption mix	28 - 32t gross weight / 22t payload capacity
GLO	Truck	diesel driven, 1980s, cargo	Consumption mix	more than 32t gross weight / 24.7t payload capacity
GLO	Truck	diesel driven, Euro 1, cargo	Consumption mix	more than 32t gross weight / 24.7t payload capacity
GLO	Truck	diesel driven, Euro 2, cargo	Consumption mix	more than 32t gross weight / 24.7t payload capacity
GLO	Truck	diesel driven, Euro 3, cargo	Consumption mix	more than 32t gross weight / 24.7t payload capacity
GLO	Truck	diesel driven, Euro 4, cargo	Consumption mix	more than 32t gross weight / 24.7t payload capacity
GLO	Truck	diesel driven, Euro 5, cargo	Consumption mix	more than 32t gross weight / 24.7t payload capacity
GLO	Truck	diesel driven, Euro 6, cargo	Consumption mix	more than 32t gross weight / 24.7t payload capacity
GLO	Truck	diesel driven, Euro 0 – 6 mix, cargo	Technology and consumption mix	more than 32t gross weight / 24.7t payload capacity
GLO	Truck-trailer	diesel driven, 1980s, cargo	Consumption mix	up to 28t gross weight / 12.4t payload capacity
GLO	Truck-trailer	diesel driven, Euro 1, cargo	Consumption mix	up to 28t gross weight / 12.4t payload capacity
GLO	Truck-trailer	diesel driven, Euro 2, cargo	Consumption mix	up to 28t gross weight / 12.4t payload capacity
GLO	Truck-trailer	diesel driven, Euro 3, cargo	Consumption mix	up to 28t gross weight / 12.4t payload capacity
GLO	Truck-trailer	diesel driven, Euro 4, cargo	Consumption mix	up to 28t gross weight / 12.4t payload capacity
GLO	Truck-trailer	diesel driven, Euro 5, cargo	Consumption mix	up to 28t gross weight / 12.4t payload capacity
GLO	Truck-trailer	diesel driven, Euro 6, cargo	Consumption mix	up to 28t gross weight / 12.4t payload capacity
GLO	Truck-trailer	diesel driven, Euro 0 – 6 mix, cargo	Technology and consumption mix	up to 28t gross weight / 12.4t payload capacity
GLO	Truck-trailer	diesel driven, 1980s, cargo	Consumption mix	28 - 34t gross weight / 22t payload capacity
GLO	Truck-trailer	diesel driven, Euro 1, cargo	Consumption mix	28 - 34t gross weight / 22t payload capacity

Region	Category	Standard	Type	Gross weight/payload
GLO	Truck-trailer	diesel driven, Euro 2, cargo	Consumption mix	28 - 34t gross weight / 22t payload capacity
GLO	Truck-trailer	diesel driven, Euro 3, cargo	Consumption mix	28 - 34t gross weight / 22t payload capacity
GLO	Truck-trailer	diesel driven, Euro 4, cargo	Consumption mix	28 - 34t gross weight / 22t payload capacity
GLO	Truck-trailer	diesel driven, Euro 5, cargo	Consumption mix	28 - 34t gross weight / 22t payload capacity
GLO	Truck-trailer	diesel driven, Euro 5, cargo	Consumption mix	28 - 34t gross weight / 22t payload capacity
GLO	Truck-trailer	diesel driven, Euro 6, cargo	Consumption mix	28 - 34t gross weight / 22t payload capacity
GLO	Truck-trailer	diesel driven, Euro 0 – 6 mix, cargo	Technology and consumption mix	28 - 34t gross weight / 22t payload capacity
GLO	Truck-trailer	diesel driven, 1980s, cargo	Consumption mix	34 - 40t gross weight / 27t payload capacity
GLO	Truck-trailer	diesel driven, Euro 0 - 5 mix, cargo	Consumption mix	34 - 40t gross weight / 27t payload capacity
GLO	Truck-trailer	diesel driven, Euro 1, cargo	Consumption mix	34 - 40t gross weight / 27t payload capacity
GLO	Truck-trailer	diesel driven, Euro 2, cargo	Consumption mix	34 - 40t gross weight / 27t payload capacity
GLO	Truck-trailer	diesel driven, Euro 3, cargo	Consumption mix	34 - 40t gross weight / 27t payload capacity
GLO	Truck-trailer	diesel driven, Euro 4, cargo	Consumption mix	34 - 40t gross weight / 27t payload capacity
GLO	Truck-trailer	diesel driven, Euro 5, cargo	Consumption mix	34 - 40t gross weight / 27t payload capacity
GLO	Truck-trailer	diesel driven, Euro 6, cargo	Consumption mix	34 - 40t gross weight / 27t payload capacity
GLO	Truck-trailer	diesel driven, Euro 0 – 6 mix, cargo	Technology and consumption mix	34 - 40t gross weight / 27t payload capacity
GLO	Truck-trailer	diesel driven, Euro 4, cargo	Consumption mix	50 - 60t gross weight / 40.6t payload capacity
GLO	Truck-trailer	diesel driven, Euro 5, cargo	Consumption mix	50 - 60t gross weight / 40.6t payload capacity
GLO	Truck-trailer	diesel driven, Euro 6, cargo	Consumption mix	50 - 60t gross weight / 40.6t payload capacity