



# QUESTIONNAIRE FOR DATA COLLECTION QUANTITATIVE SECTION

*For any questions and clarifications, please contact:*

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*<http://www.tis.pt/proj/bestrans/index.htm>*

*Name of the operator*  
*Reference year*

**Table A.1: Background information**

Code	Data	Quantity	Measure unit	Source (1)
A1	Served Population (2)		n	
A2	Operating area		km <sup>2</sup>	
A3	Total number of routes operated		n	
A4	Length of the road network in the urban area		km	
A5	<i>of which:</i> running on flat areas		km	
A6	running on hilly areas		km	
A7	running on mixed areas		km	
A9	Length of bus lanes (physical length)		km	
A10	Length of reserved tracks for tram (physical length)		km	
A11	Length of reserved tracks for trolley (physical length)		km	
A13	Length of bus lanes (length of routes)		km	
A14	Length of reserved tracks for tram (length of routes)		km	
A15	Length of reserved tracks for trolley (length of routes)		km	
A16	Total area of buildings and facilities (3)		m <sup>2</sup>	
A17	Area of lighted buildings and facilities		m <sup>2</sup> or % on the total area	
A18	Area of heated buildings and facilities		m <sup>2</sup> or % on the total area	
A19	Total volume of buildings (offices, depots, stations if covered and delimited by walls)		m <sup>3</sup>	
A20	Volume of heated buildings		m <sup>3</sup> or % on the total volume	
A21	Average age of bus (4)		years	
A22	Average age of tram (4)		years	
A23	Average age of trolley (4)		years	
A24	Number of employees		n	
A25	<i>of which:</i> Drivers		n	
A26	Operational staff		n	
A27	Number of working hours per year		h	
A28	If you have a programme of drivers continued training (excluding training for new employees), please indicate an estimation of the number of hours per driver per year		h	

(1) Please, specify if the data comes from the balance sheet, operations management departments, surveys, other sources external to the company

(2) Number of people living in the served area

(3) Please, include open space areas (e.g. parkings) only if lighted

(4) If a fleet renewal campaign took place during the reference year, please indicate here the weighted average age all over the year

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*Reference year*

**Table A.2: Operating data**

Code	Data	Quantity	Measure unit	Source
A29	Annual number of passenger journeys (yearly)		n	
A30	Annual number of passenger-km		pkm	
A31	Annual number of seat km (5)		skm	
A32	Daily average passenger-km (6)		pkm	
A33	Daily average vehicle-km (6)		vkm	
A34	Daily average number of buses circulating (6)		n	
A35	Daily average of passenger-km during peak hours (6)		pkm	
A36	Daily average of vehicle-km during peak hours (6)		vkm	
A37	Average number of buses circulating during peak hours (6)		n	
A38	Average commercial speed of buses			
A39	peak		km/hour	
A40	off-peak		km/hour	
A41	average		km/hour	
A42	Average commercial speed of tram			
A43	peak		km/hour	
A44	off-peak		km/hour	
A45	average		km/hour	
A46	Average commercial speed of trolleys			
A47	peak		km/hour	
A48	off-peak		km/hour	
A49	average		km/hour	
A50	Modal split a): % of all journeys made in the urban area by:			
A51	private vehicles (car, motorcycles and mopeds, TAXI)		%	
A52	non motorised modes (e.g. bicycle, foot)		%	
	public transport		%	
	Total			
A53	Modal split b): % of public transport journeys made in the urban area by:			
A54	bus		%	
A55	tram		%	
A56	metro		%	
	train		%	
	Total			
A57	Traffic lights with prioritisation (tick one)			
	0			
	1-25%			
	26-50%			
	51-75%			
	76-100%			
A58	Average distance between stops		m	

(5) Please specify if national legislation foresees an upper limit to the number of standing and seating seats per vehicle category

(6) Please make reference to a typical working day

**Name of the operator**  
**Reference year**

**Table A.3: Production costs (7)**

Code	Data	Quantity	Measure unit (8)	Source
A59	Total operating costs (9)		€	
A60	Total fleet maintenance costs (ordinary and extra ordinary maintenance)		€	
A61	Total energy costs (for traction, depots and offices)		€	
A62	Total costs of traction energy consumption (10)		€	
	<i>of which:</i>			
A63	Total fuel costs (fossil+alternative fuels, excluding electric energy)		€	
	<i>of which:</i>			
A64	diesel		€	
A65	CNG		€	
A66	biodiesel		€	
A67	LPG		€	
A68	other		€	
A69	Total electric energy costs (for buses, trams and trolleybus)		€	
A70	Total costs of energy consumption for buildings and facilities (electric uses and heating)		€	
	<i>of which:</i>			
A71	Total costs of energy consumption for lighting buildings and facilities		€	
A72	Total cost of energy consumption for space and water heating (buildings and facilities)		€	

(7) All costs are intended VAT excluded, net of subsidies, after fuel taxes rebates (if applicable)

(8) Please, specify national currency if it differs from Euro

(9) e.g. staff costs, maintenance costs, annual cost of fleet ownership, insurance costs, energy costs, marketing and promotion costs, other costs. Please note that these are suggested items of total costs components. If different please specify

(10) Excluding auxiliary vehicles, including energy for CNG compression

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**Table A.4: Energy prices (7)**

Code	Data	Quantity	Measure unit (€/KWh) (11)	Conversion factor	Source
A73	Average annual price of fuel for traction				
A74	Diesel		€/KWh	0,0705 lt/kWh (12)	
A75	Biodiesel		€/KWh	0,0705 lt/kWh (12)	
A76	Biogas		€/KWh	0,105 m3/kWh	
A77	CNG		€/KWh		
A78	Other (please specify)		€/KWh		
A79	Average price of electric energy for traction (13)		€/KWh		
A80	Average price of electric energy for lighting and other electric end uses.		€/KWh		
A81	Average price of fuel for heating (14)				
A82	liquid		€/KWh	0,0705 lt/kWh (12)	
A83	gas		€/KWh	0,105 m3/kWh	

(11) Please, specify national currency if it differs from Euro; if costs are only available per physical unit (€ per Lt, Kg, Nm<sup>3</sup>) please provide also the conversion factor to KWh

(12) Density = 0,835 kg/lt

(13) Please, indicate here the ratio between the total cost and the total consumption to take into account rates varying by time of day, standing charges and levies

(14) Please, indicate the weighted average price for heating where more than one type of energy is used (e.g. gas and electricity)

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**Table B.1: Tramways - main structural and performance data**

Code	Type of vehicle (1)	Fleet <i>n</i>	Carried load <i>thousands tons per year</i>	Capacity <i>thousand skm</i>	Engine power <i>kW</i>	Service hours <i>h</i>
B1	V1					
B2	V2					
B3	V3					
B4	...					
B5	...					

(1) Please, specify the model type (e.g. number of coaches)

**Table B.2: Tramways - Energy consumption**

B6	Total yearly energy consumption	KWh
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**Table B.3: Tramways - Stops and intersections**

Code	Routes	Number of stops per route <i>n</i>	Number of intersections per route <i>n</i>	Length of route <i>km</i>
B7	R1			
B8	R2			
B9	R3			
B10	...			
B11	...			

<i>Name of the operator</i>
<i>Reference year</i>

**Table C.1: Trolleybus - main structural and performance data**

<b>Code</b>	<i>Type of vehicle (1)</i>	<i>Fleet</i>	<i>Vehicle-km</i>	<i>Capacity</i>	<i>Engine power</i>	<i>Service hours</i>
		<i>n</i>		<i>thousand skm</i>	<i>kW</i>	<i>h</i>
<b>C1</b>	<b>V1</b>					
<b>C2</b>	<b>V2</b>					
<b>C3</b>	<b>V3</b>					
<b>C4</b>	...					
<b>C5</b>	...					

(1) Please, specify the model type (e.g. number of coaches)

**Table C.2: Trolleybus - Energy consumption**

<b>C6</b>	<i>Total yearly energy consumption</i>		KWh
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**Table C.3: Trolleybus - Stops and intersections**

<b>Code</b>	<i>Routes</i>	<i>Number of stops per route</i>	<i>Number of intersections per route</i>	<i>Length of route</i>
		<i>n</i>	<i>n</i>	<i>km</i>
<b>C7</b>	<b>R1</b>			
<b>C8</b>	<b>R2</b>			
<b>C9</b>	<b>R3</b>			
<b>C10</b>	...			
<b>C11</b>	...			

Name of the operator  
Reference year

Core data  
Supplementary data

Table D.1: Main structural and performance data by type of fuel

Code	Buses by energy source	Fleet										Vehicles km (1) thousand vkm	Passenger km thousand pkm
		number of buses	of which equipped with air conditioned systems				of which equipped with antipollution devices			of which equipped with energy saving devices			
			only for driver's post	installed power	for all the vehicle	installed power	number of vehicles	type of device (2)	estimated gain in pollutant emissions (3)	number of vehicles	type of device (2)		
D1	Diesel												
D2	Bio-Diesel												
D3	CNG												
D4	LPG												
D5	Electric buses												
D6	Other (specify)												
D7	---												
D8	---												
D9	---												
D10	Total												

(1) Please, indicate here commercial vehicle km

(2) Please, specify the type of device (e.g. catalytic converter, exhaust gas recycle systems, braking energy recovery, etc.)

(3) Estimated reduction (%) in air pollution per type of antipollution device installed (for the main pollutants)

Name of the operator  
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Core data  
Supplementary data

Table D.2: Classification of buses by size, capacity and type of fuel

Code	Number of Buses by class		by size					Total
			small (suggested up to 9m)	medium (suggested 9 - 12 m)		large (suggested, over 12 m)		
				single deck	double deck	rigid	articulated	
D11	Age of vehicles: before Euro I	Diesel						
D12		Bio-Diesel						
D13		CNG						
D14		LPG						
D15		Electric buses						
D17		Other (specify)						
D18		---						
D19		---						
D20		Total						
D21		Age of vehicles: Euro I engines	Diesel					
D22	Bio-Diesel							
D23	CNG							
D24	LPG							
D25	Electric buses							
D27	Other (specify)							
D28	---							
D29	---							
D30	Total							
D31	Age of vehicles: Euro II engines		Diesel					
D32		Bio-Diesel						
D33		CNG						
D34		LPG						
D35		Electric buses						
D37		Other (specify)						
D38		---						
D39		---						
D40		Total						
D41		Age of vehicles: Euro III engines	Diesel					
D42	Bio-Diesel							
D43	CNG							
D44	LPG							
D45	Electric buses							
D47	Other (specify)							
D48	---							
D49	---							
D50	Total							
D51	Total		Diesel					
D52		Bio-Diesel						
D53		CNG						
D54		LPG						
D55		Electric buses						
D57		Other (specify)						
D58		---						
D59		---						
D60		Total						

Name of the operator  
Reference year

Core data  
Supplementary data

Table D.3: Average capacity of buses by size (4)

Code		Average capacity				
		small (suggested up to 9m)	medium (suggested 9 - 12 m)		large (suggested, over 12 m)	
			single deck	double deck	rigid	articulated
D61	Diesel					
D62	Bio-Diesel					
D63	CNG					
D64	LPG					
D65	Electric buses					
D67	Other (specify)					
D68	---					
D69	---					
D70	---					

(4) Number of standing and seating seats per vehicle category, according to national legislation

Table D.4: Average weight of buses by size

Code		Average capacity				
		small (suggested up to 9m)	medium (suggested 9 - 12 m)		large (suggested over 12 m)	
			single deck	double deck	rigid	articulated
D71	Diesel					
D72	Bio-Diesel					
D73	CNG					
D74	LPG					
D75	Electric buses					
D77	Other (specify)					
D78	---					
D79	---					
D80	---					

Name of the operator  
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Core data  
Supplementary data

Table E.1: Total number of vehicle kilometres driven by age, size and type of fuel (1)

Code			by size				Total	
			small (suggested up to 9m)	medium (suggested 9 - 12 m)		large (suggested, over 12 m)		
				single deck	double deck	rigid	articulated	
E1	Age of vehicles: before Euro I	Diesel						
E2		Bio-Diesel						
E3		CNG						
E4		LPG						
E5		Electric buses						
E7		Other (specify)						
E8		---						
E9		---						
E10		Total						
E11		Age of vehicles: Euro I engines	Diesel					
E12	Bio-Diesel							
E13	CNG							
E14	LPG							
E15	Electric buses							
E17	Other (specify)							
E18	---							
E19	---							
E20	Total							
E21	Age of vehicles: Euro II engines		Diesel					
E22		Bio-Diesel						
E23		CNG						
E24		LPG						
E25		Electric buses						
E27		Other (specify)						
E28		---						
E29		---						
E30		Total						
E31		Age of vehicles: Euro III engines	Diesel					
E32	Bio-Diesel							
E33	CNG							
E34	LPG							
E35	Electric buses							
E37	Other (specify)							
E38	---							
E39	---							
E40	Total							
E41	Total		Diesel					
E42		Bio-Diesel						
E43		CNG						
E44		LPG						
E45		Electric buses						
E47		Other (specify)						
E48		---						
E49		---						
E50		Total						

(1) Please, indicate here total vehicle km driven (i.e. commercial and non commercial vehicle km)

Name of the operator  
Reference year

Core data  
Supplementary data

Table F.1: Energy consumption by age, size and type of fuel

Code		by size															
		small (suggested up to 9m)				single deck				medium (suggested 9 - 12 m)				double deck			
	by age	engine power (kW)	theoretical specific consumption (litres or m <sup>3</sup> or kWh per 100 km) (3)	actual total energy consumption (4)	engine power (kW)	theoretical specific consumption (litres or m <sup>3</sup> or kWh per 100 km) (3)	actual total energy consumption (4)	engine power (kW)	theoretical specific consumption (litres or m <sup>3</sup> or kWh per 100 km) (3)	actual total energy consumption (4)	engine power (kW)	theoretical specific consumption (litres or m <sup>3</sup> or kWh per 100 km) (3)	actual total energy consumption (4)	engine power (kW)	theoretical specific consumption (litres or m <sup>3</sup> or kWh per 100 km) (3)	actual total energy consumption (4)	
			Quantity	Measure unit	Quantity	Measure unit	Quantity	Measure unit	Quantity	Measure unit	Quantity	Measure unit	Quantity	Measure unit	Quantity	Measure unit	
F1	Age of vehicles: before Euro I	Diesel															
F2		Bio-Diesel															
F3		CNG															
F4		LPG															
F5		Electric buses															
F6		Other (specify)															
F7		---															
F8		---															
F9		---															
F10		---															
F11		Total															
F12	Age of vehicles: Euro I engines	Diesel															
F13		Bio-Diesel															
F14		CNG															
F15		LPG															
F16		Electric buses															
F17		Other (specify)															
F18		---															
F19		---															
F20		---															
F21		Total															
F22		Age of vehicles: Euro II engines	Diesel														
F23	Bio-Diesel																
F24	CNG																
F25	LPG																
F26	Electric buses																
F27	Other (specify)																
F28	---																
F29	---																
F30	---																
F31	Total																
F32	Age of vehicles: Euro III engines		Diesel														
F33		Bio-Diesel															
F34		CNG															
F35		LPG															
F36		Electric buses															
F37		Other (specify)															
F38		---															
F39		---															
F40		---															
F41		Total															
F42		Total	Diesel														
F43	Bio-Diesel																
F44	CNG																
F45	LPG																
F46	Electric buses																
F47	Other (specify)																
F48	---																
F49	---																
F50	---																
F51	Total																

(3) Please, fill the table F.2 to specify the reference norm for the specific energy consumption (e.g. CUNA, BNA, FAKRA, etc.)

Table F.2: reference norms used for specific energy consumption

Code	Reference norm
F52	Diesel
F53	Bio-Diesel
F54	CNG
F55	LPG
F56	Electric buses
F57	Other (specify)
F58	---
F59	---

Name of the operator  
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Table F.1: Energy consumption by age, size and engine type

Code	by age		large (suggested, over 12 m)						Total						
			rigid		articulated		rigid		articulated		Total		Total		
			engine power (kW)	theoretical specific consumption (litres or m3 or kWh per 100 km) (3)	actual total energy consumption (4)		engine power (kW)	theoretical specific consumption (litres per 100 km) (3)	actual total energy consumption (4)		engine power (kW)	theoretical specific consumption (litres per 100 km) (3)	actual total energy consumption (4)		
				Quantity Measure unit	Quantity Measure unit	Quantity Measure unit		Quantity Measure unit	Quantity Measure unit	Quantity Measure unit		Quantity Measure unit	Quantity Measure unit	Quantity Measure unit	
F1	Age of vehicles: before Euro I	Diesel													
F2		Bio-Diesel													
F3		CNG													
F4		LPG													
F5		Electric buses													
F6		Other (specify)													
F7		---													
F8		---													
F9		---													
F10		---													
F11	Total														
F12	Age of vehicles: Euro I engines	Diesel													
F13		Bio-Diesel													
F14		CNG													
F15		LPG													
F16		Electric buses													
F17		Other (specify)													
F18		---													
F19		---													
F20		---													
F21		Total													
F22	Age of vehicles: Euro II engines	Diesel													
F23		Bio-Diesel													
F24		CNG													
F25		LPG													
F26		Electric buses													
F27		Other (specify)													
F28		---													
F29		---													
F30		---													
F31		Total													
F32	Age of vehicles: Euro III engines	Diesel													
F33		Bio-Diesel													
F34		CNG													
F35		LPG													
F36		Electric buses													
F37		Other (specify)													
F38		---													
F39		---													
F40		---													
F41		Total													
F42	Total	Diesel													
F43		Bio-Diesel													
F44		CNG													
F45		LPG													
F46		Electric buses													
F47		Other (specify)													
F48		---													
F49		---													
F50		---													
F51		Total													

(3) Please, fill the table F.2 to specify the referen

Table F.2: reference norms used for specific en

Code	Reference norm
F52	Diesel
F53	Bio-Diesel
F54	CNG
F55	LPG
F56	Electric buses
F57	Other (specify)
F58	---
F59	---