

Supplementary Materials

transport mode i	vehicle type j	type of energy k	c	A <sub>0</sub> (Million vkm)	S <sub>0</sub>	C <sub>0</sub>	A <sub>0</sub> * S <sub>0</sub> * C <sub>0</sub> (million vkm)	a/km or a/kWh		Unit	a/km or a/kWh		Unit	a/km or a/kWh	
								NOx emissions (tons)	NOx E <sub>km</sub>		PM2.5 emissions (tons)	PM2.5 E <sub>km</sub>		PM2.5 emissions (tons)	PM2.5 E <sub>km</sub>
car	passenger	Gasoline	Gasoline pre-Euro/Turn 0	650.0	69.0%	0.0%	0	0.000	2.64	0.000	0.0022	0.0115	0		
car	passenger	Gasoline	Gasoline Euro 1	650.0	69.0%	6.8%	30.486	15.816	0.52	0.067	0.0022	0.0115	0.15077		
car	passenger	Gasoline	Gasoline Euro 2	650.0	69.0%	6.8%	30.486	8.405	0.28	0.067	0.0022	0.0115	0.15077		
car	passenger	Gasoline	Gasoline Euro 3	650.0	69.0%	11.9%	53.3755	5.710	0.11	0.089	0.0011	0.0115	0.6137725		
car	passenger	Gasoline	Gasoline Euro 4	650.0	69.0%	20.5%	127.8225	8.478	0.07	0.042	0.0012	0.0115	1.4099575		
car	passenger	Gasoline	Gasoline Euro 5	650.0	69.0%	27.0%	121.095	8.026	0.07	0.170	0.0014	0.0115	1.3925025		
car	passenger	Gasoline	Gasoline Euro 6	650.0	69.0%	19.0%	85.215	5.642	0.07	0.119	0.0014	0.0115	0.7799275		
car	passenger	BiEthanol	Diesel pre-Euro/Turn 0	650.0	21.8%	0.0%	0	0.000	0.75	0.000	0.2209	0.0115	0		
car	passenger	BiEthanol	Diesel Euro 1	650.0	21.8%	0.0%	0	0.000	8.60	0.000	0.0842	0.0115	0		
car	passenger	BiEthanol	Diesel Euro 2	650.0	21.8%	0.0%	0	0.000	8.61	0.000	0.0848	0.0115	0		
car	passenger	BiEthanol	Diesel Euro 3	650.0	21.8%	0.0%	0	0.000	6.00	0.000	0.2391	0.0115	0		
car	passenger	BiEthanol	Diesel Euro 4	650.0	21.8%	35.0%	40.14	32.788	0.67	1.543	0.0114	0.0115	0.56511		
car	passenger	BiEthanol	Diesel Euro 5	650.0	21.8%	35.0%	40.14	34.512	0.70	1.010	0.0021	0.0115	0.56511		
car	passenger	BiEthanol	Diesel Euro 6	650.0	21.8%	30.0%	42.12	10.187	0.24	0.063	0.0015	0.0115	0.48438		
car	passenger	CNG	Euro 3	850.0	0.0%	15.0%	0	0.000	0.12	0.000	0.0011	0.0115	0		
car	passenger	CNG	Euro 4	850.0	0.0%	14.0%	0	0.000	0.07	0.000	0.0011	0.0115	0		
car	passenger	CNG	Euro 5	850.0	0.0%	49.0%	0	0.000	0.07	0.000	0.0011	0.0115	0		
car	passenger	CNG	Euro 6	850.0	0.0%	22.0%	0	0.000	0.07	0.000	0.0011	0.0115	0		
car	passenger	LPG	Euro 1	850.0	1.0%	14.0%	1.4196	0.149	0.10	0.000	0.0011	0.0115	0.0163154		
car	passenger	LPG	Euro 4	850.0	1.8%	12.0%	1.2188	0.079	0.07	0.001	0.0011	0.0115	0.0119962		
car	passenger	LPG	Euro 5	850.0	1.8%	48.0%	4.0686	0.134	0.07	0.000	0.0011	0.0115	0.0171389		
car	passenger	LPG	Euro 6	850.0	1.8%	26.0%	2.535	0.105	0.07	0.001	0.0011	0.0115	0.0291515		
car	passenger	No Ethanol / ethanol	Euro 3	650.0	0.0%	37.0%	0	0.000	0.12	0.000	0.0011	0.0115	0		
car	passenger	No Ethanol / ethanol	Euro 4	650.0	0.0%	31.0%	0	0.000	0.06	0.000	0.0011	0.0115	0		
car	passenger	No Ethanol / ethanol	Euro 5	650.0	0.0%	17.0%	0	0.000	0.06	0.000	0.0011	0.0115	0		
car	passenger	No Ethanol / ethanol	Euro 6	650.0	0.0%	15.0%	0	0.000	0.06	0.000	0.0011	0.0115	0		
car	passenger	Gasoline hybrid	Euro 3	650.0	0.0%	1.0%	0	0.000	0.03	0.000	0.0011	0.0115	0		
car	passenger	Gasoline hybrid	Euro 4	650.0	0.0%	5.0%	0	0.000	0.02	0.000	0.0011	0.0115	0		
car	passenger	Gasoline hybrid	Euro 5	650.0	0.0%	6.0%	0	0.000	0.03	0.000	0.0011	0.0115	0		
car	passenger	Gasoline hybrid	Euro 6	650.0	0.0%	64.0%	0	0.000	0.02	0.000	0.0011	0.0115	0		
car	passenger	Diesel Hybrid	Euro 3	650.0	1.0%	1.0%	0.0035	0.003	0.03	0.000	0.0011	0.0115	0.00118825		
car	passenger	Diesel Hybrid	Euro 4	650.0	1.8%	1.0%	0.01075	0.008	0.02	0.000	0.0011	0.0115	0.00161625		
car	passenger	Diesel Hybrid	Euro 5	650.0	1.8%	30.0%	3.0005	0.047	0.02	0.003	0.0011	0.0115	0.01055575		
car	passenger	Diesel Hybrid	Euro 6	650.0	1.8%	64.0%	6.6148	0.146	0.02	0.003	0.0011	0.0115	0.01055575		
car	passenger	Electric	Euro 3	650.0	6.1%	100.0%	60.1	0.000	0.00	0.000	0.0011	0.0115	0.46135		
car	passenger	Electric	Euro 4	650.0	6.1%	100.0%	60.1	0.000	0.00	0.000	0.0011	0.0115	0		
motorcycle	passenger	Gasoline	pre Euro/Turn 0	65	100.0%	0.0%	0	0.000	0.26	0.000	0.04	0.0115	0		
motorcycle	passenger	Gasoline	Euro 1	65	100.0%	15.0%	9.75	5.045	0.52	0.137	0.014	0.0005	0.00475		
motorcycle	passenger	Gasoline	Euro 2	65	100.0%	5.0%	3.25	1.198	0.17	0.011	0.0005	0.0005	0.01025		
motorcycle	passenger	Gasoline	Euro 3	65	100.0%	2.0%	1.3	0.467	0.23	0.005	0.0005	0.0005	0.009125		
motorcycle	passenger	Gasoline	Euro 4	65	100.0%	10.0%	6.5	1.466	0.33	0.023	0.0005	0.0005	0.0035		
motorcycle	passenger	Gasoline	Euro 5	65	100.0%	20.0%	13	1.466	0.23	0.023	0.0005	0.0005	0.0025		
motorcycle	passenger	Gasoline	Euro 6	65	100.0%	30.0%	19.5	4.399	0.23	0.068	0.0005	0.0005	0.0005		
motorcycle	passenger	Electric	Euro 3	65	0.0%	100.0%	0	0.000	0.00	0.000	0.0005	0	0.0005		
3 wheelers	passenger	Diesel	Euro 2	0	11.2%	0.0%	0	0.000	0.20	0.000	0.0004	0.0006	0		
3 wheelers	passenger	Diesel	Euro 3	0	11.2%	0.0%	0	0.000	0.30	0.000	0.0004	0.0006	0		
3 wheelers	passenger	Diesel	Euro 4, Speed >45km/h (124)	0	11.2%	0.0%	0	0.000	0.20	0.000	0.0004	0.0006	0		
3 wheelers	passenger	Diesel	Euro 5, 447 Euro 6	0	11.2%	0.0%	0	0.000	0.30	0.000	0.0004	0.0006	0		
3 wheelers	passenger	Diesel	Euro 6	0	11.2%	100.0%	0	0.000	0.30	0.000	0.0004	0.0006	0		
3 wheelers	passenger	Gasoline	Euro 2	0	88.8%	15.0%	0	0.000	0.20	0.000	0.0004	0.0006	0		
3 wheelers	passenger	Gasoline	Euro 3	0	88.8%	10.0%	0	0.000	0.20	0.000	0.0004	0.0006	0		
3 wheelers	passenger	Gasoline	Euro 4, Speed >45km/h (124)	0	88.8%	25.0%	0	0.000	0.30	0.000	0.0004	0.0006	0		
3 wheelers	passenger	Gasoline	Euro 5, 447 Euro 6	0	88.8%	60.0%	0	0.000	0.20	0.000	0.0004	0.0006	0		
3 wheelers	passenger	Gasoline	Euro 6	0	88.8%	34.0%	0	0.000	0.30	0.000	0.0004	0.0006	0		
3 wheelers	passenger	Electric	Euro 3	0	0.0%	100.0%	0	0.000	0.00	0.000	0.0004	0	0.0004		
light truck	NI (good)	Gasoline	Gasoline pre Euro/Turn 0	60	10.0%	0.0%	0	0.000	3.59	0.001	0.0117	0.00094	0		
light truck	NI (good)	Gasoline	Gasoline Euro 1	60	10.0%	10.0%	0.6	0.393	0.60	0.002	0.0023	0.00092	0.00092		
light truck	NI (good)	Gasoline	Gasoline Euro 2	60	10.0%	20.0%	1.2	0.311	0.27	0.003	0.0023	0.0017	0.01084		
light truck	NI (good)	Gasoline	Gasoline Euro 3	60	10.0%	30.0%	1.2	0.186	0.17	0.003	0.0023	0.0017	0.01084		
light truck	NI (good)	Gasoline	Gasoline Euro 4	60	10.0%	40.0%	2.4	0.179	0.07	0.003	0.0023	0.0017	0.01084		
light truck	NI (good)	Gasoline	Gasoline Euro 5	60	10.0%	60.0%	0.6	0.098	0.07	0.003	0.0023	0.0017	0.01084		
light truck	NI (good)	Gasoline	Gasoline Euro 6	60	10.0%	10.0%	0.6	0.045	0.07	0.001	0.0012	0.0017	0.00092		
light truck	NI (good)	BiEthanol	Diesel pre Euro/Turn 0	60	90.0%	7.0%	3.79	7.296	1.93	1.146	0.136	0.0157	0.059346		
light truck	NI (good)	BiEthanol	Diesel Euro 1	60	90.0%	4.0%	2.16	1.42	0.39	0.117	0.0157	0.0157	0.019152		
light truck	NI (good)	BiEthanol	Diesel Euro 2	60	90.0%	10.0%	5.14	7.660	1.42	0.832	0.0137	0.0157	0.08048		
light truck	NI (good)	BiEthanol	Diesel Euro 3	60	90.0%	15.0%	10.36	12.288	1.20	1.063	0.0188	0.0157	0.161561		
light truck	NI (good)	BiEthanol	Diesel Euro 4	60	90.0%	24.0%	16.2	12.054	0.59	0.463	0.0257	0.0157	0.225434		
light truck	NI (good)	BiEthanol	Diesel Euro 5	60	90.0%	30.0%	10.8	14.442	1.34	0.611	0.0302	0.0157	0.148959		
light truck	NI (good)	BiEthanol	Diesel Euro 6	60	90.0%	10.0%	9.2	3.114	1.58	0.005	0.0009	0.0157	0.00479		
light truck	NI (good)	Electric	Euro 3	60	0.0%	100.0%	0	0.000	0.00	0.000	0.0157	0	0.0157		
light truck	NI (good)	Electric	Euro 4	60	0.0%	100.0%	0	0.000	0.07	0.000	0.0012	0.0157	0		
light truck	NI (good)	Electric	Euro 5	60	0.0%	100.0%	0	0.000	0.07	0.000	0.0012	0.0157	0		
light truck	NI (good)	Electric	Euro 6	60	0.0%	100.0%	0	0.000	0.00	0.000	0.0012	0.0157	0		
light truck	NI (good)	Gasoline hybrid	Diesel Euro 1	60	0.0%	100.0%	0	0.000	0.00	0.000	0.0012	0.0157	0		
light truck	NI (good)	Gasoline hybrid	Diesel Euro 2	60	0.0%	100.0%	0	0.000	0.02	0.000	0.0012	0.0157	0		
light truck	NI (good)	Gasoline hybrid	Diesel Euro 3	60	0.0%	100.0%	0	0.000	0.02	0.000	0.0012	0.0157	0		
light truck	NI (good)	Gasoline hybrid	Diesel												

## Supplementary Material

Coach/M2 / M3	passenger	(Bio)Diesel	Diesel Euro 6	2.0	99.9%	10.0%	0.1998	0.115	0.58	0.000	0.0018	0.0474	0.00947052
Coach/M2 / M3	passenger	CNG	Euro 3	2.0	0.0%	0.0%	0	0.000	11.63	0.000	0.01	0.0474	0
Coach/M2 / M3	passenger	CNG	Euro 4	2.0	0.0%	37.0%	0	0.000	2.91	0.000	0.005	0.0474	0
Coach/M2 / M3	passenger	CNG	Euro 5	2.0	0.0%	62.0%	0	0.000	2.91	0.000	0.005	0.0474	0
Coach/M2 / M3	passenger	CNG	Euro 6	2.0	0.0%	1.0%	0	0.000	2.91	0.000	0.005	0.0474	0
Coach/M2 / M3	passenger	LPG	Euro 3	2.0	0.1%	0.0%	0	0.000	0.07	0.000	0	0.0474	0
Coach/M2 / M3	passenger	LPG	Euro 4	2.0	0.1%	37.0%	0.00074	0.000	0.07	0.000	0	0.0474	0.000635076
Coach/M2 / M3	passenger	LPG	Euro 5	2.0	0.1%	62.0%	0.00124	0.000	0.17	0.000	0	0.0474	0.000658776
Coach/M2 / M3	passenger	LPG	Euro 6	2.0	0.1%	1.0%	0.00002	0.000	0.09	0.000	0	0.0474	0.000002948
Coach/M2 / M3	passenger	hydrogen		2.0	0.0%	100.0%	0	0.000	0.00	0.000	0	0.0474	0
Coach/M2 / M3	passenger	Diesel Hybrid		2.0	0.0%	100.0%	0	0.000	0.52	0.000	0.0018	0.0474	0
Coach/M2 / M3	passenger	Electric		2.0	0.0%	100.0%	0	0.000	0.00	0.000	0	0.0474	0
metro/tram/trolleybus	passenger	Electric		0	100.0%	100.0%	0	0.000	0.00	0.000	0	0	0
light rail	passenger	Electric		0	100.0%	100.0%	0	0.000	0.00	0.000	0	0	0
Train	passenger	Electric		2	0.0%	100.0%	0	0.000	0.00	0.000	0	0	0
Train	passenger	(Bio)Diesel	130 < P ≤ 560 kW, 2006	2.0	100.0%	40.0%	0.8	3.711	4.65	0.160	0.2	0	0
Train	passenger	(Bio)Diesel	P>560 kW, 2006	2.0	100.0%	20.0%	0.4	2.791	6.98	0.080	0.2	0	0
Train	passenger	(Bio)Diesel	railcar 130 kW < P, 2012	2.0	100.0%	20.0%	0.4	0.930	2.33	0.010	0.025	0	0
Train	passenger	(Bio)Diesel	locomotive 130 kW < P, 2012	2.0	100.0%	20.0%	0.4	1.860	4.65	0.010	0.025	0	0
Train	passenger	hydrogen		2.0	0.0%	100.0%	0	0.000	0.00	0.000	0	0	0
inland waterways ferry	passenger	Values for diesel	Displacement D ≤ 0.9, P > 37 kW, 2007	0.0	100.0%	100.0%	0	0.000	8.72	0.000	0.4	0	0
inland waterways ferry	passenger	Values for diesel	0.9 < D ≤ 1.2, 2007	0.0	100.0%	100.0%	0	0.000	8.37	0.000	0.3	0	0
inland waterways ferry	passenger	Values for diesel	1.2 < D ≤ 2.5, 2007	0.0	100.0%	100.0%	0	0.000	8.37	0.000	0.2	0	0
inland waterways ferry	passenger	Values for diesel	2.5 < D ≤ 5, 2009	0.0	100.0%	100.0%	0	0.000	8.37	0.000	0.2	0	0
inland waterways ferry	passenger	Values for diesel	5 < D ≤ 15, 2009	0.0	100.0%	100.0%	0	0.000	9.07	0.000	0.27	0	0
inland waterways ferry	passenger	Values for diesel	15 < D ≤ 20, P ≤ 3300 kW, 2009	0.0	100.0%	100.0%	0	0.000	10.12	0.000	0.5	0	0
inland waterways ferry	passenger	Values for diesel	15 < D ≤ 20, P > 3300 kW, 2009	0.0	100.0%	100.0%	0	0.000	11.40	0.000	0.5	0	0
inland waterways ferry	passenger	Values for diesel	20 < D ≤ 25, 2009	0.0	100.0%	100.0%	0	0.000	11.40	0.000	0.5	0	0
inland waterways ferry	passenger	Values for diesel	25 < D ≤ 30, 2009	0.0	100.0%	100.0%	0	0.000	12.79	0.000	0.5	0	0

**Figure S1a.** Energy efficiency excel spreadsheet.

[https://transport.ec.europa.eu/other-pages/transport-basic-page/energy-efficiency-indicator\\_en](https://transport.ec.europa.eu/other-pages/transport-basic-page/energy-efficiency-indicator_en)

Energy efficiency		Please fill in the blue cells	
Parameter value:	1,57	min scale	max scale
Indicator value:	6,43	3,5	0,5
Step 1: Base data collection/ verification			
Fill in the urban area values. If no specific values are available, enter the proposed values.			
This table requires the same values entered for indicator 7 "Greenhouse gas emissions".			
Energy content (Mj/l) for different fuel types		Proposed values (ORAN)	Urban area values
Type of energy k	Eck(en MJ/l)		
Gasoline	34,2	34,2	34,2
Diesel	38,577	38,577	38,577
CNG	53,6	53,6	53,6
LPG	25,1685	25,1685	25,1685
Heavy oil	43,059	43,059	43,059
Ethanol	23,67	23,67	23,67
Bio-Ethanol	23,94	23,94	23,94
Bio -Diesel	35,237	35,237	35,237
Hydrogen	141,86	141,86	141,86
Electricity	1	1	1
Coal	24	24	24
Step 2: Information on transport volumes			
Enter the information on transport volumes. They should be derived from the "modal split" spreadsheet.			
Typass (in millions passenger km)		TVfre (millions ton km)	
2000		500	

Figure S1b. Energy efficiency excel spreadsheet.

# Supplementary Material

				a/for or a/WH					a/for or a/WH					a/for				
transport mode i	vehicle type j	type of energy k	ε	A <sub>0</sub> (Million km)	η <sub>0</sub>	C <sub>0</sub>	A <sub>0</sub> * η <sub>0</sub> * C <sub>0</sub> (million km)	NO <sub>x</sub> Emissions (tons)	NO <sub>x</sub> E <sub>0</sub>	Unit	PM2.5 Emissions (tons)	PM2.5 E <sub>0</sub>	Unit	PM2.5 E <sub>0</sub>	non-exhaust PM2.5 emissions (tons)			
car	passenger	Gasoline	Gasoline per Euro/Fuel 0	650.0	65.0%	0.0%	0	0.000	2.64	0.000	0.0022	0.0015	0	0.0015	0			
car	passenger	Gasoline	Gasoline Euro 1	650.0	65.0%	6.0%	30.496	15.814	0.52	0.067	0.0022	0.0015	0.190777	0.190777	0			
car	passenger	Gasoline	Gasoline Euro 2	650.0	65.0%	6.0%	30.496	15.814	0.38	0.047	0.0022	0.0015	0.139777	0.139777	0			
car	passenger	Gasoline	Gasoline Euro 3	650.0	65.0%	11.7%	13.715	7.710	0.11	0.009	0.0011	0.0015	0.0117223	0.0117223	0			
car	passenger	Gasoline	Gasoline Euro 4	650.0	65.0%	28.3%	122.8225	6.472	0.07	0.141	0.0011	0.0015	1.46995875	1.46995875	0			
car	passenger	Gasoline	Gasoline Euro 5	650.0	65.0%	27.0%	121.096	6.024	0.07	0.176	0.0014	0.0015	1.397095	1.397095	0			
car	passenger	Gasoline	Gasoline Euro 6	650.0	65.0%	15.0%	75.215	3.618	0.07	0.115	0.0014	0.0015	0.572793	0.572793	0			
car	passenger	(Bio)Ethanol	Deisel per Euro/Fuel 0	650.0	21.6%	0.0%	0	0.000	0.75	0.000	0.2209	0.0015	0	0.0015	0			
car	passenger	(Bio)Ethanol	Deisel Euro 1	650.0	21.6%	0.0%	0	0.000	0.80	0.000	0.0482	0.0015	0	0.0015	0			
car	passenger	(Bio)Ethanol	Deisel Euro 2	650.0	21.6%	0.0%	0	0.000	0.80	0.000	0.0482	0.0015	0	0.0015	0			
car	passenger	(Bio)Ethanol	Deisel Euro 3	650.0	21.6%	0.0%	0	0.000	0.80	0.000	0.0482	0.0015	0	0.0015	0			
car	passenger	(Bio)Ethanol	Deisel Euro 4	650.0	21.6%	35.0%	46.14	32.798	0.47	1.543	0.0014	0.0015	0.54011	0.54011	0			
car	passenger	(Bio)Ethanol	Deisel Euro 5	650.0	21.6%	35.0%	46.14	34.512	0.70	0.103	0.0021	0.0015	0.54011	0.54011	0			
car	passenger	(Bio)Ethanol	Deisel Euro 6	650.0	21.6%	30.0%	42.12	34.187	0.14	0.003	0.0015	0.0015	0	0.0015	0			
car	passenger	CHG	Euro 3	650.0	0.0%	15.0%	0	0.000	0.12	0.000	0.0011	0.0015	0	0.0015	0			
car	passenger	CHG	Euro 4	650.0	0.0%	45.0%	0	0.000	0.07	0.000	0.0011	0.0015	0	0.0015	0			
car	passenger	CHG	Euro 5	650.0	0.0%	22.0%	0	0.000	0.07	0.000	0.0011	0.0015	0	0.0015	0			
car	passenger	LPG	Euro 3	650.0	1.6%	14.0%	1.4196	0.149	0.10	0.002	0.0011	0.0015	0.0161254	0.0161254	0			
car	passenger	LPG	Euro 4	650.0	1.6%	12.0%	1.2188	0.079	0.07	0.001	0.0011	0.0015	0.0119912	0.0119912	0			
car	passenger	LPG	Euro 5	650.0	1.6%	48.0%	4.9686	0.144	0.07	0.005	0.0011	0.0015	0.0171389	0.0171389	0			
car	passenger	LPG	Euro 6	650.0	1.6%	26.0%	2.531	0.185	0.07	0.001	0.0011	0.0015	0.0251253	0.0251253	0			
car	passenger	Bio-Ethanol / ethanol	Euro 3	650.0	0.0%	37.0%	0	0.000	0.12	0.000	0.0011	0.0015	0	0.0015	0			
car	passenger	Bio-Ethanol / ethanol	Euro 4	650.0	0.0%	31.0%	0	0.000	0.06	0.000	0.0011	0.0015	0	0.0015	0			
car	passenger	Bio-Ethanol / ethanol	Euro 5	650.0	0.0%	17.0%	0	0.000	0.06	0.000	0.0011	0.0015	0	0.0015	0			
car	passenger	Bio-Ethanol / ethanol	Euro 6	650.0	0.0%	15.0%	0	0.000	0.06	0.000	0.0011	0.0015	0	0.0015	0			
car	passenger	Gasoline hybrid	Euro 3	650.0	0.0%	1.0%	0	0.000	0.03	0.000	0.0011	0.0015	0	0.0015	0			
car	passenger	Gasoline hybrid	Euro 4	650.0	0.0%	5.0%	0	0.000	0.03	0.000	0.0011	0.0015	0	0.0015	0			
car	passenger	Gasoline hybrid	Euro 5	650.0	0.0%	30.0%	0	0.000	0.02	0.000	0.0011	0.0015	0	0.0015	0			
car	passenger	Gasoline hybrid	Euro 6	650.0	0.0%	64.0%	0	0.000	0.02	0.000	0.0011	0.0015	0	0.0015	0			
car	passenger	Deisel hybrid	Euro 3	650.0	1.6%	5.0%	0.10335	0.003	0.03	0.001	0.0011	0.0015	0.00138257	0.00138257	0			
car	passenger	Deisel hybrid	Euro 4	650.0	1.6%	5.0%	0.10335	0.008	0.02	0.001	0.0011	0.0015	0.005842625	0.005842625	0			
car	passenger	Deisel hybrid	Euro 5	650.0	1.6%	30.0%	3.1005	0.003	0.03	0.007	0.0011	0.0015	0.01691616	0.01691616	0			
car	passenger	Electric	Euro 3	650.0	6.7%	100.0%	45.1	0.000	0.00	0.000	0.000	0	0.0015	0.48416	0			
car	passenger	Electric	Euro 4	650.0	6.7%	100.0%	45.1	0.000	0.00	0.000	0.000	0	0.0015	0.48416	0			
car	passenger	Electric	Euro 5	650.0	6.7%	100.0%	45.1	0.000	0.00	0.000	0.000	0	0.0015	0.48416	0			
car	passenger	Electric	Euro 6	650.0	6.7%	100.0%	45.1	0.000	0.00	0.000	0.000	0	0.0015	0.48416	0			
motorcycle	passenger	Gasoline	Euro-Fuel/Fuel 0	65	100.0%	5.0%	3.25	0.820	0.20	0.046	0.014	0.005	0.01625	0.01625	0			
motorcycle	passenger	Gasoline	Euro 1	65	100.0%	5.0%	15.9	8.26	0.12	0.044	0.014	0.005	0.08875	0.08875	0			
motorcycle	passenger	Gasoline	Euro 2	65	100.0%	5.0%	3.25	1.188	0.17	0.011	0.005	0.005	0.01625	0.01625	0			
motorcycle	passenger	Gasoline	Euro 3	65	100.0%	25.0%	16.25	3.666	0.13	0.057	0.005	0.005	0.01625	0.01625	0			
motorcycle	passenger	Gasoline	Euro 4	65	100.0%	10.0%	6.5	1.466	0.13	0.005	0.005	0.005	0.01625	0.01625	0			
motorcycle	passenger	Gasoline	Euro 5	65	100.0%	10.0%	6.5	1.466	0.23	0.023	0.005	0.005	0.01625	0.01625	0			
motorcycle	passenger	Gasoline	Euro 6	65	100.0%	10.0%	29.13	0.13	0.06	0.005	0.005	0.005	0.01625	0.01625	0			
motorcycle	passenger	Electric	Euro 3	65	0.0%	100.0%	0	0.000	0.00	0.000	0.000	0	0.005	0	0			
3 wheelers	passenger	Deisel	Euro 2	0	11.2%	0.0%	0	0.000	0.20	0.000	0.007	0	0.0086	0	0			
3 wheelers	passenger	Deisel	Euro 3	0	11.2%	0.0%	0	0.000	0.20	0.000	0.004	0	0.004	0	0			
3 wheelers	passenger	Deisel	Euro 4, Speed <45km/h (L3e)	0	11.2%	0.0%	0	0.000	0.20	0.000	0.004	0	0.004	0	0			
3 wheelers	passenger	Deisel	Euro 5, <45 km/h	0	11.2%	0.0%	0	0.000	0.20	0.000	0.004	0	0.004	0	0			
3 wheelers	passenger	Deisel	Euro 6	0	11.2%	100.0%	0	0.000	0.20	0.000	0.004	0	0.0086	0	0			
3 wheelers	passenger	Deisel	Euro 7	0	11.2%	100.0%	0	0.000	0.20	0.000	0.007	0	0.0086	0	0			
3 wheelers	passenger	Deisel	Euro 8	0	11.2%	100.0%	0	0.000	0.20	0.000	0.004	0	0.0086	0	0			
3 wheelers	passenger	Gasoline	Euro 4, Speed <45km/h (L3e)	0	88.8%	25.0%	0	0.000	0.20	0.000	0.004	0	0.0086	0	0			
3 wheelers	passenger	Gasoline	Euro 5, <45 km/h	0	88.8%	10.0%	0	0.000	0.20	0.000	0.004	0	0.0086	0	0			
3 wheelers	passenger	Gasoline	Euro 6	0	88.8%	34.0%	0	0.000	0.20	0.000	0.004	0	0.0086	0	0			
3 wheelers	passenger	Gasoline	Euro 8	0	88.8%	34.0%	0	0.000	0.20	0.000	0.004	0	0.0086	0	0			
3 wheelers	passenger	Electric	Euro 3	0	0.0%	100.0%	0	0.000	0.00	0.000	0.000	0	0.0086	0	0			
3 wheelers	passenger	Electric	Euro 4	0	0.0%	100.0%	0	0.000	0.00	0.000	0.000	0	0.0086	0	0			
3 wheelers	passenger	Electric	Euro 5	0	0.0%	100.0%	0	0.000	0.00	0.000	0.000	0	0.0086	0	0			
3 wheelers	passenger	Electric	Euro 6	0	0.0%	100.0%	0	0.000	0.00	0.000	0.000	0	0.0086	0	0			
3 wheelers	passenger	Electric	Euro 8	0	0.0%	100.0%	0	0.000	0.00	0.000	0.000	0	0.0086	0	0			
3 wheelers	passenger	Electric	Euro 9	0	0.0%	100.0%	0	0.000	0.00	0.000	0.000	0	0.0086	0	0			
3 wheelers	passenger	Electric	Euro 10	0	0.0%	100.0%	0	0.000	0.00	0.000	0.000	0	0.0086	0	0			
3 wheelers	passenger	Electric	Euro 11	0	0.0%	100.0%	0	0.000	0.00	0.000	0.000	0	0.0086	0	0			
3 wheelers	passenger	Electric	Euro 12	0	0.0%	100.0%	0	0.000	0.00	0.000	0.000	0	0.0086	0	0			
3 wheelers	passenger	Electric	Euro 13	0	0.0%	100.0%	0	0.000	0.00	0.000	0.000	0	0.0086	0	0			
3 wheelers	passenger	Electric	Euro 14	0	0.0%	100.0%	0	0.000	0.00	0.000	0.000	0	0.0086	0	0			
3 wheelers	passenger	Electric	Euro 15	0	0.0%	100.0%	0	0.000	0.00	0.000	0.000	0	0.0086	0	0			
3 wheelers	passenger	Electric	Euro 16	0	0.0%	100.0%	0	0.000	0.00	0.000	0.000	0	0.0086	0	0			
3 wheelers	passenger	Electric	Euro 17	0	0.0%	100.0%	0	0.000	0.00	0.000	0.000	0	0.0086	0	0			
3 wheelers	passenger	Electric	Euro 18	0	0.0%	100.0%	0	0.000	0.00	0.000	0.000	0	0.0086	0	0			
3 wheelers	passenger	Electric	Euro 19	0	0.0%	100.0%	0	0.000	0.00	0.000	0.000	0	0.0086	0	0			
3 wheelers	passenger	Electric	Euro 20	0	0.0%	100.0%	0	0.000	0.00	0.000	0.000	0	0.0086	0	0			
3 wheelers	passenger	Electric	Euro 21	0	0.0%	100.0%	0	0.000	0.00	0.000	0.000	0	0.0086	0	0			
3 wheelers	passenger	Electric	Euro 22	0	0.0%	100.0%	0	0.000	0.00	0.000	0.000	0	0.0086					

## Supplementary Material

Coach/M2 / M3	passenger	(Bio)Diesel	Diesel Euro 6	2.0	99.9%	10.0%	0.1998	0.115	0.58	0.000	0.0018	0.0474	0.00947052
Coach/M2 / M3	passenger	CNG	Euro 3	2.0	0.0%	0.0%	0	0.000	11.63	0.000	0.01	0.0474	0
Coach/M2 / M3	passenger	CNG	Euro 4	2.0	0.0%	37.0%	0	0.000	2.91	0.000	0.005	0.0474	0
Coach/M2 / M3	passenger	CNG	Euro 5	2.0	0.0%	62.0%	0	0.000	2.91	0.000	0.005	0.0474	0
Coach/M2 / M3	passenger	CNG	Euro 6	2.0	0.0%	1.0%	0	0.000	2.91	0.000	0.005	0.0474	0
Coach/M2 / M3	passenger	LPG	Euro 3	2.0	0.1%	0.0%	0	0.000	0.07	0.000	0	0.0474	0
Coach/M2 / M3	passenger	LPG	Euro 4	2.0	0.1%	37.0%	0.00074	0.000	0.07	0.000	0	0.0474	0.000635076
Coach/M2 / M3	passenger	LPG	Euro 5	2.0	0.1%	62.0%	0.00124	0.000	0.17	0.000	0	0.0474	0.000587776
Coach/M2 / M3	passenger	LPG	Euro 6	2.0	0.1%	1.0%	0.00002	0.000	0.09	0.000	0	0.0474	0.000002940
Coach/M2 / M3	passenger	hydrogen		2.0	0.0%	100.0%	0	0.000	0.00	0.000	0	0.0474	0
Coach/M2 / M3	passenger	Diesel Hybrid		2.0	0.0%	100.0%	0	0.000	0.52	0.000	0.0018	0.0474	0
Coach/M2 / M3	passenger	Electric		2.0	0.0%	100.0%	0	0.000	0.00	0.000	0	0.0474	0
metro/tram/trolleybus	passenger	Electric		0	100.0%	100.0%	0	0.000	0.00	0.000	0	0	0
light rail	passenger	Electric		0	100.0%	100.0%	0	0.000	0.00	0.000	0	0	0
Train	passenger	Electric		2	0.0%	100.0%	0	0.000	0.00	0.000	0	0	0
Train	passenger	(Bio)Diesel	130 ≤ P ≤ 560 kW, 2006	2.0	100.0%	40.0%	0.8	3.721	4.65	0.160	0.2	0	0
Train	passenger	(Bio)Diesel	P ≥ 560 kW, 2006	2.0	100.0%	20.0%	0.4	2.791	6.98	0.080	0.2	0	0
Train	passenger	(Bio)Diesel	railcar 130 kW < P, 2012	2.0	100.0%	20.0%	0.4	0.930	2.33	0.010	0.025	0	0
Train	passenger	(Bio)Diesel	locomotive 130 kW < P, 2012	2.0	100.0%	20.0%	0.4	1.860	4.65	0.010	0.025	0	0
Train	passenger	hydrogen		2.0	0.0%	100.0%	0	0.000	0.00	0.000	0	0	0
Inland waterways ferry	passenger	Values for diesel	Displacement D ≤ 0.8, P > 37 kW, 2007	0.0	100.0%	100.0%	0	0.000	8.72	0.000	0.4	0	0
Inland waterways ferry	passenger	Values for diesel	0.8 < D ≤ 1.2, 2007	0.0	100.0%	100.0%	0	0.000	8.37	0.000	0.3	0	0
Inland waterways ferry	passenger	Values for diesel	1.2 < D ≤ 2.5, 2007	0.0	100.0%	100.0%	0	0.000	8.37	0.000	0.2	0	0
Inland waterways ferry	passenger	Values for diesel	2.5 < D ≤ 5, 2009	0.0	100.0%	100.0%	0	0.000	8.37	0.000	0.2	0	0
Inland waterways ferry	passenger	Values for diesel	5 < D ≤ 15, 2009	0.0	100.0%	100.0%	0	0.000	9.07	0.000	0.27	0	0
Inland waterways ferry	passenger	Values for diesel	15 < D ≤ 26, P ≤ 3300 kW, 2009	0.0	100.0%	100.0%	0	0.000	10.12	0.000	0.5	0	0
Inland waterways ferry	passenger	Values for diesel	15 < D ≤ 26, P > 3300 kW, 2009	0.0	100.0%	100.0%	0	0.000	11.40	0.000	0.5	0	0
Inland waterways ferry	passenger	Values for diesel	26 < D ≤ 25, 2009	0.0	100.0%	100.0%	0	0.000	11.40	0.000	0.5	0	0

Figure S2a. Air pollutant emissions excel spreadsheet.

[https://transport.ec.europa.eu/other-pages/transport-basic-page/energy-efficiency-indicator\\_en](https://transport.ec.europa.eu/other-pages/transport-basic-page/energy-efficiency-indicator_en)

Supplementary Material

Air pollutant emissions		kg PM2.5 eq / cap		
Parameter value:	0,45		minimum value for scale	Max value for scale
Indicator value:	7,91		2,15	0

Step 1 - data collection

For your information, the table below gives the different classifications possible with respect to vehicle type, fuel type and emission standard.

passenger vehicles		Fuel types		Emission standards	
	car (M1)		Gasoline		Gasoline pre-Euro/Euro 0
	bus (M2, < 5 t)		Diesel	note: emission standards for goods vehicles is weight dependent (<1305; 1305 - 1760; 1760 - 3500)	Gasoline Euro 1
	bus (M3, > 5 t)		CNG		Gasoline Euro 2
	coach (M2/M3)		LPG		Gasoline Euro 3
	Powered Two Wheelers (PWT)/ Motorcycle		Ethanol		Gasoline Euro 4
	Motorised 3-wheeler		Bio-Ethanol		Gasoline Euro 5
	metro/tram/trolleybus		Bio-Diesel		Gasoline Euro 6
	lightrail		Hydrogen		Diesel pre-Euro/Euro 0
	train		Electricity		Diesel Euro 1
	Inland waterways ferry				Diesel Euro 2
goods vehicles	light truck				Diesel Euro 3
	heavy truck				Diesel Euro 4
					Diesel Euro 5
					Diesel Euro 6

The tables below have to be filled insofar information is available.

a) Information on transport volumes: vkm at vehicle level

Please fill information on transport volumes at aggregated level for vehicle types, in terms of vkm (Millions vkm/year). Information could also be estimated from pkm or tkm with the application of average occupancy factor or load factor.

If no information is available for one vehicle type, leave it blank. Nevertheless, this data is strictly required to calculate the indicator. This table requires the same values entered for indicator 9 "energy efficiency" and indicator 7 "GHG emissions".

Figure S2b. Air pollutant emissions excel spreadsheet

Supplementary Material

Greenhouse gas emissions

Parameter value:1,35

Indicator value:5,09

Please fill in the blue cells  
t CO<sub>2</sub> eq/ cap per year

minimum value for scale

maximum value for scale

0

2,75

Step 1: Base data collection/ verification

Fill in the urban area values. If no specific values are available enter the proposed values.  
This table requires the same values entered for indicator 9 "energy efficiency"

Energy content (MJ/l) for different fuel types

Type of energy k	Proposed values (ORAN)	Urban area values
Gasoline	34,2	34,2
Diesel	38,577	38,577
CNG	53,6	53,6
LPG	25,1685	25,1685
Heavy oil	43,059	43,059
Ethanol	23,67	23,67
Bio-Ethanol	23,94	23,94
Bio-Diesel	35,237	35,237
Hydrogen	141,86	141,86
Electricity	1	1
Coal	24	24

in MJ/kg

in IEq

comment box  
(please add source of data, year, geographical area)

ORAN values

Enter the information on the country (in order to select the appropriate energy mix for electricity generation) and on the inhabitants of the urban area

country

EL - Greece

cap (inhabitants)

215.000

Figure S3a. GHG emissions excel spreadsheet

## Supplementary Material

Transport mode

Vehicle type

Type of energy

E

A<sub>0</sub> (million tons)

T<sub>0</sub>

C<sub>0</sub>

A<sub>0</sub> \* T<sub>0</sub> \* C<sub>0</sub>  
(million tons)

E<sub>0</sub>

Unit

Energy Content

Conversion

GHG Conversion

E<sub>0</sub> (TWh)

E<sub>0</sub>

GHG Conversion

GHG Conversion

GHG Conversion

car

passenger

Gasoline

Gasoline per Euro/Euro 2

600.0

60.0%

0.0%

0.000

0.0016617

liters

34.3

0.001

0.000

0.000

0.000

0.000

0.000

car

passenger

Gasoline

Gasoline per Euro/Euro 3

600.0

60.0%

0.0%

0.000

0.0017920

liters

34.3

0.001

0.000

0.000

0.000

0.000

0.000

car

passenger

Gasoline

Gasoline per Euro/Euro 4

600.0

60.0%

0.0%

0.000

0.0017920

liters

34.3

0.001

0.000

0.000

0.000

0.000

0.000

car

passenger

Gasoline

Gasoline per Euro/Euro 5

600.0

60.0%

25.1%

127.821

0.0017920

liters

34.3

0.001

0.000

0.000

0.000

0.000

0.000

car

passenger

Gasoline

Gasoline per Euro/Euro 6

600.0

60.0%

25.1%

127.821

0.0017920

liters

34.3

0.001

0.000

0.000

0.000

0.000

0.000

car

passenger

Gasoline

Gasoline per Euro/Euro 7

600.0

60.0%

25.1%

127.821

0.0017920

liters

34.3

0.001

0.000

0.000

0.000

0.000

0.000

car

passenger

Gasoline

Gasoline per Euro/Euro 8

600.0

60.0%

25.1%

127.821

0.0017920

liters

34.3

0.001

0.000

0.000

0.000

0.000

0.000

car

passenger

Gasoline

Gasoline per Euro/Euro 9

600.0

60.0%

25.1%

127.821

0.0017920

liters

34.3

0.001

0.000

0.000

0.000

0.000

0.000

car

passenger

Gasoline

Gasoline per Euro/Euro 10

600.0

60.0%

25.1%

127.821

0.0017920

liters

34.3

0.001

0.000

0.000

0.000

0.000

0.000

car

passenger

Gasoline

Gasoline per Euro/Euro 11

600.0

60.0%

25.1%

127.821

0.0017920

liters

34.3

0.001

0.000

0.000

0.000

0.000

0.000

car

passenger

Gasoline

Gasoline per Euro/Euro 12

600.0

60.0%

25.1%

127.821

0.0017920

liters

34.3

0.001

0.000

0.000

0.000

0.000

0.000

car

passenger

Gasoline

Gasoline per Euro/Euro 13

600.0

60.0%

25.1%

127.821

0.0017920

liters

34.3

0.001

0.000

0.000

0.000

0.000

0.000

car

passenger

Gasoline

Gasoline per Euro/Euro 14

600.0

60.0%

25.1%

127.821

0.0017920

liters

34.3

0.001

0.000

0.000

0.000

0.000

0.000

car

passenger

Gasoline

Gasoline per Euro/Euro 15

600.0

60.0%

25.1%

127.821

0.0017920

liters

34.3

0.001

0.000

0.000

0.000

0.000

0.000

car

passenger

Gasoline

Gasoline per Euro/Euro 16

600.0

60.0%

25.1%

127.821

0.0017920

liters

34.3

0.001

0.000

0.000

0.000

0.000

0.000

car

passenger

Gasoline

Gasoline per Euro/Euro 17

600.0

60.0%

25.1%

127.821

0.0017920

liters

34.3

0.001

0.000

0.000

0.000

0.000

0.000

car

passenger

Gasoline

Gasoline per Euro/Euro 18

600.0

60.0%

25.1%

127.821

0.0017920

liters

34.3

0.001

0.000

0.000

0.000

0.000

0.000

car

passenger

Gasoline

Gasoline per Euro/Euro 19

600.0

60.0%

25.1%

127.821

0.0017920

liters

34.3

0.001

0.000

0.000

0.000

0.000

0.000

car

passenger

Gasoline

Gasoline per Euro/Euro 20

600.0

60.0%

25.1%

127.821

0.0017920

liters

34.3

0.001

0.000

0.000

0.000

0.000

0.000

car

passenger

Gasoline

Gasoline per Euro/Euro 21

600.0

60.0%

25.1%

127.821

0.0017920

liters

34.3

0.001

0.000

0.000

0.000

0.000

0.000

car

passenger

Gasoline

Gasoline per Euro/Euro 22

600.0

60.0%

25.1%

127.821

0.0017920

liters

34.3

0.001

0.000

0.000

0.000

0.000

0.000

car

passenger

Gasoline

Gasoline per Euro/Euro 23

600.0

60.0%

25.1%

127.821

0.0017920

liters

34.3

0.001

0.000

0.000

0.000

0.000

0.000

car

passenger

Gasoline

Gasoline per Euro/Euro 24

600.0

60.0%

25.1%

127.821

0.0017920

liters

34.3

0.001

0.000

0.000

0.000

0.000

0.000

car

passenger

Gasoline

Gasoline per Euro/Euro 25

600.0

60.0%

25.1%

127.821

0.0017920

liters

34.3

0.001

0.000

0.000

0.000

0.000

0.000

car

passenger

Gasoline

Gasoline per Euro/Euro 26

600.0

60.0%

25.1%

127.821

0.0017920

liters

34.3

0.001

0.000

0.000

0.000

0.000

0.000

car

passenger

Gasoline

Gasoline per Euro/Euro 27

600.0

60.0%

25.1%

127.821

0.0017920

liters

34.3

0.001

0.000

0.000

0.000

0.000

0.000

car

passenger

Gasoline

Gasoline per Euro/Euro 28

600.0

60.0%

25.1%

127.821

0.0017920

liters

34.3

0.001

0.000

0.000

0.000

0.000

0.000

car

passenger

Gasoline

Gasoline per Euro/Euro 29

600.0

60.0%

25.1%

127.821

0.0017920

liters

34.3

0.001

0.000

0.000

0.000

0.000

0.000

car

passenger

Gasoline

Gasoline per Euro/Euro 30

600.0

60.0%

25.1%

127.821

0.0017920

liters

34.3

0.001

0.000

0.000

0.000

0.000

0.000

car

passenger

Gasoline

Gasoline per Euro/Euro 31

600.0

60.0%

25.1%

127.821

0.0017920

liters

34.3

0.001

0.000

0.000

0.000

0.000

0.000

car

passenger

Gasoline

Gasoline per Euro/Euro 32

600.0

60.0%

25.1%

127.821

0.0017920

liters

34.3

0.001

0.000

0.000

0.000

0.000

0.000

car

passenger

Gasoline

Gasoline per Euro/Euro 33

600.0

60.0%

25.1%

127.821

0.0017920

liters

34.3

0.001

0.000

0.000

0.000

0.000

0.000

car

passenger

Gasoline

Gasoline per Euro/Euro 34

600.0

60.0%

25.1%

127.821

0.0017920

liters

34.3

0.001

0.000

0.000

0.000

0.000

0.000

car

passenger

Gasoline

Gasoline per Euro/Euro 35

600.0

60.0%

25.1%

127.821

0.0017920

liters

34.3

0.001

0.000

0.000

0.000

0.000

0.000

car

passenger

Gasoline

Gasoline per Euro/Euro 36

600.0

60.0%

25.1%

127.821

0.0017920

liters

34.3

0.001

0.000

0.000

0.000

0.000

0.000

car

passenger

Gasoline

Gasoline per Euro/Euro 37

600.0

60.0%

25.1%

127.821

0.0017920

liters

34.3

0.001

0.000

0.000

0.000

0.000

0.000

car

passenger

Gasoline

Gasoline per Euro/Euro 38

600.0

60.0%

25.1%

127.821

0.0017920

liters

34.3

0.001

0.000

0.000

0.000

0.000

0.000

car

passenger

Gasoline

Gasoline per Euro/Euro 39

600.0

60.0%

25.1%

127.821

0.0017920

liters

34.3

0.001

0.000

0.000

0.000

0.000

0.000

car

passenger

Gasoline

Gasoline per Euro/Euro 40

600.0

60.0%

25.1%

127.821

0.0017920

liters

34.3

0.001

0.000

0.000

0.000

0.000

0.000

car

passenger

Gasoline

Gasoline per Euro/Euro 41

600.0

60.0%

25.1%

127.821

0.0017920

liters

34.3

0.001

0.000

0.000

0.000

0.000

0.000

car

passenger

Gasoline

Gasoline per Euro/Euro 42

600.0

60.0%

25.1%

127.821

0.0017920

liters

34.3

0.001

0.000

0.000

0.000

0.000

0.000

car

passenger

Gasoline

Gasoline per Euro/Euro 43

600.0

60.0%

25.1%

127.821

0.0017920

liters

34.3

0.001

0.000

0.000

0.000

0.000

0.000

car

passenger

Gasoline

Gasoline per Euro/Euro 44

600.0

60.0%

25.1%

127.821

0.0017920

liters

34.3

0.001

0.000

0.000

0.000

0.000

0.000

car

passenger

Gasoline

Gasoline per Euro/Euro 45

600.0

60.0%

25.1%

127.821

0.0017920

liters

34.3

0.001

0.000

0.000

0.000

0.000

0.000

car

passenger

Gasoline

Gasoline per Euro/Euro 46

600.0

60.0%

25.1%

127.821

0.0017920

liters

34.3

0.001

0.000

0.000

0.000

0.000

0.000

car

passenger

Gasoline

Gasoline per Euro/Euro 47

600.0

60.0%

25.1%

127.821

0.0017920

liters

34.3

0.001

0.000

0.000

0.000

0.000

0.000

car

passenger

Gasoline

Gasoline per Euro/Euro 48

600.0

60.0%

25.1%

127.821

0.0017920

liters

34.3

0.001

0.000

0.000

0.000

0.000

0.000

car

passenger

Gasoline

Gasoline per Euro/Euro 49

600.0

60.0%

25.1%

127.821

0.0017920

liters

34.3

0.001

0.000

0.000

0.000

0.000

0.000

car

passenger

Gasoline

Gasoline per Euro/Euro 50

600.0

60.0%

25.1%

127.821

0.0017920

liters

34.3

0.001

0.000

0.000

0.000

0.000

0.000

car

passenger

Gasoline

Gasoline per Euro/Euro 51

600.0

60.0%

25.1%

127.821

0.0017920

liters

34.3

0.001

0.000

0.000

0.000

0.000

0.000

car

passenger

Gasoline

Gasoline per Euro/Euro 52

600.0

60.0%

25.1%

127.821

0.0017920

liters

34.3

0.001

0.000

0.000

0.000

0.000

0.000

car

passenger

Gasoline

Gasoline per Euro/Euro 53

600.0

60.0%

25.1%

127.821

0.0017920

liters

34.3

0.001

0.000

0.000

0.000

0.000

0.000

car

passenger

Gasoline

Gasoline per Euro/Euro 54

600.0

60.0%

25.1%

127.821

0.0017920

liters

34.3

0.001

0.000

0.000

0.000

0.000

0.000

car

passenger

Gasoline

Gasoline per Euro/Euro 55

600.0

60.0%

25.1%

127.821

0.0017920

liters

34.3

0.001

0.000

0.000

0.000

0.000

0.000

car

passenger

Gasoline

Gasoline per Euro/Euro 56

600.0

60.0%

25.1%

127.821

0.0017920

liters

34.3

0.001

0.000

0.000

0.000

0.000

0.000

car

passenger

Gasoline

Gasoline per Euro/Euro 57

600.0

60.0%

25.1%

127.821

0.0017920

liters

34.3

0.001

0.000

0.000

0.000

0.000

0.000

car

passenger

Gasoline

Gasoline per Euro/Euro 58

600.0

60.0%

25.1%

127.821

0.0017920

liters

34.3

0.001

0.000

0.000

0.000

0.000

0.000

car

passenger

Gasoline

Gasoline per Euro/Euro 59

600.0

60.0%

25.1%

127.821

0.0017920

liters

34.3

0.001

0.000

0.000

0.000

0.000

0.000

car

passenger

Gasoline

Gasoline per Euro/Euro 60

600.0

60.0%

25.1%

127.821

0.0017920

liters

34.3

0.001

0.000

0.000

0.000

0.000

0.000

car

passenger

Gasoline

Gasoline per Euro/Euro 61

600.0

60.0%

25.1%

127.821

0.0017920

liters

34.3

0.001

0.000

0.000

0.000

0.000

0.000

car

passenger

Gasoline

Gasoline per Euro/Euro 62

600.0

60.0%

25.1%

127.821

0.0017920

liters

34.3

0.001

0.000

0.000

0.000

0.000

0.000

car

passenger

Gasoline

Gasoline per Euro/Euro 63

600.0

60.0%

25.1%

127.821

0.0017920

liters

34.3

0.001

0.000

0.000

0.000

0.000

0.000

car

passenger

Gasoline

Gasoline per Euro/Euro 64

600.0

60.0%

25.1%

127.821

0.0017920

liters

34.3

0.001

0.000

0.000

0.000

0.000

0.000

car

passenger

Gasoline

Gasoline per Euro/Euro 65

600.0

60.0%

25.1%

127.821

0.0017920

liters

34.3

0.001

0.000

0.000

0.000

0.000

0.000

car

passenger

Gasoline

Gasoline per Euro/Euro 66

600.0

60.0%

25.1%

127.821

0.0017920

liters

34.3

0.001

0.000

0.000

0.000

0.000

0.000

car

passenger

Gasoline

Gasoline per Euro/Euro 67

600.0

60.0%

25.1%

127.821

0.0017920

liters

34.3

0.001

0.000

0.000

0.000

0.000

0.000

car

passenger

Gasoline

Gasoline per Euro/Euro 68

600.0

60.0%

25.1%

127.821

0.0017920

liters

34.3

0.001

0.000

0.000

0.000

0.000

0.000

car

passenger

Gasoline

Gasoline per Euro/Euro 69

600.0

60.0%

25.1%

127.821

0.0017920

liters

34.3

0.001

0.000

0.000

0.000

0.000

0.000

car

passenger

Gasoline

Gasoline per Euro/Euro 70

600.0

60.0%

25.1%

127.821

0.0017920

liters

34.3

0.001

0.000

0.000

0.000

0.000

0.000

car

passenger

Gasoline

Gasoline per Euro/Euro 71

600.0

60.0%

25.1%

127.821

0.0017920

liters

34.3

0.001

0.000

0.000

0.000

0.000

0.000

car

passenger

Gasoline

Gasoline per Euro/Euro 72

600.0

60.0%

25.1%

127.821

0.0017920

liters

34.3

0.001

0.000

0.000

0.000

0.000

0.000

car

passenger

Gasoline

Gasoline per Euro/Euro 73

600.0

60.0%

25.1%

127.821

0.0017920

liters

34.3

0.001

0.000

0.000

0.000

0.000

0.000

car

passenger

Gasoline

Gasoline per Euro/Euro 74

600.0

60.0%

25.1%

127.821

0.0017920

liters

34.3

**Figure S3b.** Air pollutant emissions excel spreadsheet. [https://transport.ec.europa.eu/other-pages/transport-basic-page/greenhouse-gas-emissions-indicator\\_en](https://transport.ec.europa.eu/other-pages/transport-basic-page/greenhouse-gas-emissions-indicator_en)

## Supplementary Material

Quality of public spaces	
Parameter	41,2%
Indicator value	4,1

Please fill in the blue cells

Indicator	Aspect	Question	Surveyed Persons (I)	DK/NA	Satisfied (h)	Rather satisfied (h)	Rather unsatisfied (h)	Not at all satisfied (h)
Quality of public	Public spaces	Q1.6	100	1	15	29	44	11
	Green spaces	Q1.7	100	1	4	16	54	25

c1	c2	c3	c4
10	6,66	3,33	0

Satisfied (h)	Rather satisfied (h)	Rather unsatisfied (h)	Not at all satisfied (h)
0,151515	0,292929	0,444444	0,111111
0,040404	0,161616	0,545455	0,252525

Satisfied (h)	Rather satisfied (h)	Rather unsatisfied (h)	Not at all satisfied (h)	Scores
1,515152	1,950909	1,48	0	4,9
0,40404	1,076364	1,816364	0	3,3

Indicator value	4,12
-----------------	------

DK/NA = don't know/ not applicable

- Q1** Generally speaking, please tell me if you are [1] satisfied, [2] rather satisfied, [3] rather unsatisfied, [4] not at all satisfied, or [5] DK/NA (do not read out), with each of the following issues in your city or area.
- Q1.6 Public spaces such as markets, squares, pedestrian areas
- Q1.7 Green spaces such as parks and gardens

**Figure S4.** Quality of public spaces spreadsheet.

[https://transport.ec.europa.eu/other-pages/transport-basic-page/quality-public-spaces-indicator\\_en](https://transport.ec.europa.eu/other-pages/transport-basic-page/quality-public-spaces-indicator_en)

## Supplementary Material

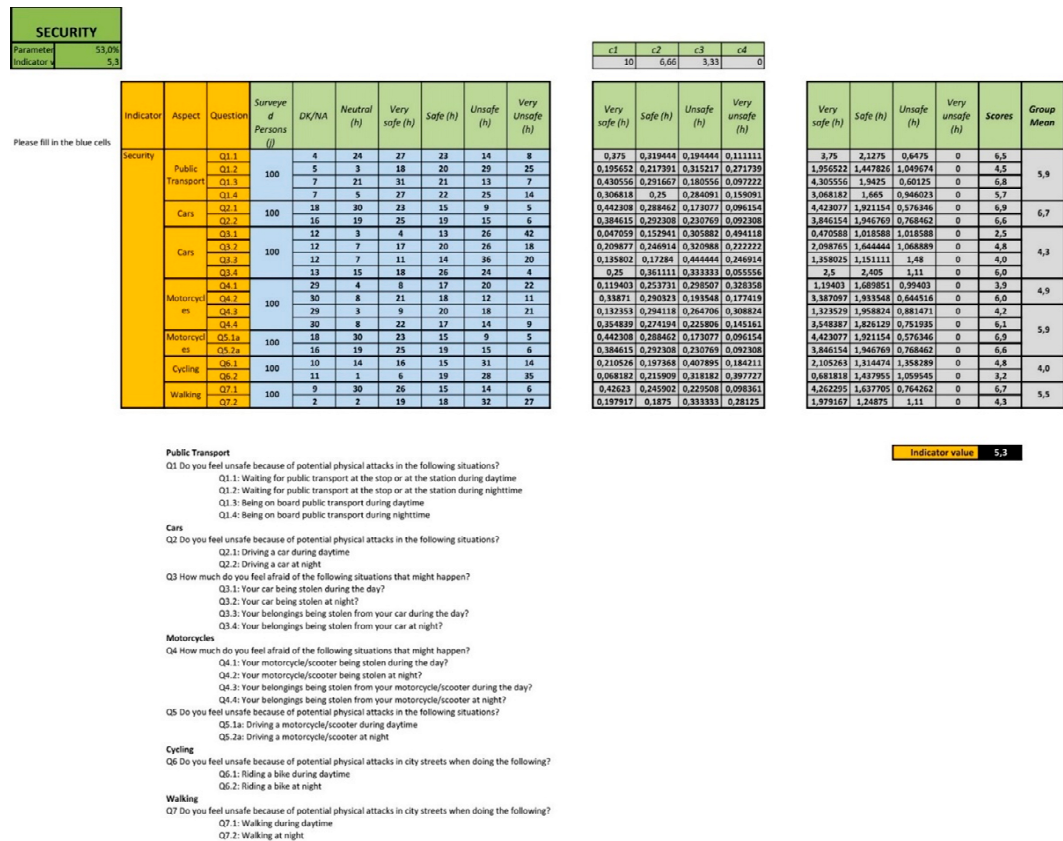


Figure S5. Security spreadsheet.

[https://transport.ec.europa.eu/other-pages/transport-basic-page/security-indicator\\_en](https://transport.ec.europa.eu/other-pages/transport-basic-page/security-indicator_en)

Traffic safety active modes	
Parameter value	258
Indicator value	8,71

min scale	max scale
2000	0

Fill in the blue cells.

Pedestrian	12	30	394
Bicycles	6	40	156
Active Modes	18,06	70	258

Ki=Number of persons killed within 30 days after the traffic accident as a corollary of the event in transport mode i [# simple average over the last 3 years for which data is available] - data collected for indicator 5 (road deaths)	Expi=Exposure, defined as number of trips (in million) [# per year] - data collected via "modal split" spreadsheet
---	--

Figure S6. Traffic safety active modes spreadsheet.

[https://transport.ec.europa.eu/other-pages/transport-basic-page/traffic-safety-active-modes-indicator\\_en](https://transport.ec.europa.eu/other-pages/transport-basic-page/traffic-safety-active-modes-indicator_en)

## Supplementary Material

Road deaths	
Parameter	10,20
Indicator va	3,20

Min	Max
15	0

Please fill in the blue cells:

- 1) First enter the number of road deaths (per transport mode) in column D.
- 2) Next enter the number of inhabitants in the urban area in cell E11.

Transport mode	Ki	Cap	FR
Pedestrian	4	215.000	10,20
Bicycle (including regular bicycle)	4		
Moped	1		
Motorcycles	8		
Cars	4		
LGV (<3.5 tons)	1		
HGV - Trucks (≥3.5 tons)	1		
Bus	0		
Tram - Lightrail - ...	0		
Other	0		
Unknown	0		

**Figure S7.** Traffic safety active modes spreadsheet.

[https://transport.ec.europa.eu/other-pages/transport-basic-page/road-deaths-indicator\\_en](https://transport.ec.europa.eu/other-pages/transport-basic-page/road-deaths-indicator_en)

Supplementary Material

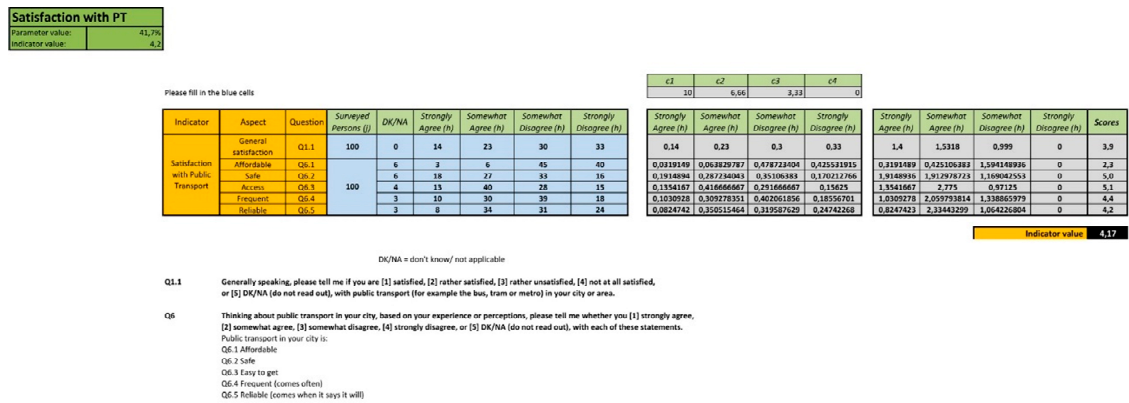


Figure S8. Satisfaction with PT spreadsheet.

[https://transport.ec.europa.eu/other-pages/transport-basic-page/satisfaction-public-transport-indicator\\_en](https://transport.ec.europa.eu/other-pages/transport-basic-page/satisfaction-public-transport-indicator_en)

Supplementary Material

Commuting travel time

Parameter value: 33

Indicator value: 7.37563

min: 90.00

max: 10.00

Please fill in the blue cells.

First, choose an option:

Option selected: Option 2

Please choose from the dropdown menu in the cell to the left the option you have chosen.

Option 1

Calculation if you are reporting the results of the latest mobility survey conducted in your urban area.

Mode of travel

Average duration of one daily trip to/from work (min) per mode of travel

Average number of daily trips to/from work per mode of travel OR Reported % share of each mode for trips to/from work

Car

15

50

Motorcycle

10

10

Public Transport

25

10

Ferry

15

6

Bike

20

10%

Other mode

15

3%

All modes reported together

Formula result: 15.66333903

Please only use this line if the survey you are reporting does NOT give a modal breakdown of commuting trips. Otherwise leave blank.

Option 2

Calculation if survey responses (anonymised), i.e. directly from a short online/offline survey are used and entered directly.

All modes (m)

Average Time (min)

Average Distance (km)

Average Speed (km/h)

Car

2.9

5.5

233.0

Motorcycle

0.0

8.0

#N/A(P/D)

Public Transport

0.0

9.3

#N/A(P/D)

Ferry

Bike

Walking

10.0

2.5

30.0

Car & PT

Bike & PT

Walk & PT

This block will be filled automatically when you enter the survey results in the table below

Please only fill in the blue cells

Survey persons: 100

1

Average Distance (km)

Average Time to work (min)

Average Time to home (min)

Travel Time (min)

Q1: Mode

1

6

12.5

12.5

Car

2

4

7.5

12.5

Car

3

2.5

12.5

12.5

Car

4

6

22.5

27.5

Car

5

3.5

7.5

7.5

Motorcycle

6

2.5

2.5

2.5

Car

7

6.5

12.5

17.5

Car

8

6

17.5

17.5

Car

9

8.5

27.5

35

Car

10

3.5

7.5

7.5

Car

11

12.5

35

15

Motorcycle

12

2.5

2.5

2.5

Car

13

12.5

22.5

22.5

Car

14

12.5

40

35

Public Transport

15

2.5

3

3

Walking

16

12

27.5

27.5

Public Transport

17

2.5

2.5

2.5

Car

18

2.5

7.5

7.5

Walking

19

2.5

12.5

12.5

Car

20

2.5

3

3

Car

21

15

35

35

Car

22

6

7.5

12.5

Car

23

6

17.5

17.5

Car

24

3.5

25

25

Public Transport

25

8.5

12.5

12.5

Car

26

2.5

7.5

7.5

15 Walking

27

3.5

7.5

7.5

15 Car

28

2.5

12.5

12.5

25 Walking

29

3.5

7.5

7.5

15 Car

30

6

12.5

17.5

30 Car

31

6

17.5

17.5

35 Motorcycle

32

6

12.5

12.5

25 Car

33

6

27.5

27.5

55 Car

34

6

17.5

22.5

40 Car

35

6

12.5

12.5

25 Car

36

2.5

4

4

8 Motorcycle

37

8.5

12.5

17.5

30 Car

38

3.5

12.5

12.5

25 Car

39

3.5

12.5

12.5

25 Car

40

2.5

2.5

2.5

5 Car

41

2.5

5

5

10 Walking

42

17.5

22.5

22.5

45 Car

43

6

22.5

22.5

45 Public Transport

44

6

7.5

7.5

15 Car

45

6

17.5

12.5

30 Car

46

6

12.5

12.5

25 Car

47

5

20

20

40 Walking

48

8.5

7.5

12.5

20 Car

49

6

12.5

12.5

25 Car

50

3.5

12.5

12.5

25 Car

51

6

12.5

12.5

25 Public Transport

52

12

17.5

17.5

35 Car

53

8.5

22.5

22.5

45 Car

54

15

40

35

75 Car

55

6

12.5

12.5

25 Car

56

2.5

7

7

14 Walking

57

6

40

40

80 Public Transport

58

11

30

30

60 Public Transport

59

3.5

7.5

7.5

15 Car

60

6

12.5

12.5

25 Car

61

3.5

25

25

50 Public Transport

62

2.5

4

4

8 Car

63

12

22.5

22.5

45 Car

64

6

12.5

12.5

25 Car

65

6

12.5

12.5

25 Car

66

3.5

17

17

34 Car

67

3.5

12.5

17.5

30 Car

68

6

17.5

17.5

35 Car

69

10

35

35

70 Car

70

10

35

35

70 Public Transport

71

2.5

3

3

6 Car

72

12.5

15

15

30 Car

73

2.5

5

5

10 Bike

74

6

35

35

70 Public Transport

75

6

17.5

12.5

30 Car

76

5

20

20

40 Bike & PT

77

3

10

10

20 Bike & PT

78

5

15

15

30 Public Transport

79

3.5

7.5

7.5

15 Car

80

6

12.5

12.5

45 Bike

81

3.5

7.5

7.5

15 Motorcycle

82

6

12.5

7.5

20 Car

83

8.5

15

15

30 Car

84

5

10

10

20 Bike

85

5

25

25

50 Public Transport

86

6

25

20

45 Bike

87

3

12.5

12.5

25 Walking

88

3

10

10

20 Bike

89

2.5

10

10

20 Walking

90

6

12.5

12.5

25 Car

91

5

10

10

20 Public Transport

92

6

17.5

17.5

35 Car

93

6

17.5

12.5

30 Car

94

3.5

7.5

7.5

15 Motorcycle

95

6

7.5

7.5

15 Motorcycle

96

6

30

30

60 Public Transport

97

3.5

12.5

7.5

20 Car

98

6.5

30

30

60 Bike

99

3

15

15

30 Walking

100

8.5

17.5

17.5

35 Car

Figure S9. Commuting travel time spreadsheet. <https://transport.ec.europa.eu/other-pages/transport-basic-page/commuting-travel-time-indicator> en

## Supplementary Material

Congestion and delays		
Parameter value:		2,00
Indicator value:		4,98

min scale	max scale
3	1

Please fill in the blue cells

1) For each road corridor enter

CTi = Number of car trips during peak hours on main road corridor i [#]

PHTi = Car travel time during peak hours on main road corridor i [minutes]

FFTi = Off-peak car travel time on main road corridor i [minutes]

2) For each PT corridor enter

PTj = Number of public transport trips during peak hours on transit corridor j [#]

PTPHTj = Public transport travel time during peak hours on main road corridor i [minutes]

PTOTj = Optimal Public Transport travel time on main road corridor i [minutes]

3) Enter the modal shares of road and public transport (column J). The sum of these modal shares should be 1.

		Input in h:mm:ss					
road corridor i	CTi	PHTi	FFTi	Cdi	Cdroad	Msroad	CDi
1	2722	0:15:00	0:07:00	5832,86	1,797262	0,48	2,004257353
2	1578	0:10:00	0:06:00	2630,00			
3	1100	0:07:00	0:06:00	1283,33			
4	801	0:07:00	0:05:00	1121,40			
5	797	0:05:00	0:05:00	797,00			
6	700	0:05:00	0:05:00	700,00			
7	1200	0:10:00	0:06:00	2000,00			
8	2134	0:15:00	0:06:00	5335,00			
9	1500	0:10:00	0:05:00	3000,00			
10	1350	0:10:00	0:06:00	2250,00			
PT corridors j	PTj	PTPHTj	PTOTj	CDj	CDpt	MSpt	
1	2722	0:15:00	0:07:00	5832,86	2,19533	0,52	
2	1578	0:15:00	0:07:00	3381,43			
3	1100	0:15:00	0:07:00	2357,14			
4	801	0:10:00	0:05:00	1602,00			
5	797	0:15:00	0:07:00	1707,86			
6	700	0:10:00	0:05:00	1400,00			
7	1200	0:15:00	0:07:00	2571,43			
8	2134	0:15:00	0:07:00	4572,86			
9	1500	0:10:00	0:05:00	3000,00			
10	1350	0:15:00	0:05:00	4050,00			

Figure S10. Congestion and delays spreadsheet.

[https://transport.ec.europa.eu/other-pages/transport-basic-page/congestion-and-delays-indicator\\_en](https://transport.ec.europa.eu/other-pages/transport-basic-page/congestion-and-delays-indicator_en)

## Supplementary Material

Access to mobility services		min scale	max scale
Parameter value:	57%	0%	100%
Indicator value:	5,70		

The input data PR<sub>i</sub> refers to population living within the five typologies of zones in the urban area, identified by combination of PT accessibility level (see table 1).  
The following services have to be considered:  
 • **Bus and Tram** = urban buses + intercity buses + trams  
 • **Metro and Train** = Metro + suburban/regional trains + long-distance trains

All stops located within a 50m distance from another stop should be considered as one single stop (e.g. if a bus stop is located at both sides of a street, one for each direction, the related stop should be considered as one - and the related departures should sum the departures in both directions)

Table 1: Typology zones on the basis of service frequencies and distance from PT stops

distance	frequency* (departures/ hour)	Metro and train					
		<=833 m (10 minutes walking)			>833 m (10 minutes walking)		
		>=10 departures/ hour	>=4 and < 10 departures/ hour	< 4 departures/ hour	>=10 departures/ hour	>=4 and < 10 departures/ hour	< 4 departures/ hour
Bus and tram	<=417 m (5 minutes walking)	>=10 departures/ hour	very high access	high access	high access	high access	high access
		>=4 and < 10 departures/ hour	high access	Medium access	Medium access	Medium access	Medium access
		< 4 departures/ hour	high access	Medium access	Low access	Low access	Low access
	>417 m (5 minutes walking)	>=10 departures/ hour	high access	Medium access	Low access	No access	No access
		>=4 and < 10 departures/ hour	high access	Medium access	Low access	No access	No access
		< 4 departures/ hour	high access	Medium access	Low access	No access	No access

\* Average number of departures per hour on a normal weekday, considering the period between 6:00 and 20:00  
 \*\* Straight-line distance, there is no requirement for estimating the value on the basis of a walking distance via streets

Source: DG REGIO's paper "Measuring access to public transport in European cities"

Please fill in the blue cells:  
 For each typology zone i, the related amount of population PR<sub>i</sub> have to be filled (set = 0 if the typology is not available in the urban area).  
 The sum of population PR<sub>i</sub> has to be equal to the total population of the urban area (see input check cell E13).  
 A large urban area is defined as >= 100,000 inhabitants

Population living within each access typology zone i		large urban area	small urban area	PR <sub>i</sub>	W*PR <sub>i</sub>	Cap	Acc
i	PT access level						
1	No access	0	0	6.450	0	215.000	57%
2	Low access	0	0,5	21.500	0		
3	Medium access	0,5	1	129.000	64500		
4	High access	1	1	42.000	42000		
5	Very high access	1	1	35.050	35050		
				215.000			
				input check	ok		

The weight W<sub>i</sub> is predefined (not modified by the user) and identify if the accessibility to mobility services is appropriate:  
 - It is = 1 where it is fully appropriate  
 - It is = 0,5 where it isn't fully appropriate  
 - It is = 0 where it isn't appropriate

comment box  
(please add source of data, year, geographical area)

Figure S11. Access to mobility services spreadsheet.

[https://transport.ec.europa.eu/other-pages/transport-basic-page/access-mobility-services-indicator\\_en](https://transport.ec.europa.eu/other-pages/transport-basic-page/access-mobility-services-indicator_en)

Affordability of public transport for the poorest group	
Affordability score	65,0%
Affordability indicator	65,00
Public transport expenditure ratio	40,0%

Please fill in the blue cells

PT mode/operator i	Monthly PT price (local currency)	AvgInc25% (local currency)	Avg. HH size (25%)	Score
TRENO	30	400	2,6	65,0%
ΛΕΩΦΟΡΕΙΟ	70			
ΤΡΑΜ-ΤΡΟΛΕΥ-ΜΕΤΡΟ	0			

Supplementary parameter	Monthly transport expenditure P25%	Score	comment box (please add source of data, year, geographical area)
	650	40,0%	ΠΑΤΡΑ

**Figure S12.** Affordability of public transport spreadsheet.

[https://transport.ec.europa.eu/other-pages/transport-basic-page/affordability-public-transport-poorest-group-indicator\\_en](https://transport.ec.europa.eu/other-pages/transport-basic-page/affordability-public-transport-poorest-group-indicator_en)

## Supplementary Material

Active Mobility	
Parameter value:	0,80
Indicator value:	4,00

Max
10

Please fill in the blue cells

Lsw	Lpz	Lbl	Lz30	Lrn	Ram
500	300	200	600	2000	0,80

Variable	Description
L <sub>w</sub> [km]	Length of road network with pavements (not if in a pedestrian zone)
L <sub>pz</sub> [km]	Length pedestrian zone
L <sub>bl</sub> [km]	Length of road network with bike lanes (not if in a 30 km/h zone)
L <sub>z30</sub> [km]	Length of road network in 30 km/h zone
L <sub>n</sub> [km]	Total length of city road network (excluding motorways)
Ram [n]	Combined share of road network adapted for walking and cycling

**Step 1: Input value for the length of road network with pavements (Lsw)**

Note:  
The width of pavements must meet the minimum value (0.6m).  
This excludes the length of pavements already within a pedestrian zone, but not the perimeter of a pedestrian zone.

**Step 2: Input value for the length of pedestrian zone (Lpz)**

Note:  
Only the length of road that is pedestrianised, or length of roads that fall within the pedestrian zone can be counted.  
Do not count the area of a pedestrian zone (e.g. market square).

**Step 3: Input value for the length of the road network with bike lanes (Lbl)**

Note:  
The width of cycle lanes must meet the minimum value (0.75m).  
This excludes the length of bike lanes that fall within a 30 km/h zone.

**Step 4: Input the length of road network in a 30km/h zone (Lz30)**

Note:  
For countries that express road speed in miles per hour (mp/h), the equivalent speed is a 20 mp/h zone.

**Step 5: Input the total length of city road network (excluding motorways) (Lrn)**

**Step 6: Calculation (Ram)**

Note:  
The parameter value is an average of the length of the road network adapted to walking and the length of the road network adapted to cycling.  
The indicator value is the parameter value expressed on a scale of 1 - 10.

**Figure S13.** Affordability of public transport spreadsheet.

[https://transport.ec.europa.eu/other-pages/transport-basic-page/opportunity-active-mobility-indicator\\_en](https://transport.ec.europa.eu/other-pages/transport-basic-page/opportunity-active-mobility-indicator_en)