



Urban environmental indicators

Year 2009

Istat presents the results of an urban environmental indicators survey carried out in collaboration with Municipal Statistical Offices and other Organizations working in the field. The data, referring to provincial capitals¹, is available in a time series from 2000 to 2009. It should be noted that complete information is not available for L'Aquila because of the earthquake². Starting this year, average values of time series have been calculated for regional capitals (see attached tables). The 116 provincial capitals that were the object of this study and where 29.8% of Italy's total population resides (almost 18 million people), cover 6.8% of the country's surface area. The average population density³ of these cities is 873.1 inhabitants per km² with the greatest density in Naples at 8,214.4 inhabitants per km², and the lowest is Tempio Pausania with 66.7 inhabitants per km² of municipal area⁴.

Principal results

In 2009 many indicators show a reduction of environmental pressure generated by human activity. In particular, the following indicators show improvement: the average number of times that the PM₁₀ (particulate matter with a diameter of less than 10 microns) limit was exceeded for protection of human health (-5.1% compared to 2008), urban garbage collected (-1.5%) and household water consumption (-0.7%). An overall increase in separated collection of nearly 2 percent was seen, which now totals 30.4% of urban garbage.

Indicators showing unfavourable trends include the increase in motorcycles per thousand inhabitants (+3.9%) and the number of vehicles (+0.4%), as well as a reduction in the demand for public transport (-0.7%). Household consumption of electricity and gas, as well as the density of urban greenery remain practically unchanged (Figure 1). Greater sensitivity to the environment and energy related themes in provincial capitals is shown by the fact that in 2009, 28 of them (as compared to 8 in 2000), used district heating. Also, thermal solar panels were installed on public buildings in 59 cities (as compared to 3 in 2000) and photovoltaic panels in as many as 69 towns, as compared to 2000 when it was used only in Palermo.

¹ 3 new Provinces have been established (Barletta-Andria-Trani, Fermo and Monza - Brianza) with 5 Provincial capitals (Barletta, Andria, Trani, Fermo and Monza).

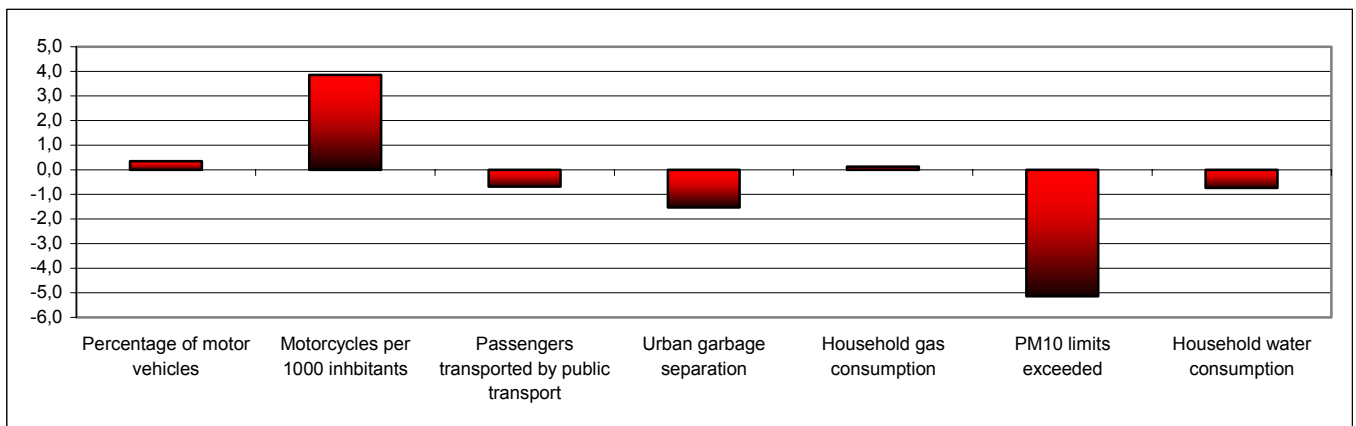
² In order to make time-wise comparisons, for Abruzzo, The Southern Regions and Italy, the 2000-2009 time series figures are given excluding L'Aquila Municipality due to unavailability of indicators. It should however be noted that in 2008, with regard to per capita consumption of household water L'Aquila, with a lower average consumption brought down the average for Abruzzo by 4.3 m³ per inhabitant; while the proportion of Abruzzi capitals with water purification plants increased by 1.3 percent; in both cases the averages for the South and for Italy as a whole remain unchanged. In the same year, the higher rates of per capita methane gas consumption for household and heating use in L'Aquila municipality raised the average consumption by 40 m³ for the Abruzzo Region and for the South by 7 m³, although the overall Italian average was practically unchanged. Finally, with regard to the per capita electricity consumption for household use, the figures for L'Aquila did not impact the overall averages for Abruzzo, Southern Italy or Italy as a whole.

³ The population density in provincial capitals is given in the attached table.

⁴ The term "Italy" as well as all references to Regions in the graphs and tables in this article refer to the total for Provincial capital cities.

A continuing improvement in air quality was observed in 2009, although the number of the days when the level of PM10 was exceeded was still higher than current legislation (Italian Ministerial Decree 60/2002) allows for. The figures tell us that in the 102 cities where PM₁₀ levels are monitored, air quality criteria showed that on average, limit was exceeded on 54.1 days, which is less than the 2008 value of 57.0, but still far in excess of the permitted 35.

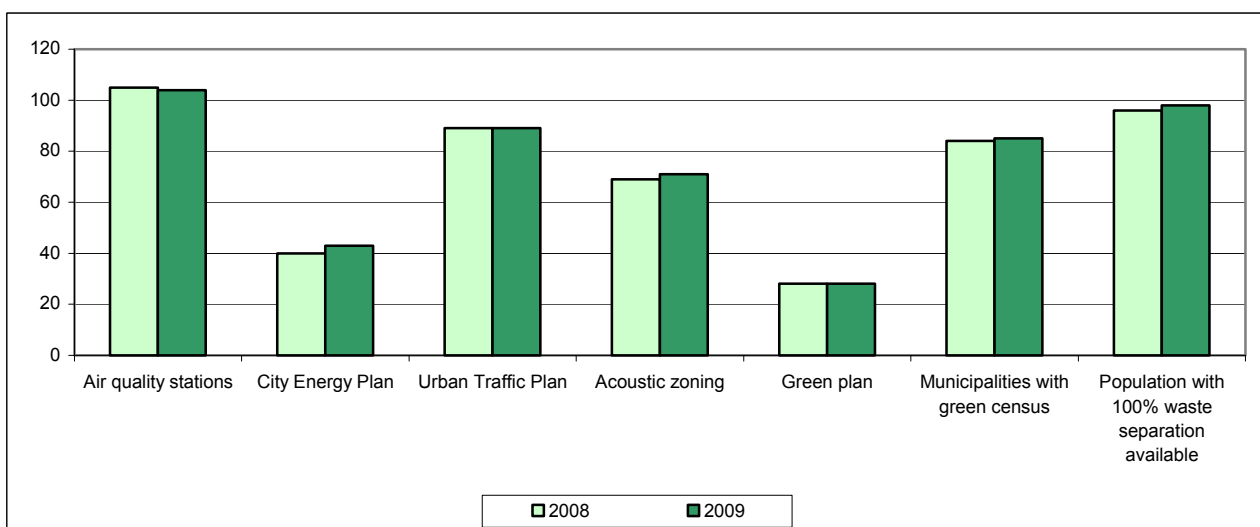
Figure 1 – Some indicators that determine environmental and overall pressure for provincial capital municipalities - 2009
(percentage variation compared to 2008)



Source: Istat, Environmental data for cities, ACI (Automobile Club on Italy)

In 2009 there was an increase in the number of cities that put environmental safeguards in place. Massa, Benevento and Macerata approved the Municipal Energy Plan. Rovigo, Siena and Oristano made separated collection available to all residents. Ferrara and Massa approved acoustic zoning. Cosenza and Trapani set up permanent air quality monitoring stations, and for the first time Pesaro carried out a green census. Between 2008 and 2009 there was no new cities approved an urban traffic plan or green plan (Figure 2).

Figure 2 – Number of Provincial capitals that have applied environmental protection policies - 2008 and 2009



Source: Istat, Environmental data for cities

Considering the principal elementary indicators analysed in Table 1, the top and bottom three cities classified for PM₁₀, separated collection, green density, demand for public transportation and consumption of electricity in 2009, are given below. Note that:

- with regard to the number of days when PM₁₀ limits were exceeded, the top three positions (meaning cities with the lowest levels of these contaminants) were occupied by Siena, Foggia and Andria municipalities, while at the bottom of the list we find Syracuse, Naples and Turin municipalities;
- with regard to the percentage of separated collection, the top three positions were occupied by Pordenone, Novara and Verbania municipalities, while at the bottom of the list we find Syracuse, Messina and Iglesias municipalities;
- with regard to city area dedicated to urban greenery the best municipalities were Pisa, L'Aquila and Biella, while at the bottom of the list we find Taranto, Olbia and Villacidro municipalities;
- with regard to demand for public transportation, considering the number of passengers carried during the year per inhabitant, the top three positions with the highest use of public transportation were Milan, Venice and Rome municipalities, while at the bottom of the list we find Villacidro, Sanluri and Carbonia municipalities;
- with regard to household electricity consumption, the top three positions with the lowest consumption were occupied by Campobasso, Matera and Potenza municipalities, while at the bottom of the list we find Olbia, Cagliari and Carbonia municipalities (Table 1).

Table 1 – First 3 and last 3 municipalities with respect to the main environmental indicators in 2009

Position	PM10		Waste separation		Density of urban greenery		Demand for public transportation		Electricity consumption	
	days limit exceeded		Percentage quota of waste		Percentage on area		Passengers per inhabitant		Kwh per inhabitant	
First	Siena	0	Pordenone	76.7	Pisa	71.9	Milan	702.3	Campobasso	910.4
Second	Foggia	0	Novara	73.0	L'Aquila	43.4	Venice	628.6	Matera	933.5
Third	Andria	1	Verbania	71.7	Biella	35.0	Rome	533.9	Potenza	939.3
AVERAGE	Italy	54	Italy	30.4	Italy	9.3	Italy	228.7	Italia	1,206.8
Third last	Turin	151	Iglesias	5.1	Villacidro	0.1	Carbonia	1.7	Carbonia	1433.9
Second last	Naples	170	Messina	4.4	Olbia	0.0	Sanluri	0.0	Cagliari	1644.7
Last	Syracuse	309	Syracuse	3.8	Taranto	0.0	Villacidro	0.0	Olbia	1788.6

Source: Istat, Environmental data for cities

Furthermore, for the same indicators, the greatest changes with respect to the previous year have also been noted in Table 2. Note that:

- with regard to the number of days when PM₁₀ limits were exceeded, the top three positions (meaning cities which showed most improvement) were occupied by Sondrio, Terni and Benevento municipalities, while at the bottom of the list we find Ancona, Catanzaro and Mantua municipalities;
- with regard to the percentage of separated collection, the top three positions were occupied by Oristano, Avellino and Caserta municipalities, while at the bottom of the list we find Crotone, Teramo and Catania municipalities. After the separated collection management crisis in Campania during 2007-2008, separated collection jumped up in Avellino (62.9% in 2009) and Caserta (48.9%), while Salerno's situation of the previous year remains unchanged (60.8 per cent in 2009). The values for Benevento and Naples are still under 20%. The average amount of separated collection in provincial capitals in Campania therefore increased from 18.1 to 25.8%;

- with regard to city area dedicated to urban greenery the top three positions showing a slight improvement compared to 2008 were occupied by Sondrio, Brescia and Trento, while at the bottom of the list we find Isernia, Vicenza and Cagliari municipalities;
- with regard to demand for public transportation, the greatest increase in the number of passengers carried during the year per inhabitant was seen in the municipalities of Bolzano-Bozen, Bergamo and Pisa, and the lowest in L'Aquila, Savona and Macerata;
- with regard to household electricity consumption, the top three positions showing greatest reduction when compared to 2008 were occupied by Bolzano, Parma and Trieste municipalities, while at the bottom of the list we find Olbia, Cagliari and Carbonia municipalities.

Table 2 - First 3 and last 3 provincial capitals with respect to main environmental indicators – Absolute variations 2009-2008

Position	PM10		Waste separation		Density of urban greenery		Demand for public transport		Electricity consumption	
	days limit exceeded		Percentage quota of waste		Percentage of area		Passengers per inhabitant		Kwh per inhabitant	
First	Sondrio	-54	Oristano	46.7	Sondrio	0.8	Bolzano-Bozen	12.7	Bolzano-Bozen	-106,6
Second	Terni	-36	Avellino	41.5	Brescia	0.4	Bergamo	9.5	Parma	-63,8
Third	Benevento	-35	Caserta	38.0	Trento	0.4	Pisa	9.4	Trieste	-51,4
AVERAGE	Italy	-3	Italy	1.9	Italy	0.0	Italy	-1.6	Italy	-0,8
Third Last	Mantova	45	Catania	-3.4	Cagliari	0.0	Macerata	-12.9	Oristano	24,6
Second Last	Catanzaro	63	Teramo	-4.1	Vicenza	0.0	Savona	-14.4	Carbonia	27,7
Last	Ancona	70	Crotone	-9.1	Isernia	0.0	L'Aquila	-20.9	Cremona	63,8

Source: Istat, Dati ambientali nelle città (Environmental data for cities),

The top four cities with regard to environmental compatibility in 2009 calculated by summarising all the main indicators of the causes for environmental pressure and the official response (see Methodological note) were Trento, Venice, Bologna and Foggia. The municipalities of Syracuse, Iglesias, Olbia and Catania occupy the last four positions (Table 3).

Biella ceded the fifth position to Ravenna while Modena dropped one place. Sondrio, Avellino and Terni have made it to the first ten places this year. Sondrio's improvements in air quality monitoring and control are especially noteworthy, with half the previous number of days (down from 107 to 53), when PM₁₀ limits were exceeded, though still well above the permitted limit (35 days). Avellino improved the percentage of separated collection from 21.4% to 62.9%, but the number of days when PM₁₀ limits were exceeded increased from 102 to 112. Terni gained 12 positions with respect to the previous year, by reducing the number of days when PM₁₀ limits were exceeded from 93 to 57.

Besides Sondrio, cities that gained more than 10 positions in 2009 compared to 2008, were Oristano, Cosenza, Massa, Benevento, Ferrara, Macerata, Caserta, Rimini and Pordenone. On the other hand, Agrigento, Vibo Valentia, Rovigo, Prato, Reggio di Calabria and Alessandria slipped down many places in the ranking. Furthermore, Agrigento and Vibo Valentia suspended measurement of the principal atmospheric pollutants and Agrigento is the only municipality that reduced (by two percent) the quantity of separated collection.

Table 3 - First 10 and last 10 provincial capitals for greater attention to eco-compatibility - 2008, 2009 (a)

CITIES	2008	2009	2009-2008 Difference (b)	2008 Ranking	2009 Ranking	Difference in ranking 2009-2008
Trento	7.0	7.1	0.1	1	1	0
Venice	6.9	7.0	0.1	2	2	0
Bologna	6.7	6.7	0.0	3	3	0
Foggia	6.3	6.3	-0.1	4	4	0
Ravenna	6.1	6.2	0.1	6	5	1
Sondrio	5.8	6.2	0.4	22	6	16
Avellino	5.9	6.2	0.3	15	7	8
Modena	6.1	6.2	0.1	7	8	-1
Terni	6.0	6.1	0.2	12	9	3
Biella	6.1	6.1	0.0	5	10	-5
Chieti	4.3	4.2	-0.1	107	106	1
Barletta	4.2	4.2	0.0	108	107	1
Agrigento	4.7	4.2	-0.5	87	108	-21
Fermo	4.0	4.0	0.0	109	109	0
Vibo Valentia	4.7	4.0	-0.7	91	110	-19
Enna	3.9	4.0	0.0	110	111	-1
Catania	3.8	3.9	0.0	111	112	-1
Olbia	3.7	3.7	0.0	113	113	0
Iglesias	3.6	3.6	0.0	114	114	0
Siracusa	3.5	3.5	0.0	115	115	0

Source: Istat, Environmental data for cities

(a) L'Aquila has not been inserted in the 2009 ranking of cities as complete data is not available due to the earthquake.

(b) Some apparent discrepancies are caused by rounding off to one decimal place.