



Transport baseline

Consistency with EU statistics and national data

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Contents

1. Calibration of transport baseline
2. Details of transport baseline
3. From transport volumes to vehicle volumes
 - Principles
 - Basic assumptions in TREMOVE
4. Speeds
5. Validation with country data
6. Discussion



1. Calibration of transport baseline

SCENES is European model

⇒ EU consistency between countries

⇒ Calibration with EU data sources

SCENES calibrated with
Transport in Figures (2004)

TREMOVE uses volumes on
national territory

1. Calibration

Transport in Figures

Versus

TREMOVE

For passenger car
transport [Mpsg km]

	TIF	TREMOVE
AT	69.23	69.23
BE	106.27	106.27
CH	82.32	82.32
CZ	63.92	63.92
DE	714.50	855.10
DK	59.12	59.12
ES	300.90	300.90
FI	55.70	55.70
FR	699.60	699.60
GR		77.06
HU	46.59	46.59
IE	33.33	33.33
IT	726.53	726.53
LU	5.08	5.08
NL	141.10	141.10
NO	46.83	46.83
PL	149.70	149.70
PT	86.50	86.50
SE	91.10	91.10
SI	10.03	10.03
UK	614.00	639.00



1. Calibration : LDV

Light Duty Vehicles (Vans, < 3.5 ton)

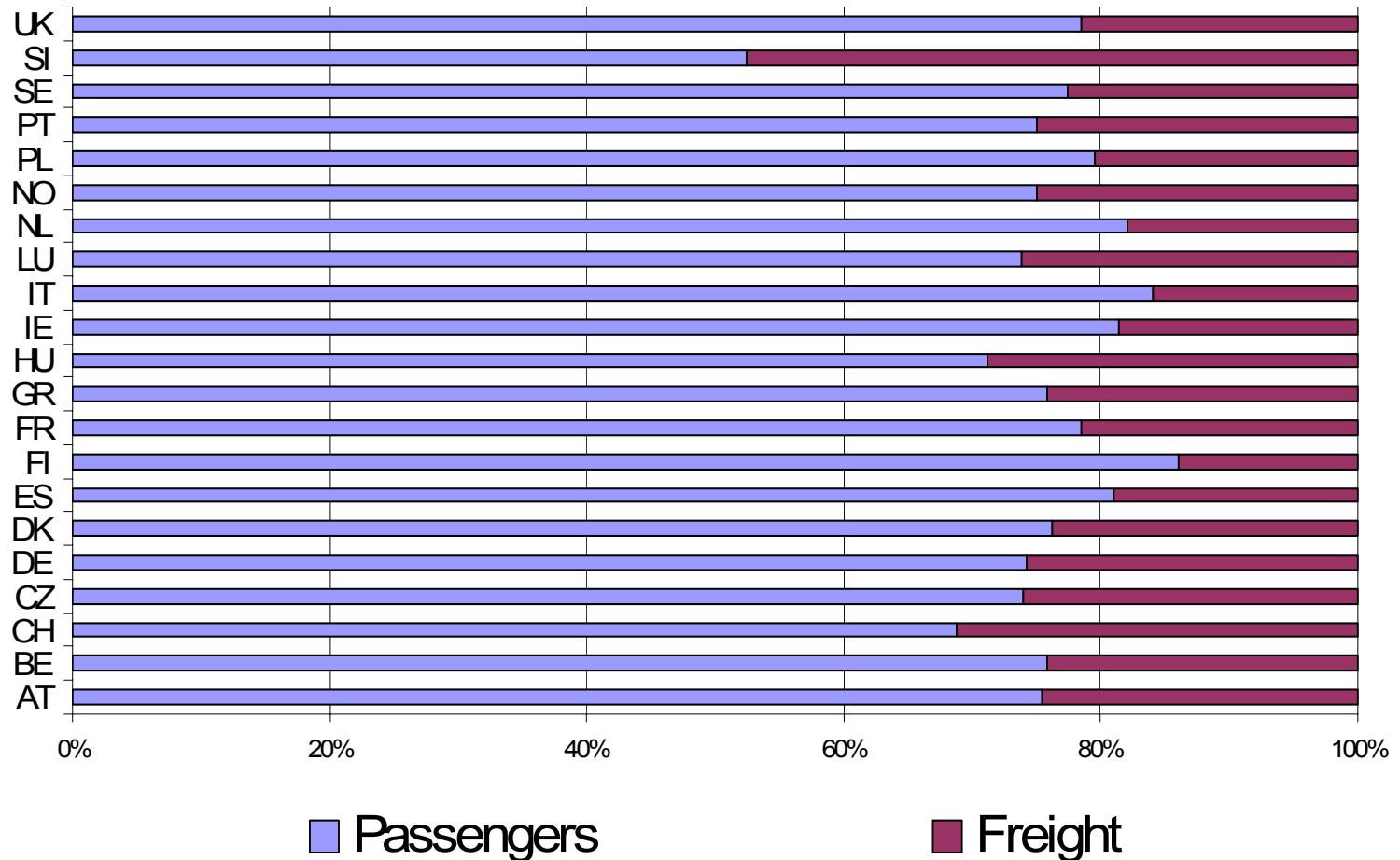
Interpretation REMOVE :

- LDV used for both passenger and freight transport
- LDV not incorporated in TIF
 - Additional freight volume
 - Additional passenger volume

=> How in TIF for each country?

1. Calibration : LDV

Proportion LDV for Passenger and Freight





1. Calibration of transport baseline

We did NOT use vehicle kilometers from UN-ECE :

Inconsistencies for some countries with TIF !!!

(e.g. occupancy < 1 !)



2. Details of transport baseline

=> See also Country sheets

- Regions
- Roads
- Travel motive
- Freight categories

Regions

Three regions :

- Metropolitan
- Non- urban
- Other cities

Illustration :

Psg km split per region in 2000

region	metropolitan	non-urban	other cities
AT	8.8%	77.5%	13.7%
BE	3.9%	80.5%	15.6%
CH	6.2%	82.9%	10.9%
CZ	4.4%	86.1%	9.5%
DE	0.6%	69.1%	30.3%
DK	10.2%	81.7%	8.1%
ES	5.2%	75.2%	19.6%
FI	8.9%	77.6%	13.5%
FR	6.8%	73.4%	19.7%
GR	12.4%	78.1%	9.4%
HU	8.6%	86.4%	5.0%
IE	13.5%	81.9%	4.6%
IT	2.9%	84.8%	12.2%
LU	-	68.8%	31.2%
NL	8.7%	78.8%	12.5%
NO	8.6%	73.6%	17.8%
PL	2.6%	86.4%	11.0%
PT	12.0%	85.2%	2.9%
SE	11.7%	69.3%	19.0%
SI	-	91.2%	8.8%
UK	11.6%	67.0%	21.4%

Roads

Four roads :

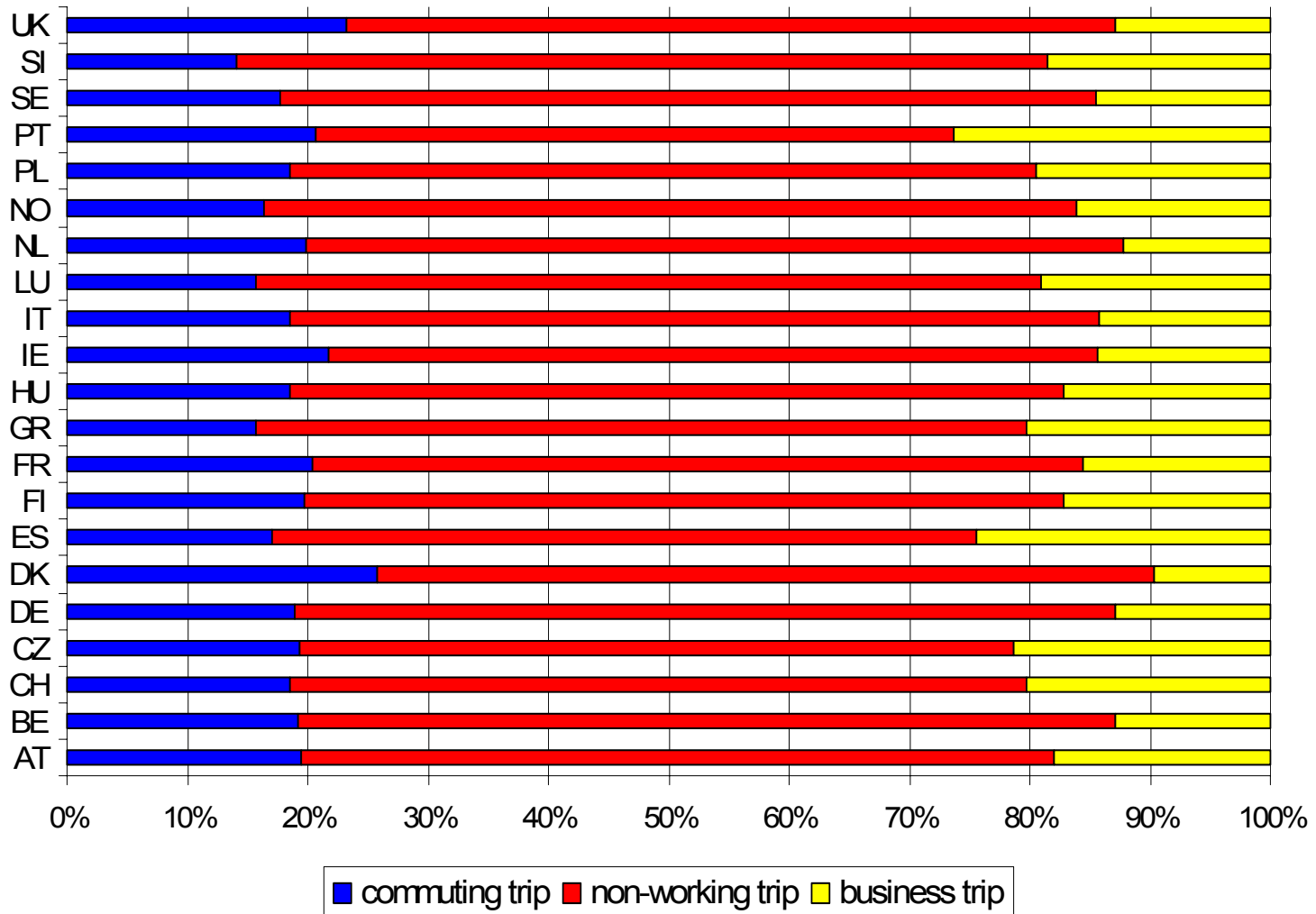
- Metropolitan
- Other cities
- Motorway (non-urban)
- Other roads (non-urban)

Illustration :

Ton km split per region in 2000

	Metropolitan urban road	non urban motorway	non urban other road	other cities urban road
AT	0.1%	59.3%	40.2%	0.4%
BE	0.1%	81.6%	17.7%	0.6%
CH	0.1%	64.3%	35.3%	0.3%
CZ	0.2%	24.3%	74.5%	1.0%
DE	0.1%	74.3%	24.6%	1.0%
DK	6.0%	45.0%	43.7%	5.4%
ES	0.3%	28.6%	70.0%	1.1%
FI	1.1%	15.5%	82.6%	0.8%
FR	0.1%	58.1%	41.4%	0.3%
GR	1.6%	36.9%	58.4%	3.1%
HU	0.8%	24.4%	74.1%	0.7%
IE	2.8%	4.5%	91.8%	0.9%
IT	0.1%	74.6%	24.6%	0.8%
LU	-	16.9%	46.4%	36.8%
NL	0.1%	65.2%	34.4%	0.3%
NO	0.2%	32.2%	67.1%	0.5%
PL	-	6.4%	93.6%	0.0%
PT	1.1%	44.3%	54.3%	0.2%
SE	0.2%	32.2%	67.1%	0.5%
SI	0.0%	30.2%	69.7%	0.1%
UK	2.7%	35.0%	55.8%	6.5%

Travel motive



Freight categories





3. From transport to vehicle volumes

- Principles
- Basic assumptions in TREMOVE
- Validation with country data



Principles

We have detailed view on :

- Activity number [psg km – ton km]
 - Vehicle stock [number of vehicles]
- ⇒ Vehicle volumes [vehicle km]

Principles

Relations :

Vehicle volume =
Activity number X load factor
occupancy

Vehicle volume = Vehicle stock X mileage

We want double consistency while
determining vehicle volumes !



Principles

Occupancies depend on
travel motive / road types

Load factors depend on
truck categories / road types

Mileages depend on
vehicle type

Basic assumptions in TREMOVE

Occupancies :

Depend on 'travel motive' :

Exemple of DK (psg / vehicle)

vehicle category	Commuting trip	Non-working trip	Business trip
small car	1.17	1.83	1.14
medium/big car	1.17	1.83	1.14
moped	1.10	1.10	1.10
motorcycle	1.10	1.10	1.10
light duty vehicle	1.17	1.83	1.14
bus	13.00	14.72	-
coach	13.00	13.84	1.00

Basic assumptions in TREMOVE

Load factors :

- Differ along freight category (based on SCENES)
- Differ along road type (based on study in Germany)

Two HDV classes in Demand module :

Small truck	<i>HDV 3.5-7.5 ton</i>
	<i>HDV 7.5-16 ton</i>
Large truck	<i>HDV 16-32 ton</i>
	<i>HDV > 32 ton</i>

Basic assumptions in TREMOVE

Load Factors :

- Dependency on freight category (ton/km) :
(Exemple of NL :)

vehicle category	bulk	cargo	unitised
light duty vehicle	0.80	0.80	-
heavy duty vehicle	7.87	7.87	7.70
freight train	335.69	335.69	335.70
inland ship	5,892.16	5,892.16	1,070.33

- Dependency on road type (ton/km) :

	<i>Motorways</i>	<i>Other roads</i>	<i>Other urban & Metropolitan</i>
Small truck	1.78	1.78	1.78
Large truck	10.03	8.96	8.45

4. Speeds for REMOVE

SCENES is an 'all-day model'

⇒ Peak and off-peak speeds for REMOVE not directly from SCENES !

⇒ Additional calculations / estimations based on general network models.

Speeds in REMOVE depend :

- On time period : peak – off peak
- On road type :
 - Metropolitan road
 - Other urban road
 - Motorway
 - Other road (in rural areas)
- On year
- On vehicle type (car – truck)

Speeds : country sheets

Car speeds (e.g. here DE) [km/h]

Period	Vehicle category	2000	2010	2020
peak	Metropolitan	21.7	21.8	21.8
	Other urban	39.7	40.3	40.8
	Motorway	103.7	103.3	102.9
	Rural road	36.8	37.0	37.2
Off-peak	Metropolitan	24.6	24.6	24.7
	Other urban	46.9	47.6	48.3
	Motorway	110.8	110.3	109.9
	Rural road	38.8	39.0	39.3

Lower truck speeds:

Period	Vehicle category	2000	2010	2020
peak	Metropolitan	19.2	19.2	19.3
	Other urban	35.1	35.6	36.1
	Motorway	75.1	74.8	74.5
	Rural road	27.7	27.8	28.0
Off-peak	Metropolitan	21.8	21.8	21.8
	Other urban	41.5	42.1	42.7
	Motorway	80.3	79.9	79.6
	Rural road	29.2	29.4	29.5



5. Validation with country data

Transport demand compared with country data

Germany

Annual growth rates 2000-2020 :
Passenger

	Germany model	TREMOVE
road	0.8%	1.5%

Freight

	Germany model	TREMOVE
road	2.2%	1.1%
train	1.0%	1.0%
inland ship	1.6%	1.1%

Germany

Data from Germany :
low occupancy and low load factors

	Germany	TREMOVE
Occupancies [psg/vehicle]	1.46	1.6
truck load factors [ton/vehicle]	4.02	7.3

France

Occupancy rates :

- SES model (France) : 1.73
- REMOVE : 1.41

Influence of road type :

	France	TREMOVE
Motorway	2.20	1.35
Other roads	2.00	1.39
Urban roads	1.25	1.43



Italy :

- Italian motorways : 1.7 pasg/veh
- Tremove : 1.6 pasg/veh



Belgium

- Compared occupancies

	Belgium	TREMOVE
Motorway	1.46	1.36
Other roads	1.41	1.38
Urban roads	1.32	1.39



6. Discussion on Country sheets

⇒ Country sheets available

Discussion on :

- SCENES
- Transport Demand



6. Discussion on Country sheets

Remarks

- How are LDV treated in each country (and in TIF numbers) ?
- Relation UN-ECE vehicle volumes with TIF numbers per country ?