

**City - PORTO**

GENERAL DATA			1991	2001
1	Location - latitude (°N) and altitude (m)	°N, m		
2	Climate - temperature, Humidity, Annual Rainfall <sup>1</sup>	°C, %, mm		
3	Resident Population			1,260,680
4	Employment			614.800 <sup>a</sup>
5	Overall city / metropolitan surface	km <sup>2</sup>		814.70
6	Urban area <sup>2</sup>	km <sup>2</sup>		see attached pdf 474,5
7	Green-blue structures (non urban areas) <sup>3</sup>	km <sup>2</sup>		see attached pdf 356 <sup>b</sup>
8	Gross population density	inhab/km <sup>2</sup>		see attached pdf 1550 <sup>c</sup>
9	Gross employment density	inhab/km <sup>2</sup>		see attached pdf 755 <sup>d</sup>
10	GDP per capita	€/inhab		12.640 <sup>e</sup>

BUILDING STOCK			1991	2001
11	Dwellings per 1000 inhabitants			541 <sup>t</sup>
12	Average age of the total stock	years		37 <sup>g</sup>
13	New construction <sup>4</sup>	m <sup>2</sup> /inhab x year		1,20 <sup>n</sup>
14	Rehabilitation <sup>5</sup>	m <sup>2</sup> /inhab x year		0,017 <sup>i</sup>
15	Building functions <sup>6</sup>			10,37 <sup>j</sup>
16	Building high <sup>7</sup>			2 <sup>k</sup>
17	Housing types <sup>8</sup>			3,40 <sup>l</sup>

LAND USE AND URBAN FORM			1991	2001
18	Geometric shape			
19	Mono or polycentric structure			
20	Map of population density			see attached pdf
21	Map of employment density			see attached pdf
22	Concentration of employment in the city centre <sup>9</sup>	%		21 <sup>m</sup>
23	Residential concentration index <sup>10</sup>			1.33
24	Public green areas <sup>11</sup>	km <sup>2</sup>		6
25	Street density in the urban area	km/km <sup>2</sup>		12 <sup>n</sup>

TRANSPORT SYSTEMS			1991	2001
26	Cars per 1000 inhabitants			355 <sup>o</sup>
27	Provision of public transport	1000 seat x km/km <sup>2</sup>		3.560 <sup>p</sup>
28	Trunk road length per capita	km/inhab		0,20 <sup>q</sup>
29	Street network length per capita	m/inhab		5,22 <sup>r</sup>
30	Modal split <sup>12</sup>	%		52% - Private transport; 20% - Public transport; 19% - Walking; 1% - Others
31	Parking spaces per 1000 city centre workplaces			12.0
32	Density of segregated transit routes <sup>13</sup>	km/km <sup>2</sup>		0,23 <sup>s</sup>
33	Public vs private infrastructure provision <sup>14</sup>			0,74 <sup>t</sup>

RESOURCE CONSUMPTION			1991	2001
34	Urban area per capita	km <sup>2</sup> /inhab		0,0003842 <sup>u</sup>
35	Residential floor space per capita	m <sup>2</sup> /inhab		27,9 <sup>v</sup>
36	Energy use in buildings per capita	Kwh/inhab x year		4.215 <sup>w</sup>
37	Energy use in transports per capita	Kwh/inhab x year		9.740 <sup>x</sup>
38	Energy use in public transport per capita	Kwh/inhab x year		926
39	Energy use in private transport per capita	Kwh/inhab x year		2,770

PERFORMANCE INDICATORS			1991	2001
40	CO <sub>2</sub> emissions per capita	kg/inhab x year		4.000 <sup>y</sup>
41	CO <sub>2</sub> emissions per workplace	kg/workplace x year		8,202
42	CO <sub>2</sub> emissions per urban km <sup>2</sup>	ton/km <sup>2</sup>		10,418
43	CO <sub>2</sub> emissions per city km <sup>2</sup>	ton/km <sup>2</sup>		6,187
44	CO <sub>2</sub> emissions per residential floor space	kg/m <sup>2</sup>		143
45	CO <sub>2</sub> emissions per GDP	gr/€		316

<sup>1</sup> - Mean annual values

<sup>2</sup> - Urban areas include all areas within city boundaries with gross population densities above 250 inhab/km<sup>2</sup>

<sup>3</sup> - Agricultural and forest lands as well as (non formalized) natural areas, located within city boundaries

- <sup>4</sup> - Annual production of new floor space per inhabitant
- <sup>5</sup> - Annual production of rehabilitated floor space per inhabitant
- <sup>6</sup> - Ratio of (exclusively) residential vs mixed and non residential buildings
- <sup>7</sup> - Average number of floors above ground in the whole city
- <sup>8</sup> - Ratio of dwellings in unifamily houses vs dwellings in multifamily houses
- <sup>9</sup> - Percentage of workplaces in the city centre on the total for the whole city
- <sup>10</sup> - This index is defined as the residents' average distance to the urban centre divided by the average distance they would have had if they were evenly distributed all over the urban area (Naess et al, 1996)
- <sup>11</sup> - Includes all formalized green areas such as squares, parks and urban green corridors
- <sup>12</sup> - Percentages of the total journeys carried out by public, private and non motorised transport modes
- <sup>13</sup> - Total length of segregated routes occupied by bus, light metro, conventional metro and rail lines divided by the total surface of the urban area
- <sup>14</sup> - Ratio of the total length of segregated public transport routes (all modes) by the total length of urban trunk roads (network of urban motorways and fast carriageways) (adapted from Kenworthy & Laube, 2004)

- <sup>a</sup> - 2004 values, adjusted with the active resident population
- <sup>b</sup> - Ecological and Agricultural Reserves (REN & RAN) plus non classified forestry areas
- <sup>c</sup> - Gross population density =  $1.260.680 \text{ inhab} / 814,70 \text{ km}^2$
- <sup>d</sup> - Gross workplace density =  $614.800 \text{ workplaces} / 814,70 \text{ km}^2$
- <sup>e</sup> - GDP per capita =  $15.934,5 \text{ ME (Eurostat - 2004)} / 1.260.680$
- <sup>f</sup> - Dwellings per 1000 inhabitants =  $264.744 / 1.000$
- <sup>g</sup> - 50% of buildings built after 1970.
- <sup>h</sup> - Figures for 2004.
- <sup>i</sup> - idem
- <sup>j</sup> - Building functions =  $241.450 / 23.294$
- <sup>k</sup> - Building high =  $(\text{no. of floors} \times \text{no. of building units}) / \text{total no. of building units}$
- <sup>l</sup> - Housing types =  $204.621 / 60.123$
- <sup>m</sup> - Percentage of jobs in the city center. In this context the demarcation of the city center is coincidental with the limits of the ACRRU (Área Crítica de Reabilitação e de Reconversão Urbanística)
- <sup>n</sup> - Street density in the urban area =  $5.723,80 / 474,50$
- <sup>o</sup> - 2000 values.
- <sup>p</sup> - Only public funded companies.
- <sup>q</sup> - Trunk road length per capita =  $185,32 / 1.260.680$
- <sup>r</sup> - Street network length per capita =  $6.590,35 / 1.260.680$
- <sup>s</sup> - Density of segregated transit routes =  $185,32 / 814,70$
- <sup>t</sup> - Public vs private infrastructure provision =  $185,32 / 249.283,48$
- <sup>u</sup> - Urban area per capita =  $474,50 / 1.260.680$
- <sup>v</sup> - Figures to 2004.
- <sup>w</sup> - Estimated values.
- <sup>x</sup> - Estimated values
- <sup>y</sup> - Monteiro, A.; Borrego, C.; Tchepel, O.; Santos, P. e Miranda, A. (2001). Inventário de emissões atmosféricas - base de dados Polar2. In actas da 7ª Conferência Nacional sobre a Qualidade do Ambiente, 18-20 Abril, Aveiro, Portugal, pp. 954-958