

Reducing Pollution in Rome: Programs and Policies

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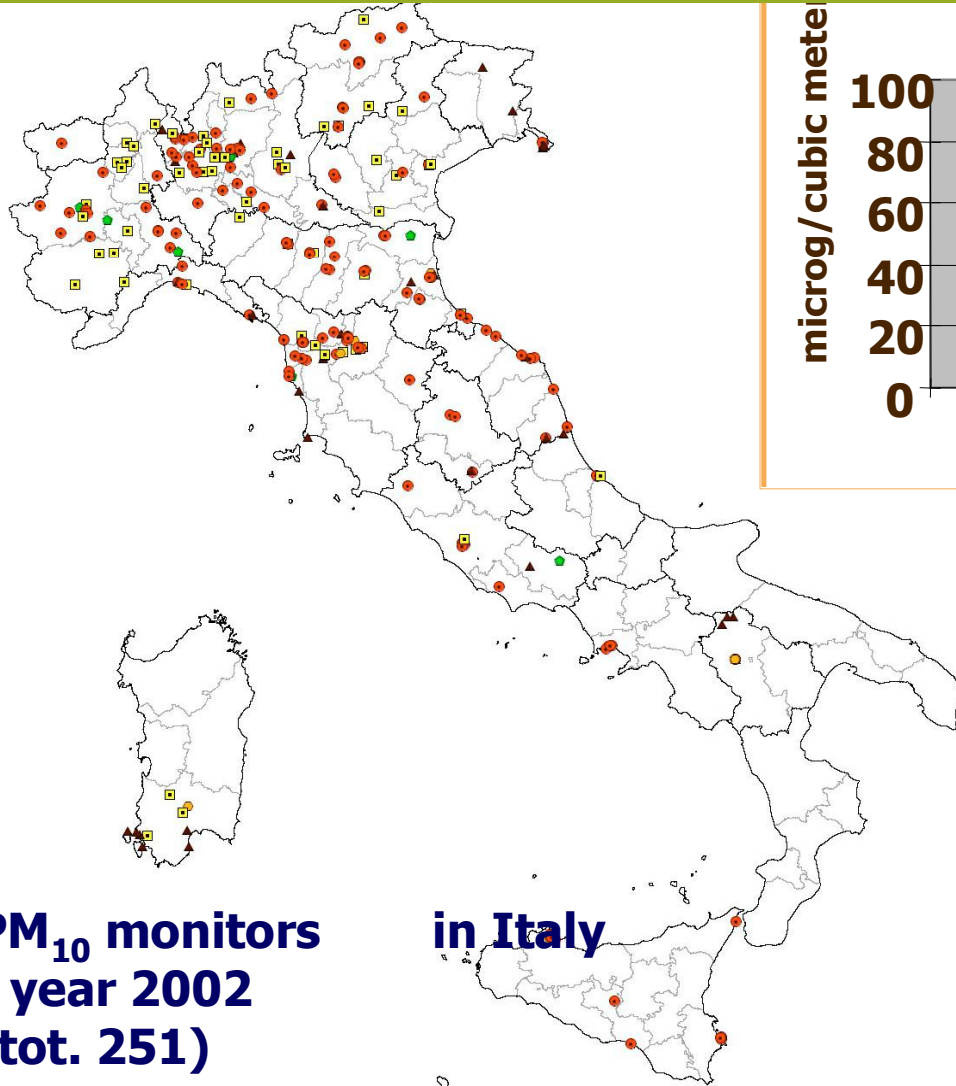
United Nations Environment Programme

environment for development

November 16-17, 2005

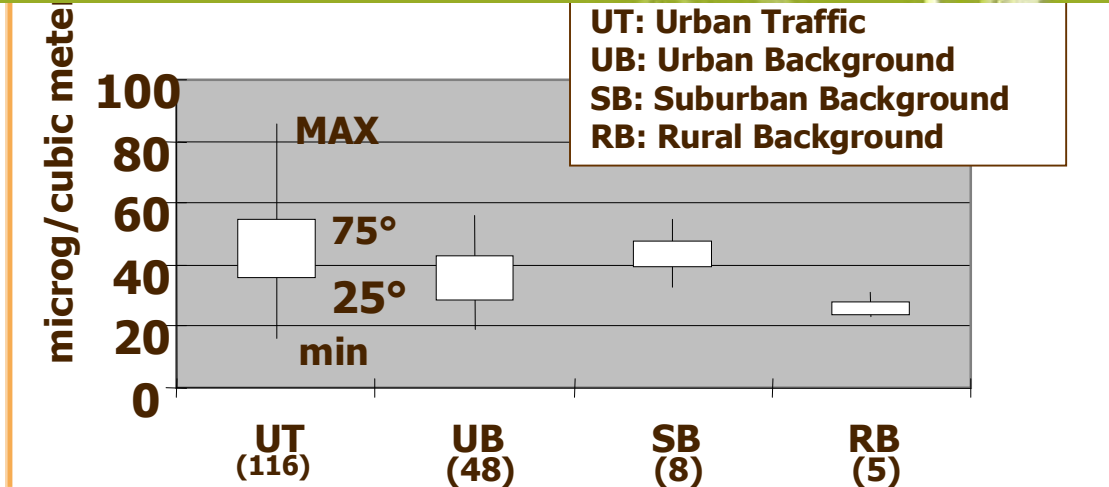
PM₁₀ monitors in Italy

Annual PM₁₀ concentrations in Italy (1995-2001) per type of station (number of measurements in parenthesis)



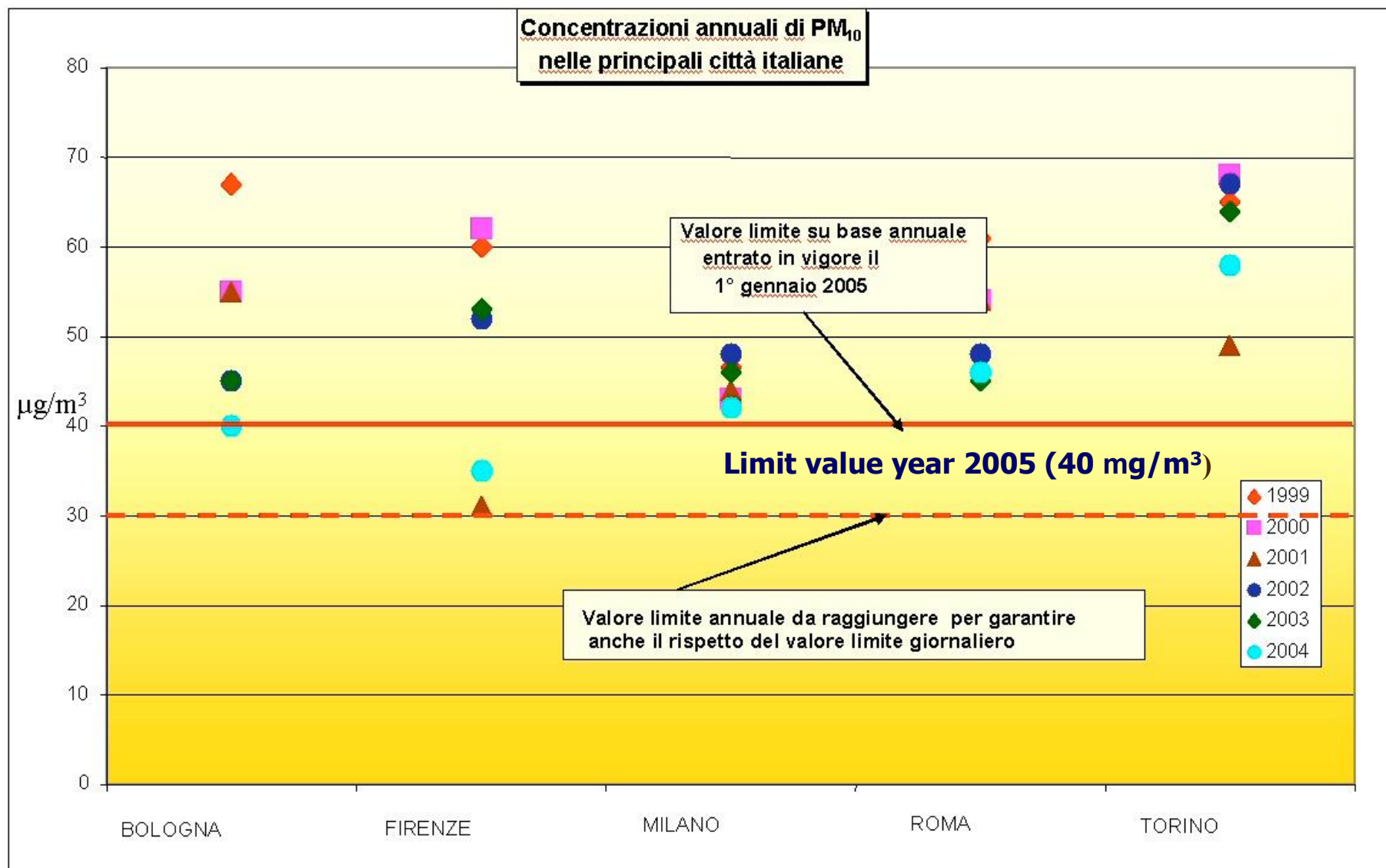
**PM₁₀ monitors
- year 2002
(tot. 251)**

in Italy

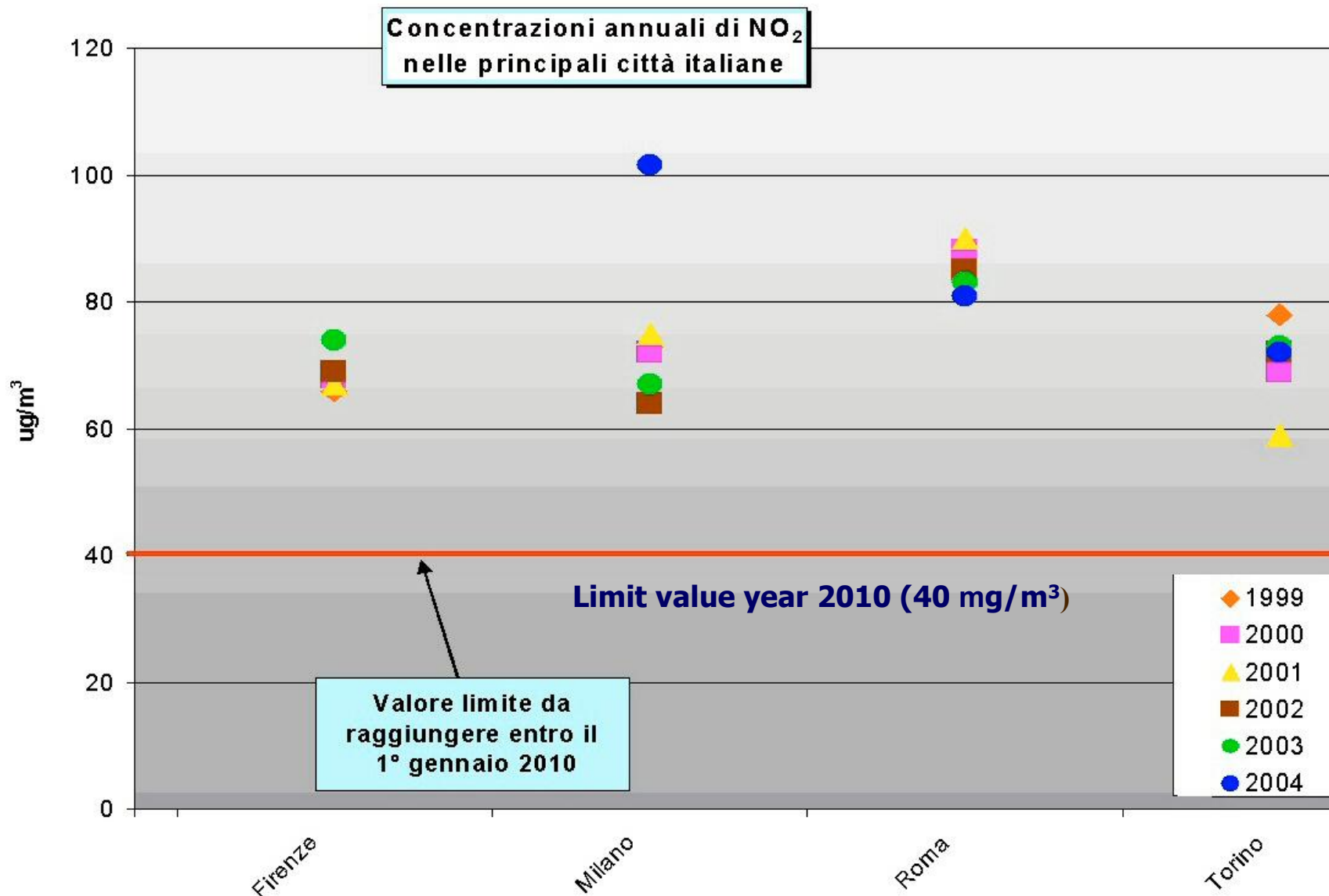


- Urban/Suburban Traffic (143)
- Urban/Suburban Background (58)
- ▲ Urban/Suburban Industrial (37)
- ⬡ Rural Industrial (6)
- ⬠ Rural Background (7)

PM₁₀ AIR CONCENTRATIONS ITALIAN CITIES – ANNUAL AVERAGE



NO₂ AIR CONCENTRATIONS ITALIAN CITIES – ANNUAL AVERAGE



Air pollution in Italian cities

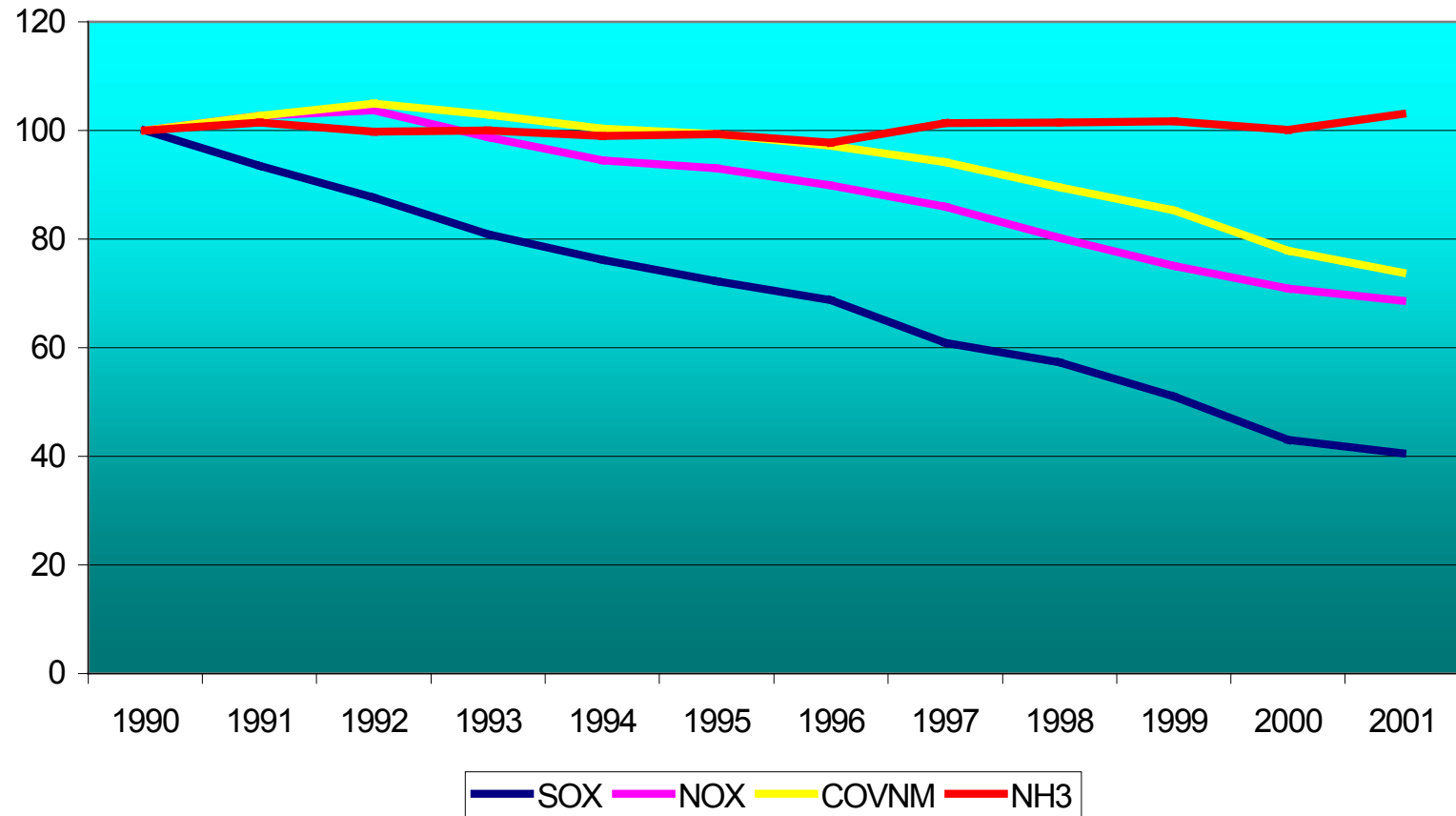
Also emissions of almost all PM10 precursors decreased in Italy during the last decade

In these areas road transport is one of the leading environmental pressures concerning:

- . air pollutant emissions - at urban level, the greatest share of PM₁₀, NO_x (nitrogen oxides), VOC (volatile organic compounds) and CO (carbon monoxide) is emitted by road vehicles;
- . noise;
- . land use.

Moreover safety and congestion issues due to road traffic must be considered.

NATIONAL ITALIAN EMISSIONS OF PM PRECURSORS (NO_x, SO_x, COVNM and NH₃) 1990=100



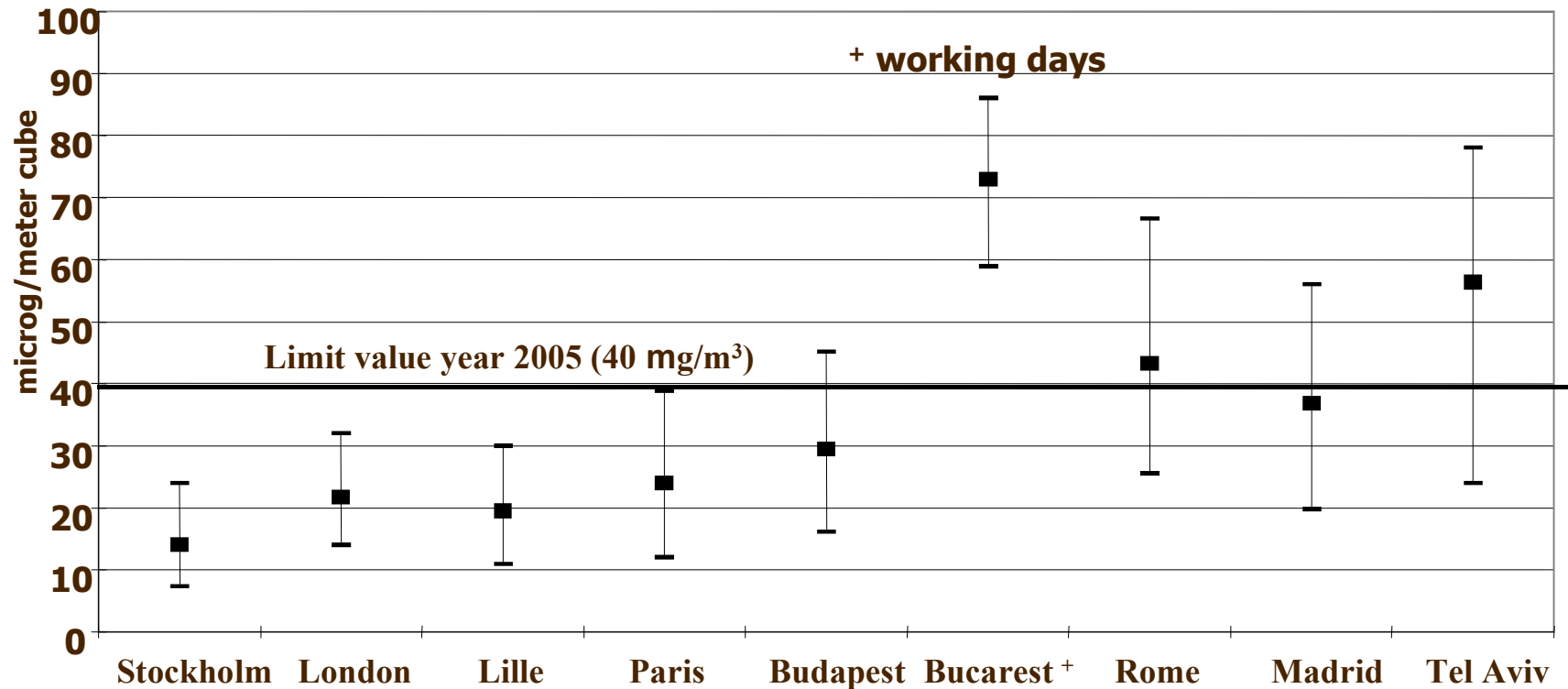
Air pollution in Italian cities

It is necessary to consider particular meteo-climatic conditions characterizing the different Member States with an approach analogous to the natural sources contribution.



Air pollution in italian cities

ANNUAL CONCENTRATIONS PM₁₀ SOME CITIES > 1.000.000 INHABITANTS
(years 1996 - 2000 - MAX, min, 10° e 90° percentile)



APAT 2004

Rome motorcar fleet: composition for fuel



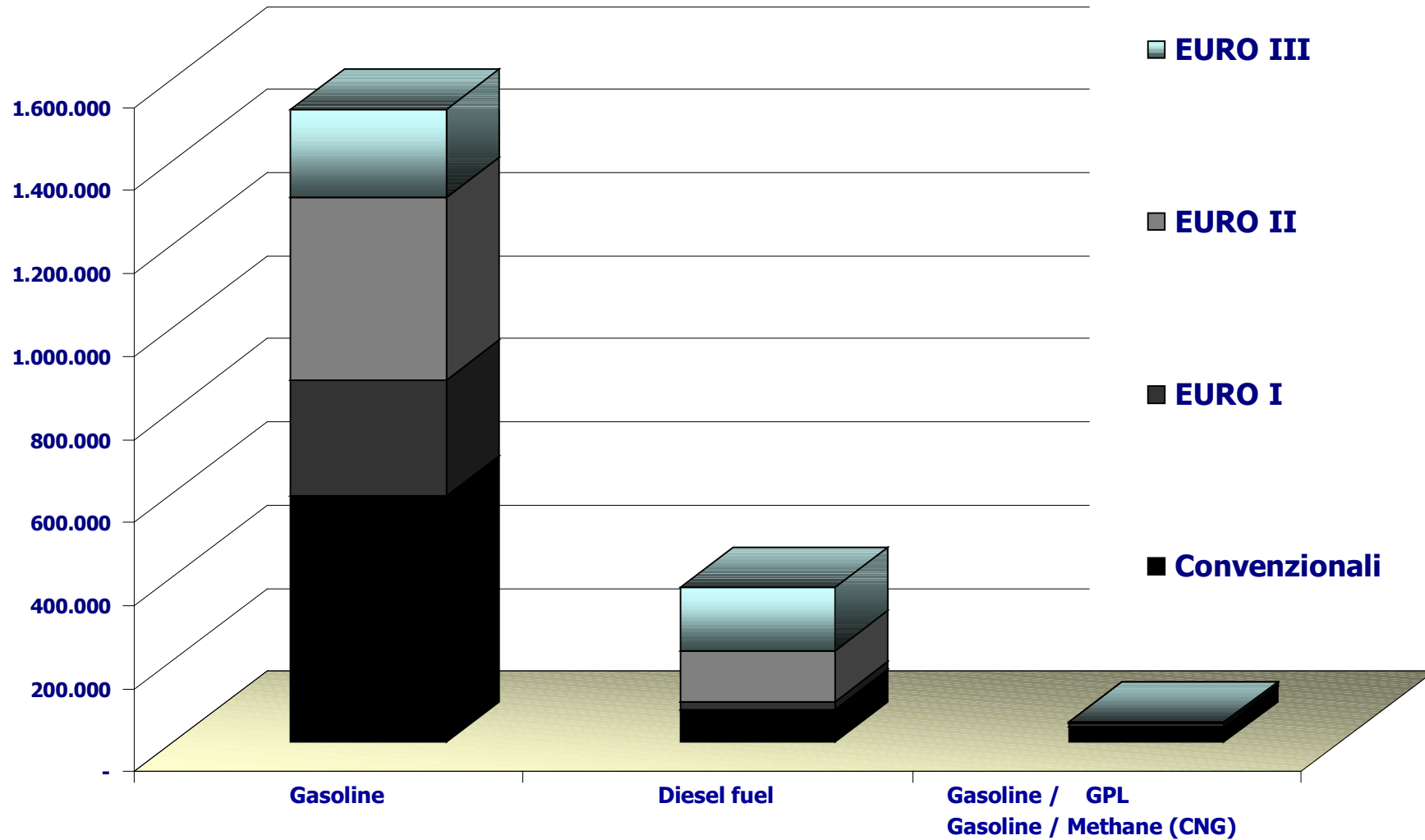
		Dato Comunale		Dato Provinciale	
		Parco 2002	% anno 2002	Parco 2002	% anno 2002
Gasoline	Convenzionali	590.128	38,80%	799.970	38,80%
	EURO I	280.341	18,43%	380.027	18,43%
	EURO II	441.116	29,00%	597.971	29,00%
	EURO III	209.464	13,77%	283.946	13,77%
	Totale	1.521.049	100,00%	2.061.914	100,00%
	<i>% sul totale parco</i>	78,33%		78,33%	
Diesel fuel	Convenzionali	77.824	20,94%	105.497	20,94%
	EURO I	17.030	4,58%	23.086	4,58%
	EURO II	125.906	33,88%	170.676	33,88%
	EURO III	150.887	40,60%	204.540	40,60%
	Totale	371.647	100,00%	503.799	100,00%
	<i>% sul totale parco</i>	19,14%		19,14%	
Gasoline / GPL	Convenzionali	37.860	76,85%	51.323	76,85%
	EURO I	7.733	15,70%	10.483	15,70%
Gasoline / Methane (CNG)	EURO II	3.483	7,07%	4.721	7,07%
	EURO III	192	0,39%	260	0,39%
	Totale	49.268	100,00%	66.787	100,00%
<i>% sul totale parco</i>	2,54%		2,54%		
Totale parco	1.941.964	100,00%	2.632.500	100,00%	

Rome

Rome motorcar fleet: composition for fuel



Roma: Parco circolante per anno d'immatricolazione e standard di emissione



Rome motorcycles fleet: composition for fuel

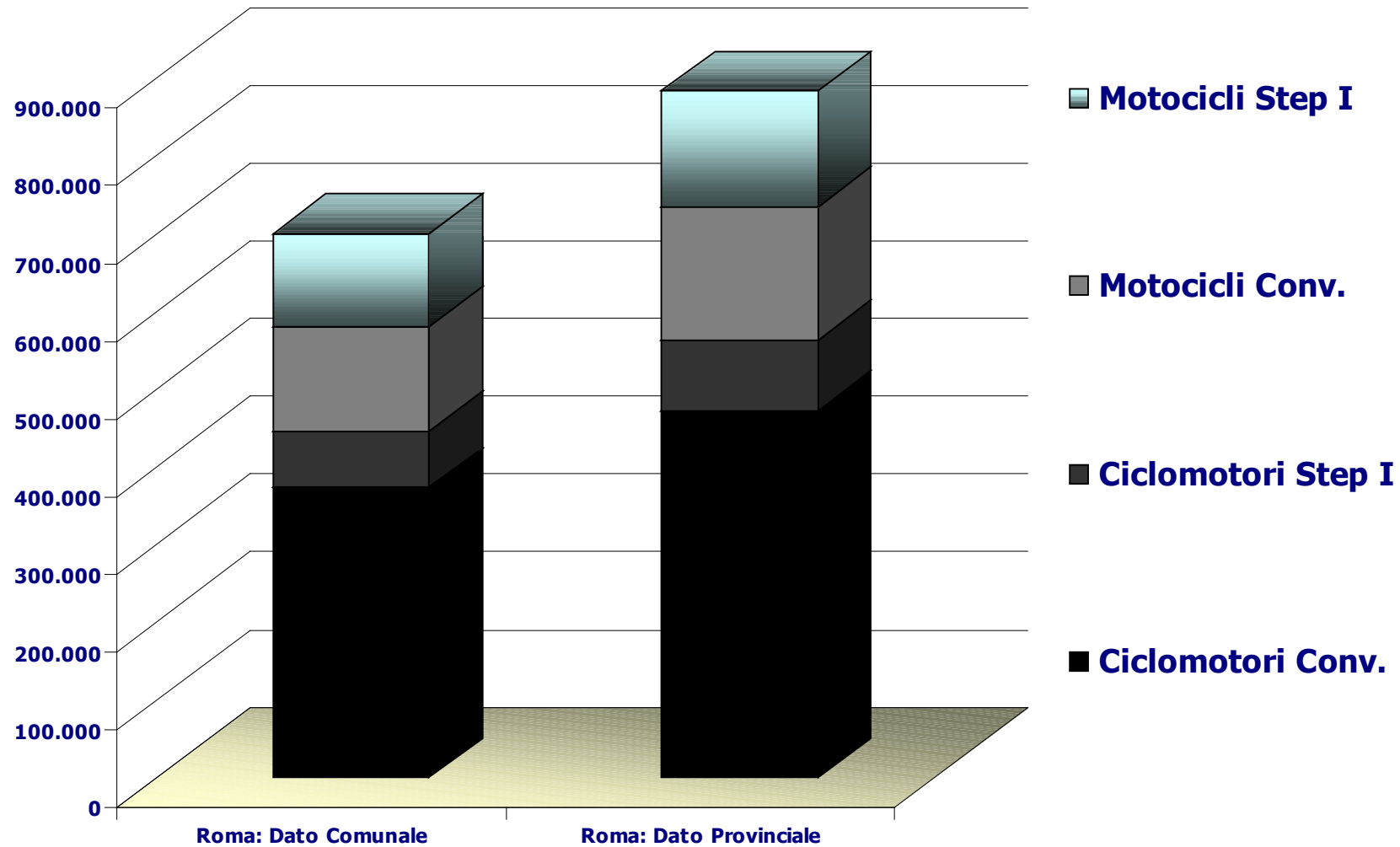
Rome	Mopeds and Motorcycles < 50 cm³	Ciclomotori Conv.	373.054	83,79%	471305	83,79%
		Ciclomotori Step I	72.182	16,21%	91.192	16,21%
		<i>Totale</i>	445.236	100,00%	562.497	100,00%
		<i>% sul totale parco</i>	63,73%		63,73%	
		Motocicli Conv.	135.238	53,37%	170.855	53,37%
		Motocicli Step I	118.155	46,63%	149.274	46,63%
		<i>Totale</i>	253.393	100,00%	320.129	100,00%
		<i>% sul totale parco</i>	36,27%		36,27%	
		<i>Totale parco</i>	698.629		882.626	
		<i>Totale Ciclomotori</i>	445.236	63,73%	562.497	63,73%
		<i>Totale Motocicli</i>	253.393	36,27%	320.129	36,27%
			698.629	100,00%	882.626	100,00%



Rome motorcycles fleet: composition for fuel



Roma: Motocicli e ciclomotori per standard di emissione



Rome delivery fleet (< 3.5 Tonn.) : composition for fuel

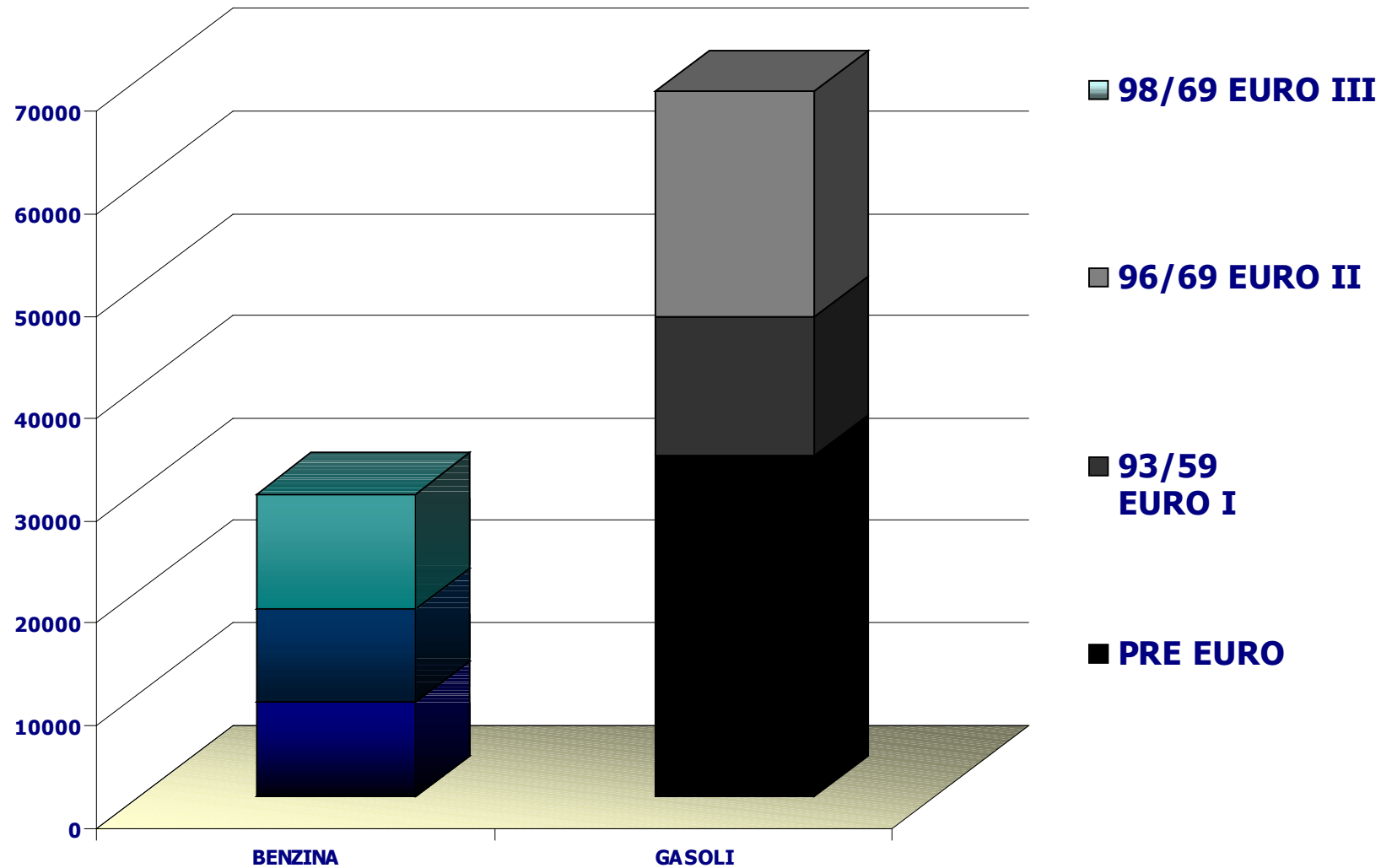


Parco veicolare commerciale per alimentazione e standard di emissione

Rome	PRE EURO	93/59 EURO I	96/69 EURO II	98/69 EURO III	TOTALE
Gasoline	9.268	9.066	11.330	10.872	40.536
Diesel fuel	33.361	13.568	22.106	15.370	84.405

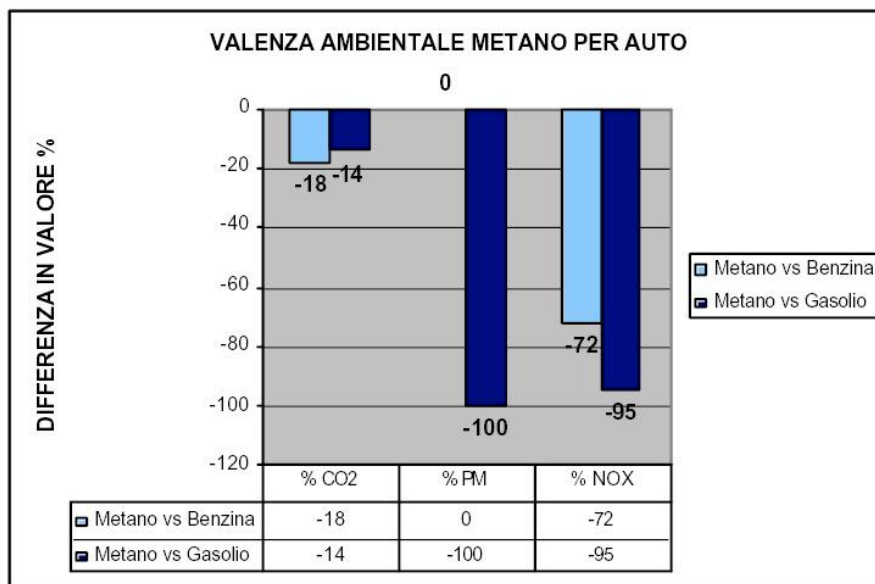
Rome delivery fleet (< 3.5 Tonn.) : composition for fuel

Roma: Parco veicoli commerciali <3.5 Tonn. per standard di emissione

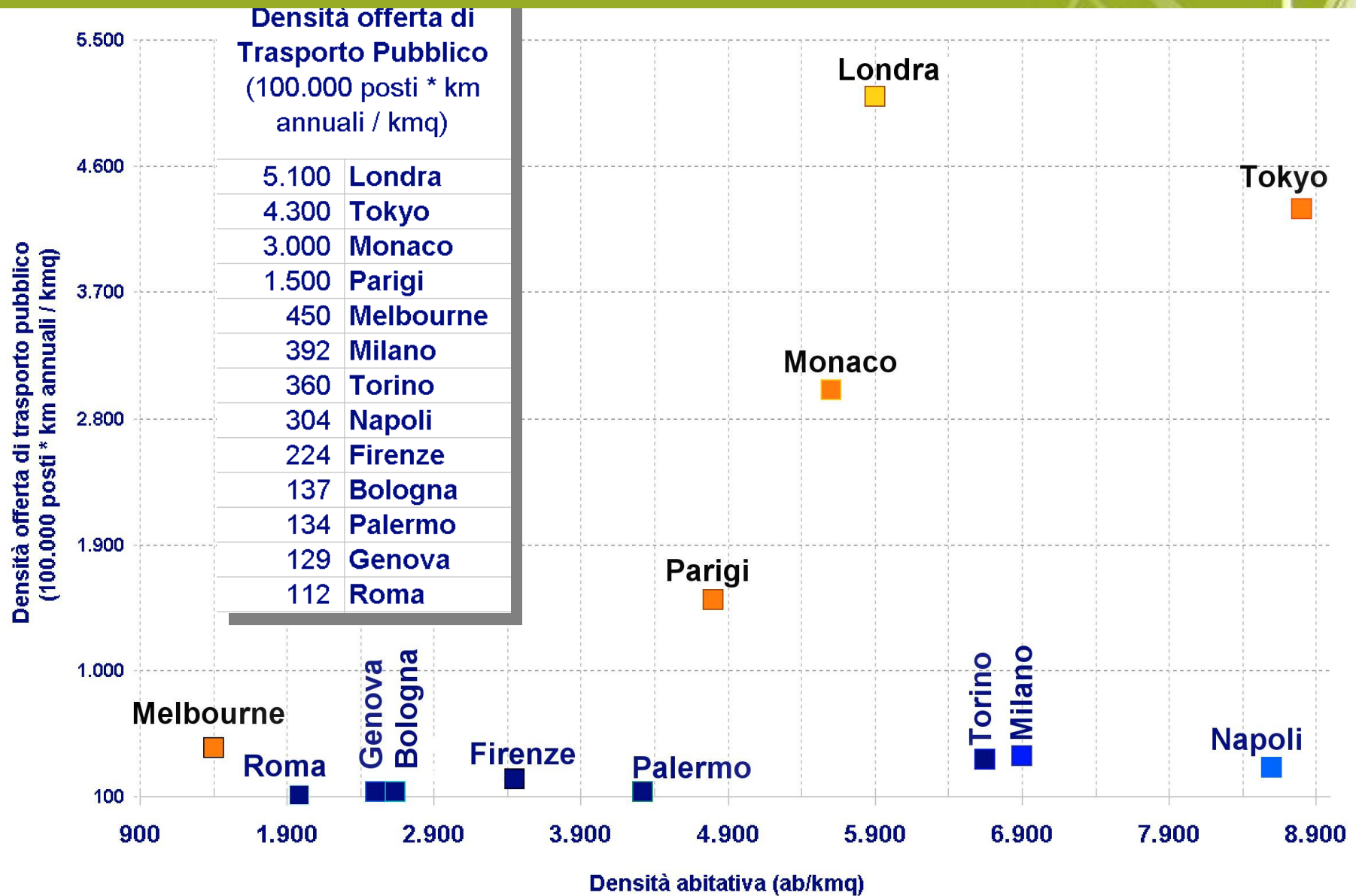


Rome: methane (CNG) distribution

ROMA	Area di servizio Prenestina E	EA 1 km 566	Impianto autostradale
	Area di servizio Prenestina C	CA 1 km 566	Impianto autostradale
	Formello	SS 2 Cassia nibis km 13,222	
	Guidonia	Via Tiburtina km 18,700 - SS 5	
	Lanuvio	SS 207 Nettunense, km 14,021	
	Magliana Sud	Raccordo Autostradale Roma Fiumicino	Impianto autostradale
	Magliana Nord	Raccordo Autostradale Roma Fiumicino	Impianto autostradale
	Pomezia	Via Monachelle km 1,300	
	Ponzano Romano	SP Ponzano - Civitacastellana	
	Roma	Via di Tor Bella Monaca-USC.17 GRA-Dir. Casilina	
	Roma	Via Boccea km 10,000	
	Roma	Via del Flauto, 40	
	Roma	Via Pomonte, 39/41 - Loc. Settebagni	
	Roma	Grande Raccordo Anulare - Casilina Interna	
	Roma	Grande Raccordo Anulare - Ardeatina Esterna	In costruzione
	Roma	Via Aurelia	In costruzione
	Roma	Loc. Ponte Galeria	In costruzione
	Roma	Grande Raccordo Anulare - Pisana Interna	
	Roma	Grande Raccordo Anulare - Selva Candida	In costruzione



Rome: international report - Public transport



Cataldo - Villani su dati società di TPL (valori riferiti al 2002)

Review of transport policies in italian urban areas

Here are some elements derived from a critical review of projects concerning mobility that are adopted and implemented in Rome for improving air quality.

MAIN PURPOSES OF THE REVIEW:

- Make a inventory of the ongoing projects
- Evaluate how project aims and contents are presented to stakeholders
- Assess environmental performance of analyzed projects
- Analyse people level of information, communication and feedback
- Check – where possible – transferability of experiences in different urban contexts

ACTIVITIES:

- Analysis of the projects adopted in Rome
- In order to frame Italian experiences, analysis of the projects of European Countries performed in the Framework Programs of the European Union

SOURCES OF INFORMATION:

- *Documents about Rome (Municipal reports on air quality, Urban Traffic Plans, etc.)*
- *Web pages Rome Municipalitie, Italian Local Environmental Protection Agencies, European Union, Information Service on Local Mobility of the European Union.*
- *Italian and European Statistical data*

SUMMARY OF THE RESULTS

Information about some representative Italian cities are organized as follows:

Type	Thematic area of intervention	Description of measures adopted	Indicators						
<i>Infrastructures Intervention</i>	<i>"Transit point"</i>	<i>City-oriented Freight Platform and client supply through ZEV/LEV Scheme</i>	<table border="1"> <thead> <tr> <th>Dim</th> <th>State</th> <th>Perf</th> </tr> </thead> <tbody> <tr> <td>☹</td> <td>☺</td> <td>☹</td> </tr> </tbody> </table>	Dim	State	Perf	☹	☺	☹
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☹	☺	☹							
	<table border="1"> <tbody> <tr> <td>☺</td> <td><i><u>High impact intervention on urban territory and/or local mobility system</u></i></td> <td rowspan="3"><i>Dimension</i></td> </tr> <tr> <td>☹</td> <td><i><u>Medium impact intervention on urban territory and/or local mobility system</u></i></td> </tr> <tr> <td>☹</td> <td><i><u>Low impact intervention on urban territory and/or local mobility system</u></i></td> </tr> </tbody> </table>	☺	<i><u>High impact intervention on urban territory and/or local mobility system</u></i>	<i>Dimension</i>	☹	<i><u>Medium impact intervention on urban territory and/or local mobility system</u></i>	☹	<i><u>Low impact intervention on urban territory and/or local mobility system</u></i>	
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Rome 1 / 2 / 3

Population: 2,816,474

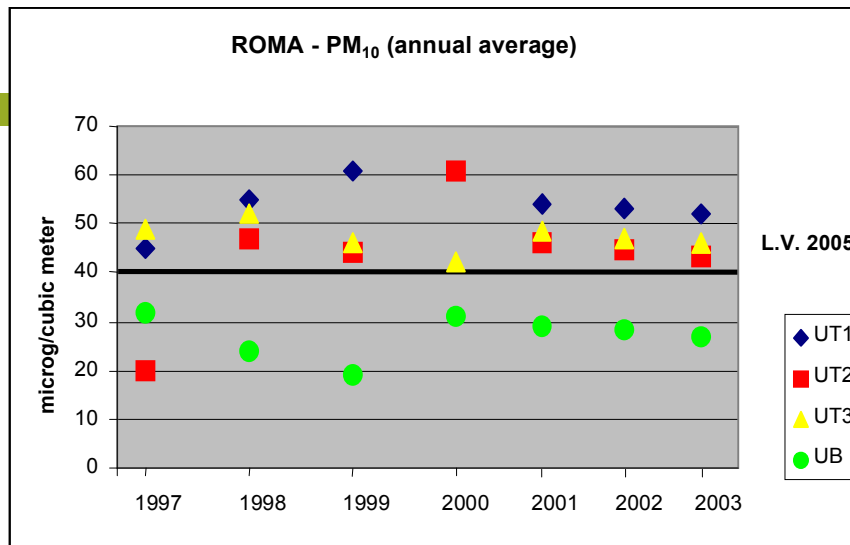
Area: 1,285 km²

Density: 2,192 ab/km²

Total cars: 1,941,964

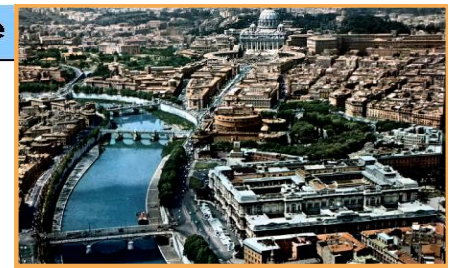
Car*1,000 inhabitant: 762.5

EuroCar*1,000 inhabitant: 485



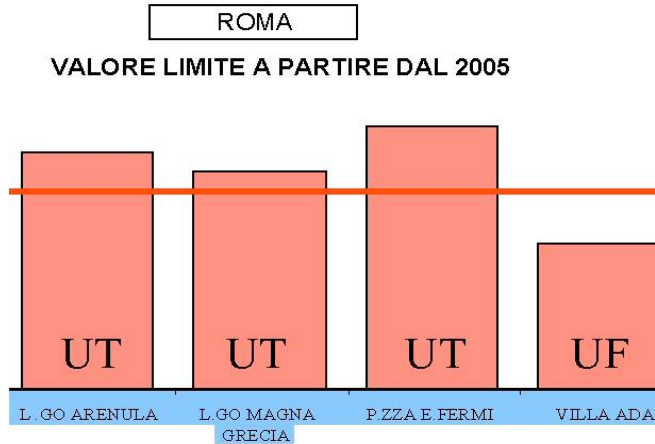
Type	Description	Dim	State	Perf
Infrastructures intervention	Traffic Remote Control - "Centrale monitoraggio flussi veicolari della STA" SIM (Sistema Informativo della Mobilità) 2.7 M Euro	😊	😊	😊
Technological measures	Methane-running Buses Operating Service (0,3% of entire fleet) 2 M Euro	😞	😊	😞
	(Gecam) Diesel-water emulsion running Buses Operating Service (12% of entire fleet) 1 M Euro	😞	😊	😊
	ZEV Buses Experimental Operating Service (fleet: 64 buses) 10.6 M Euro	😞	😊	😞
Regulatory and fiscal measures	Restricted Access Areas and on-street Parking Policies 3.8 M Euro	😊	😊	😊
	Car Sharing System 1 M Euro	😊	😊	😊
Sustainable Mobility and Communication	Electric Bicycle and Scooter Rental Scheme, Pop-Bus 2 M Euro, 5.7 M Euro	😊	😊	😊

Subtotal 28.8 M Euro



Rome 1 / 2 / 3

Population: 2,816,474
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UF: background urbano; UT: traffico

Type	Description	Cost	Dim	State	Perf
Infrastructures Intervention	Traffic Lights and Traffic Control System	12.5 M Euro	☺	☺	☺
	Technological measures				
Regulatory and fiscal measures	Implementation of Public-Transport fleet according to EURO III Standards (42% of entire fleet)	1.5 M Euro	☺	☺	☺
	(Gecam) Diesel-water emulsion running Buses Operating Service	4 M Euro	☺	☺	☺
	Restricted Access Areas and on-street Parking Policies	1.7 M Euro	☺	☹	☹
	Short-range freight delivery	1 M Euro	☺	☺	☹
	Park + Ride Scheme	3 M Euro	☹	☺	☺
Sustainable Mobility and Communication	Remote/Electronic Vehicle Access Control System	11.9 M Euro	☺	☹	☺
	Mobility Management	6 M Euro	☺	☹	☹
	Night Public Transport Operating Service	2 M Euro	☺	☺	☺
	Car Pooling Scheme	0.1 M Euro	☹	☹	☹
Subtotal		43.7 M Euro			

Rome 1 / 2 / 3

PM 10 - Numero di giorni di superamento del valore limite di 50 mg/m³ (all'1/1/2005)



Population: 2,816,474

Area: 1,285 km²

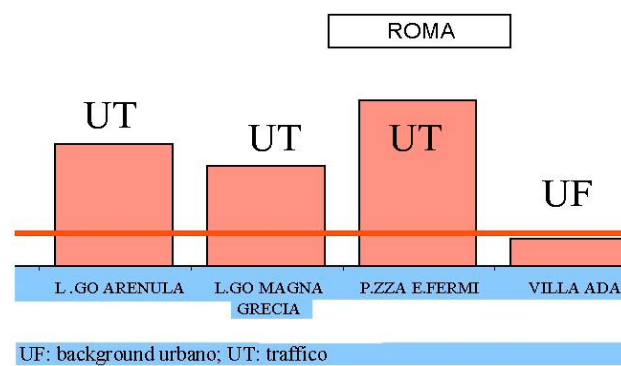
Density: 2,192 ab/km²

Total cars: 1,941,964

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NUMERO MASSIMO DI SUPERAMENTI CONSENTITI A PARTIRE DAL 2005



Type	Description	Dim	State	Perf
Infrastructures Intervention	"La cura del ferro" Light Rail Network Improvement: new tramway and underground lines construction	😊	😊	😊
Technological Application	Green Rider Card, for ZEV	😊	😊	😊
	Delivery fleet implementation according to EURO III Standards	😊	😊	😊
Regulatory and fiscal policies	Electric Bicycle and Scooter incentive	😊	😊	😊
	GPL // Methane incentive	😊	😊	😊
	"Iride" Remote/Electronic Vehicle Access Control System	😊	😊	😊
Sustainable Mobility and Communication	"Bollino Blu"	😊	😊	😊
	"Multiplo" Collective Taxi Scheme	😞	😊	😞
	"Assi verdi di circolazione" Small-area Road and Traffic Management by means of physical measures	😊	😊	😊
	"+ bus" Servizio trasporto disabili (121 municipalities Provincia Roma)	😊	😊	😊

Emilia-Romagna Provinces introduced more measures to reducing pollution:
- integrated policies of mobility (use of territory, localization of the activities, planning of transport, sustainable Urban Transport Plans);

Nine environmental agreement on the air quality (one for every province) that they preview approximately 11 million Euro of regional financing for the realization of plans in the advanced cities 50.000 inhabitants.

It objects are:

- * monitoring, the payment, the order and a better management of the goodses of transport in the city (Interreg III - City Port MEROPE);**
- * platforms of distribution, with the equipment necessary of the ITC for the management and the exchange of information;**
- * the substitution of the old vehicle with others "low emission "**

Structural transport policies:

- * 22 million euro from the Region in order fighting the smog in the cities.
 - * 4 million euro for special filters for particulate matter (for public transport vehicles and freight delivery vehicles);
 - * 5 million euro/ year (for three years 2006-2008) for the reconversion to gas methane CNG / GPL, private-cars pre-euro (30.000 vehicles in the three years);
 - * 3 million euro will serve to adapt the net of monitoring system of the quality of the air to the new communitarian dispositions.
 - * 4.2 million euro the Action plan (2001-2003) to reduce greenhouse gas and other emissions in atmosphere;
 - * 94 million euro for extraordinary Program for sustainable city mobility 2003-2005;
 - * 193,6 million euro/year for three years 2004-2006 of nine contracts for public transit.
- The provision of a safe and reliable public transport system including both bus and mass rapid transit services at prices which are affordable by all sections of the community.

Mobility strategies

Urban air pollution is one of the main environmental issues in Italy.

Transport is the principal driving force in terms of air pollutant emissions: it accounts for the majority of PM₁₀, NO_x, COV and CO emissions.

Among the assessed measures, those concerned with sustainable mobility are generally of low-medium dimension in terms of impact on urban territory and local mobility system.

The working group instituted for the technical Ministry Commission on the Emergency Italian Atmospheric pollution (CNEIA) to assess future mobility strategies

- Reduction of all the polluting emissions in order to reduce the medium yearly concentrations in atmosphere of PM10 of 30% on national base.
- quantification of environmental benefits will be estimate;
- 1 billion Euro / year to new projects and new policies.

What is needed ?

- * **Reducing pollution from vehicle exhaust. The diverse mixture of traffic coupled with poor traffic management systems, poor maintenance of most commercial vehicles and lack of proper monitoring and enforcement of existing laws, rules and regulations are the main causes of environmental pollution in the city. Motor vehicles contribute from the emission exhausts.**
- * **Meanwhile the Italian Government has approved national policies to emission testing as part of the vehicles fitness test (Bollino Blu), encourage the use of CNG by vehicles, vehicles capable of CNG propulsion, encourage the conversion of existing petrol driven vehicles to CNG and fix price differentials between CNG and petrol driven vehicles.**
- * **To enhance user awareness on alternative and sustainable modes of transport.**