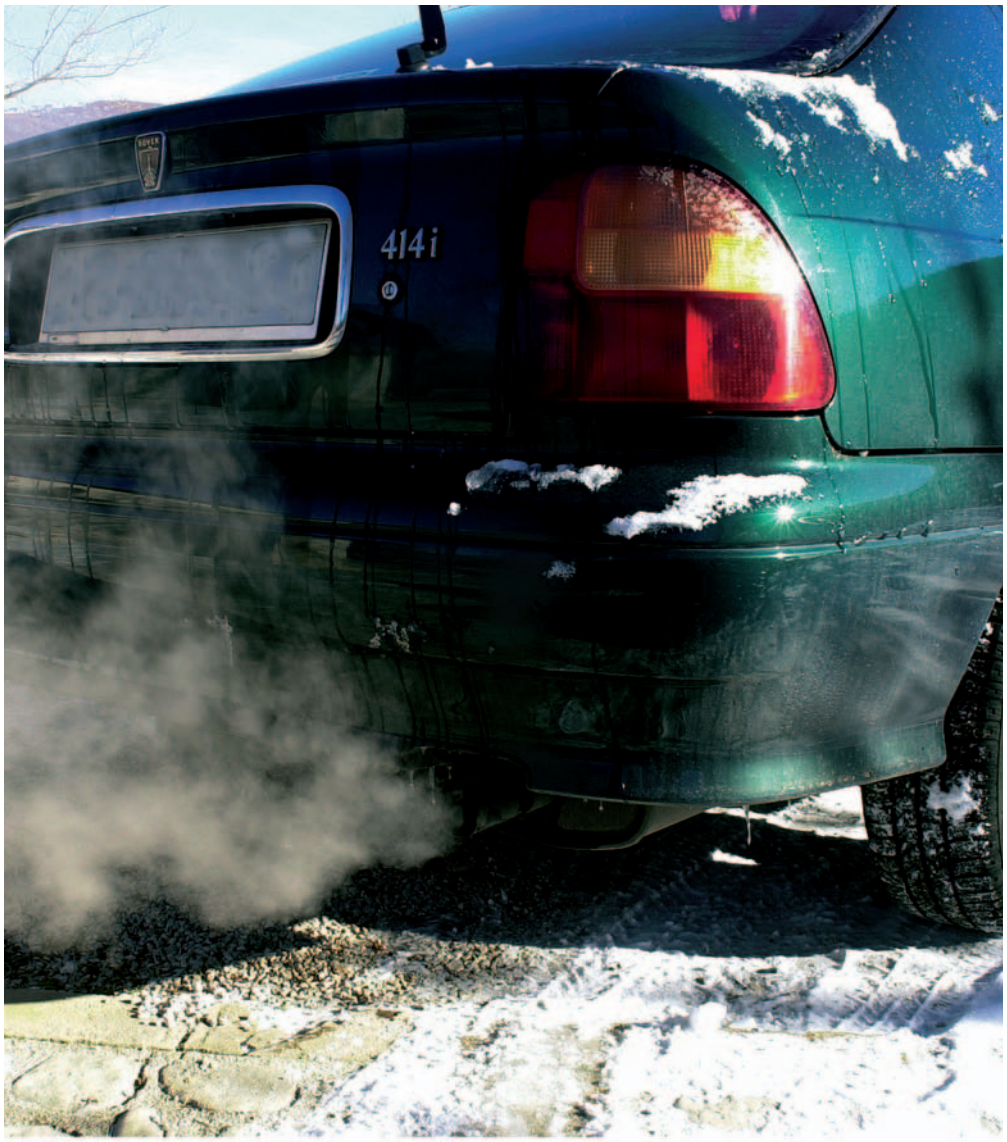
CHAPTER 3



AIR QUALITY

Introduction

Air quality represents one of the environmental emergencies that, together with the closely related issue of climate change, is of concern not only to administrators of local and central governments, but also to experts in the fields of medicine and the environment, involving citizens on a daily basis. Air quality and its defence constitute a global problem that regards, with different manifestations, Europe and the industrialised world, as well as emerging nations and other developing countries. The most critical pollutants, given the high levels they reach in the atmosphere and their impact on human health, are atmospheric particulate PM_{10} (a particle material with an aerodynamic diameter of less than 10 millionths of a metre), tropospheric ozone and nitrogen dioxide. Growing attention is being focussed on $PM_{2,5}$ (a particle material with an aerodynamic diameter of less than 2.5 millionths of a metre), whose chemical-physical characteristics make it the leading cause of the toxic effects of atmospheric particulate; the new air quality directive[1], approved in April 2008 and currently being transposed into Italian law, is the first measure to set a limit on the level of $PM_{2,5}$, to be met by 2015. In our country, as in the majority of the other European countries, the emergency primarily involves large urban areas, where the high population density, along with the resulting activities, cause elevated levels of emissions and noteworthy concentrations of pollutants in the ambient air, along with high levels of exposure. The European Environment Agency (EEA) recently estimated that, since 1997 more than 50% of the population of major European urban areas has been exposed to levels of PM_{10} higher than the limits set for the protection of human health, while approximately 61% have been exposed to levels of ozone higher than the objectives set for the same purpose[2]. An analysis of the EEA indicates that 15 of the 27 countries of the European Union shall not succeed in complying, by 2010, with one or more of the objectives set under the NEC Directive[3] in order to reduce atmospheric pollution[4].

According to an EEA estimate, since 1997 more than 50% of the population of major urban areas has been exposed to levels of PM_{10} higher than the limits set for the protection of human health, and roughly 61% has been exposed to ozone levels higher than the objectives set.

[1] Directive 2008/50/EC of the European Parliament and Council regarding the environmental air quality for cleaner air in Europe
[2] EEA, *Signal 2009*
[3] Directive 2001/81/EC of the European Parliament and Council on the national emission limits on a number of atmospheric pollutants
[4] EEA, Technical Report no. 9/2008

The reduction from the early 90's onward in emissions of primary particulate materials, meaning nitrogen oxides and other substances responsible for the pollution registered in Italy and in the rest of Europe, has led to an unquestioned improvement in the quality of the air (in particular, SO_2, CO, benzene and lead no longer constitute, as things currently stand, a threat to human health, except under certain local conditions and isolated circumstances), but it has not resolved the problems of particulate, nitrogen dioxide and ozone, whose levels in recent years have often exceeded regulatory levels, which, in the meantime, have become more stringent. All the above confirms that atmospheric pollution is an extremely complex problem that, in addition to being the result of chemical-physical interactions in the atmosphere, is also affected by hemispheric factors, such as cross-border transport, together with regional-local causes, including the growing anthropogenic transformation of the territory, with the resulting demands and decisions regarding energy sources, mobility and industrial development. In order to preserve air quality where it is good, and restore it where necessary, vigorous, increasingly integrated and long-term measures must be taken.

Our country is working, on both the local and national levels, to implement clean-up measures, especially in the transportation sector, where the ongoing rise in demand continues to be one of the primary causes of pollution in urban areas. On the national level, as support for the initiatives undertaken by the regional governments, which are not yet sufficient to deal with the emergency, a national plan of extra-regional measures is being drawn up.

State of air quality

The most critical pollutants, given the high concentrations found in the atmosphere, continue to be ozone (O_3) during the summer months, PM_{10} atmospheric particulate, especially in winter, and nitrogen dioxide (NO_2). This situation, common to many European countries, together with the difficulty of bringing levels of the pollutants below the regulated limits, were taken into consideration by the new directive on air quality (Directive 2008/50/EC). While maintaining the upper limits unchanged, art. 22 of the directive

O_3, PM_{10}, NO_2 are the most critical pollutants, especially in large urban areas.

makes possible requests for extensions or waivers (for nitrogen dioxide, PM_{10} and benzene) of the limit values and the deadlines for compliance. Our country, which must take advantage of this possibility, and intends to do so, is involved in this process regarding PM_{10} and nitrogen dioxide, which will depend on how complete, reliable and effective the documentation presented will be judged to be.

Though in Europe, on the whole, there have been signs of fairly marked decreases in atmospheric concentrations, and quite recently (in the case of sulphur dioxide, carbon oxide, benzene and nitrogen oxides as well), concentrations of PM_{10}, nitrogen dioxide and ozone remain a problem, especially in urban areas. The average pollution from PM_{10} and ozone in the major urban agglomerates of the 27 countries of the EU from 1999 to 2007, as shown in Figure 3.1 (where ozone is indicated as SOMO35[5]), points to a stable situation. Seeing that the graph presents the averages of situations, it provides an easily understandable illustration of periods of greater generalised intensity, such as 2003 and, though to a lesser degree, in 2006, when factors of weather and climate resulted in high level of PM_{10}, and of ozone in particular, in the atmosphere[6].

As can be seen, the average concentrations of PM_{10} sat at levels of between 27 and 31 $\mu g/m^3$[7], higher than the 20 $\mu g/m^3$[8] recommended by the World Health Organisation (WHO).

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[5] SOMO35 is an index of high accumulated exposure, calculate as the total sum of the differences between the maximum daily average over eight hours and the level of 35 ppb (parts per billion)

[6] ETC/ACC, Technical Paper 2009/3 "*European Exchange of Monitoring Information and State of the Air Quality in 2007*"

[7] Obviously, this does not rule out that the annual limit of 40 $\mu g/m^3$ was also exceeded in certain agglomerates, as took place in Bulgaria, the Czech Republic, Greece, Italy, Poland, Romania and Slovenia

[8] WHO Regional Publications, European Series no. 91 "*Air Quality Guidelines for Europe*": 20 $\mu g/m^3$ is the lowest level at which total mortality (cardiopulmonary and pulmonary cancer) grows at an interval of reliability greater than 95% in the event of prolonged exposure

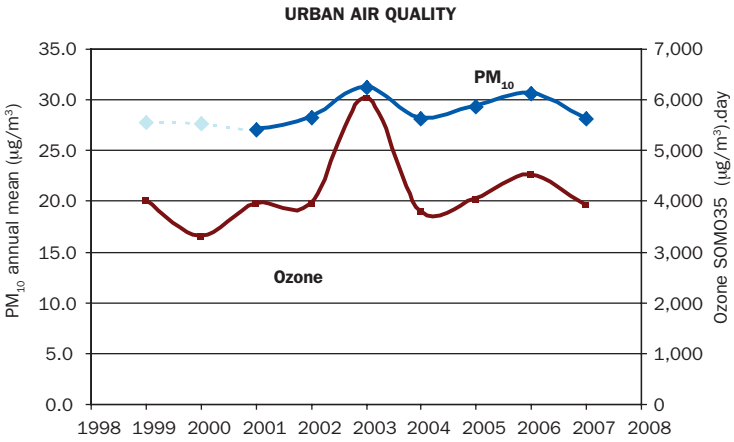

Figure 3.1: PM_{10} (annual average) and ozone (SOMO35) in the large urban agglomerates of the 27 EU countries from 1999 to 2007[9]

Between 1999 and 2007, average pollution from PM_{10} and ozone in the large urban agglomerates of the 27 countries of the EU proved stable.

The following figures on PM_{10}, $PM_{2.5}$, nitrogen dioxide and ozone illustrate the situation in Italy within the context of the rest of Europe, updated to 2007. Apart from $PM_{2.5}$, for which the information on spatial coverage was insufficient, the levels of the other pollutants in our country were found to be critical (Figures 3.2, 3.3, 3.4 and 3.5).

PM_{10}, nitrogen dioxide and ozone present critical situations in Italy.

[9] Source: ETC/ACC Technical Paper2009/3. The graph was drawn up for the European agglomerates reported on in compliance with Decision 2004/461/EC, based on the monitoring data collected in AirBase (only data from urban and suburban monitoring stations presenting at least 75% valid data were utilised)

PM_{10}, 2007.
Over 38% of the traffic monitoring stations exceeded the daily limit for the protection of human health.

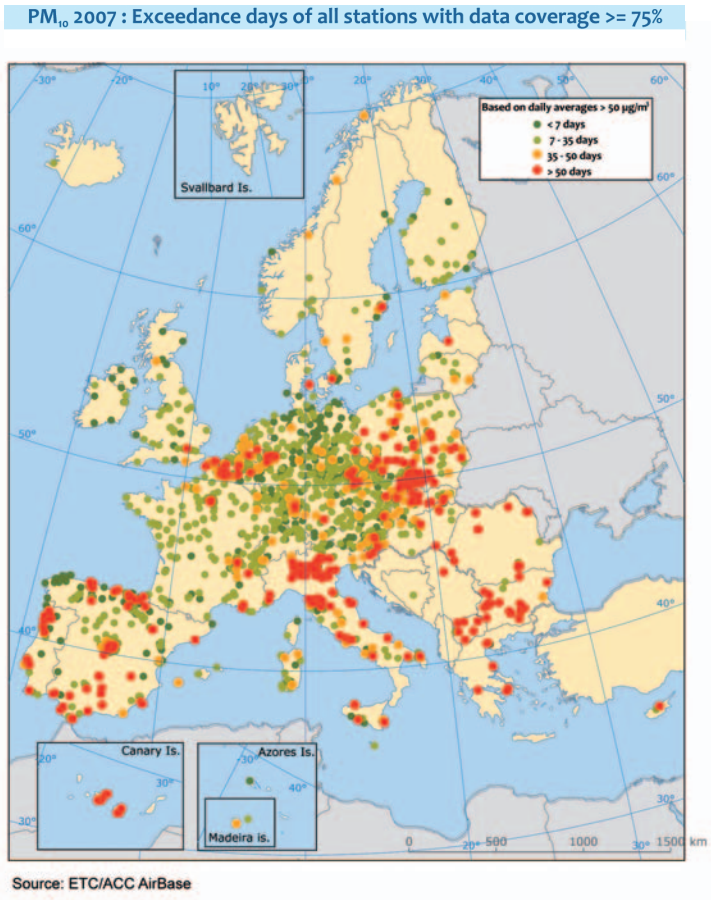

Figure 3.2: PM_{10} - Number of days in which the daily limit for the protection of human health was exceeded (50 µg/m³, not to be exceeded more than 35 times in a calendar year)[10]

[10] Source: http://air-climate.eionet.europa.eu/databases/airbase/eoi_maps/index_html

$PM_{2,5}$, 2007.
The area covered by the monitoring stations is currently insufficient.

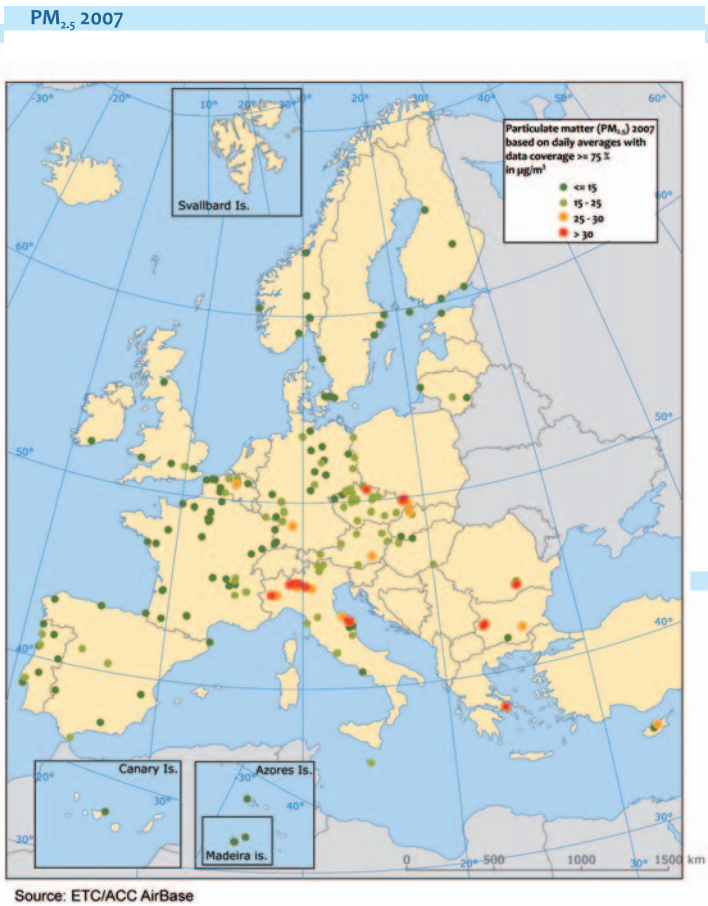

Figure 3.3: $PM_{2.5}$ – Average annual concentration (limit value of 25 µg/m³ to be met in 2015)[11]

[11] Source: ibidem

Nitrogen dioxide, 2007. More than 50% of the traffic monitoring stations exceeded the annual limit.

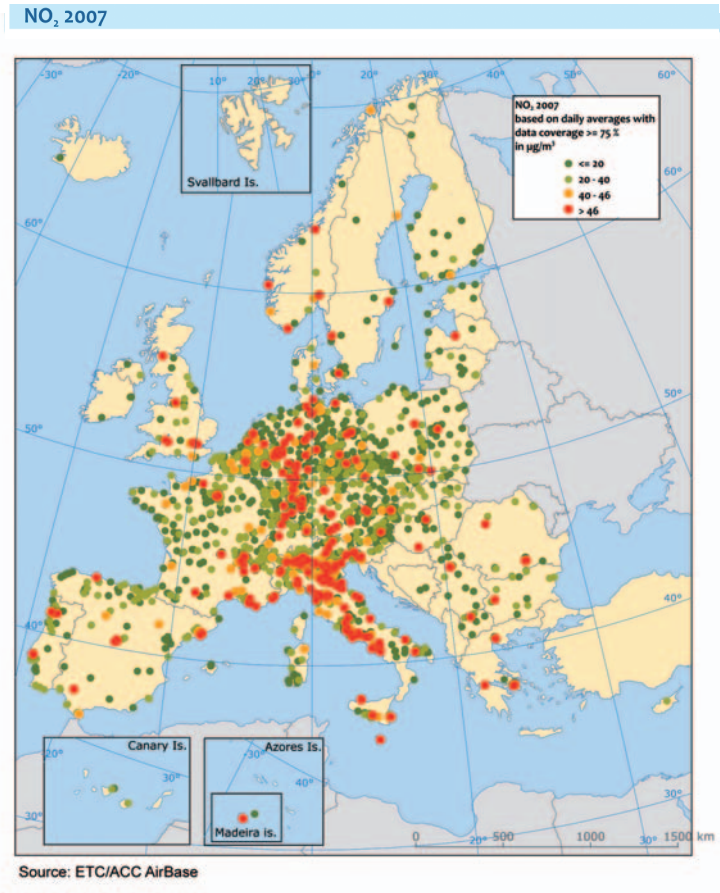

Figure 3.4: NO_2 – Average annual concentration (limit value of 40 µg/m³ to be met in 2010)[12]

[12] Source: ibidem

Ozone, 2007.
Levels higher than the long-term objective for human health were registered by 45% of the rural monitoring stations and approximately 30% of those located in urban areas.

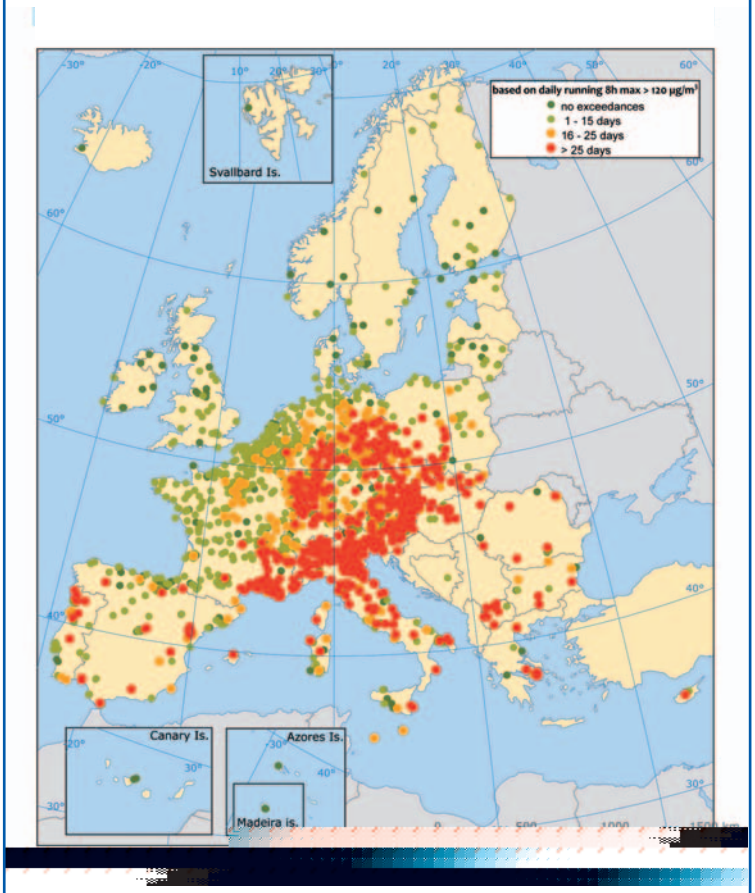

Figure 3.5: O_3 – Number of days in excess of the long-term objective for the protection of human health (120 µg/m³ as the daily maximum average over 8 hours)[13]

[13] Source: ibidem

In 2007, the transportation sector was responsible for 36% of PM_{10}, 41% of $PM_{2,5}$, 68% of NOx and 38% of NMVOC emissions in Italy.

Based on the information found in the 2007 National Emissions Inventory published by the ISPRA[28], the main source of PM_{10} as a primary component of pollution is the transportation sector, which accounts for 36% of the total, of which approximately 2/3 is traceable to roadway transport; next come industry (26%), the residential sector (17%) and agriculture (11%).
Transportation is also the main source of $PM_{2,5}$ emissions (again, in terms of $PM_{2,5}$ as a primary component alone), accounting for 41%, of which 2/3 is traceable to roadway travel; next come industry (23%), the residential sector (20%) and agriculture (12%).
As for the precursors[29] of tropospheric ozone, meaning nitrogen oxides (NO_x) and non-methane volatile organic compounds (NMVOC), the main source of NO_x emissions is transportation, which accounts for 68%, of which approximately 3/4 is traceable to roadway transport; industry accounts for 14%, energy production for 9% and the residential sector for 8%. In the case of NMVOC, transport accounts for 38% of all emissions, while 43% come from the use of solvents and the remainder from the industrial sector, the residential sector and other minor sectors.

Europe, 2007: 40% of NOx emissions were caused by the transport sector.

In 2007 transportation, and roadway transport in particular, were the primary source of emissions in the rest of Europe as well[30], accounting for 40% of NO_x emissions and 16% of NMVOC. The other main sources of NO_x emissions are electricity production (19%), industrial combustion and the residential sector. The main sources of NMVOC, apart from roadway transport, are domestic and industrial uses of solvents (23%), the use of solvents in paints (15%) and domestic heating (9%). The main emissions sector for PM_{10} and $PM_{2,5}$ was residential heating (19% and 27% respectively), followed by roadway transport (14% and 18% respectively).
In terms of overall emissions trends, from 1990 to 2007 marked reductions were registered in Italy in emissions of PM_{10} (-30%, with especially sharp decreases in the energy and industrial sectors), NO_x (-43%) and NMVOC (-38%)[31].

[28] http:// www.sinanet.apat.it/it/sinanet/serie_storiche_emissioni
[29] Precursors are substances that lead to the formation of tropospheric ozone through photochemical reactions in the atmosphere
[30] EEA, Report no. 8/2009
[31] ISPRA, Italian Greenhouse Gas Inventory, 2007

Emissions trends from 1990 to 2007 were also sharply downward for Europe as a whole: in the EU27 countries, NO_x emissions decreased by 36%, NMVOC emissions by 47% and those of SO_x by approximately 72%. From 2000 to 2007, emissions of PM_{10} and $PM_{2,5}$ fell by respective figures of 11% and 12%.
In our country, emissions of tropospheric ozone precursors, PM_{10} and SO_x fell considerably in all the regions from 1990 to 2005, with the magnitude of the decrease depending on the presence of large-scale industrial plants, for which stringent limits were introduced in the 90's on smokestack emissions of SO_x, NO_x and PM_{10}[32].
The regional emissions for the substances indicated above are illustrated for the years 1990, 1995, 2000 and 2005 (Figures 3.13, 3.14, 3.15).

From 1990 to 2007, emissions of NO_x, NMVOC, SO_x, PM_{10} and $PM_{2,5}$ fell in the EU27countries.

Italy, 1990-2005: emissions of PM_{10}, SO_x and NO_x fell in all regions.

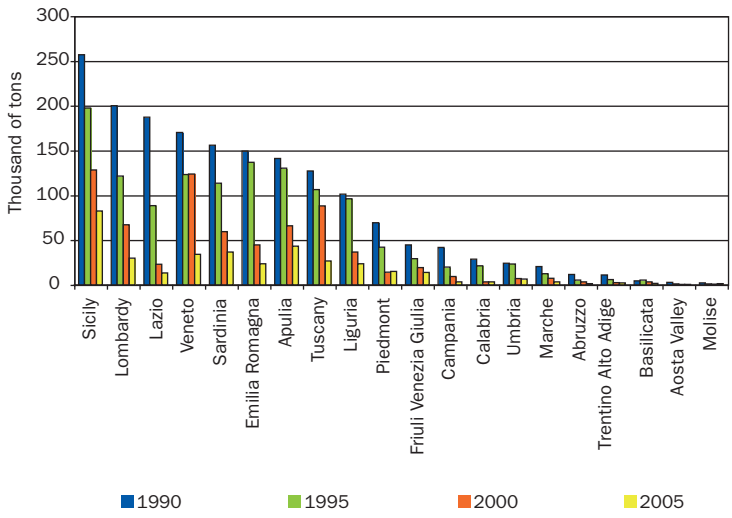

Figure 3.13: Regional emissions of SO_x[33]

Reductions in SO_x were registered in all the regions from 1990 to 2005, in a range of 60% to 90%.

[32] Ministerial Decree of 12 July 1990, "Guidelines for Limiting Polluting Emissions from Industrial Plants and Setting Minimum Emission Levels"
[33] Source: ISPRA

Reductions in NO_x were registered by all the regions from 1990 to 2005, in a range of 30% to 60%, with the exception of Molise, where emissions remained stable.

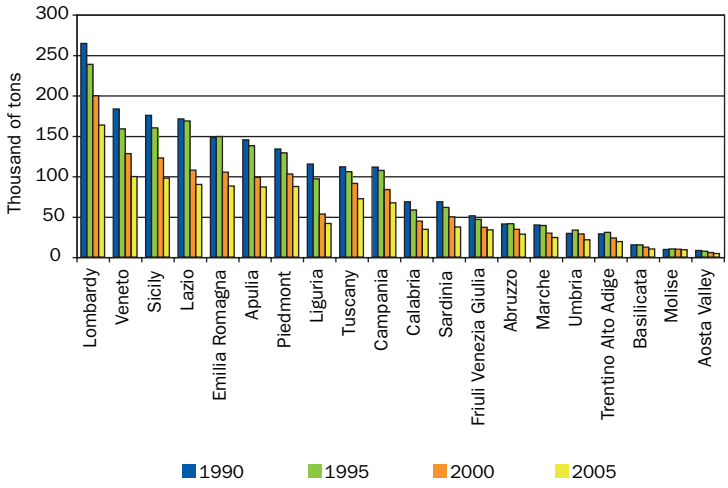

Figure 3.14: Regional emissions of NO_x [34]

Reductions in PM_{10} were registered by all the regions from 1990 to 2005, in a range of 15% to 45%, with the exception of Molise and Basilicata.

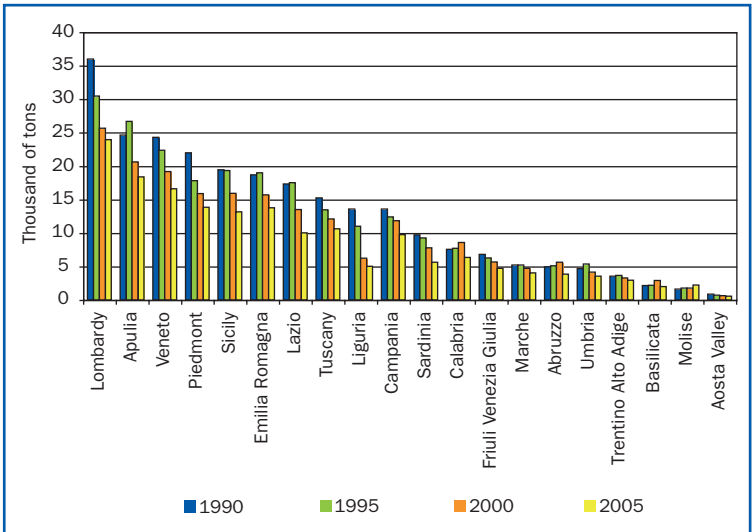

Figure 3.15: Regional emissions of PM_{10} [35]

[34] Source: ISPRA
[35] Source: ISPRA

The points briefly illustrated indicate that transport, and especially the roadway mode, is one of the main causes of the high concentrations of PM_{10}, $PM_{2,5}$ and ozone precursors registered in the air. This critical problem is especially acute in cities where the levels of population and transport density are highest. In urban settings, emissions from roadway transport account for more than 70% of overall emissions of PM_{10}, $PM_{2,5}$, NO_x and COVNM.

In urban environments roadway transport is responsible for more than 70% of PM_{10}, $PM_{2,5}$, NOx and COVNM emissions.

Levels of harmful gas emissions from roadway transport during the period 1990-2007 were the result of two contrasting trends: emissions tend to increase because of the continuous growth in the vehicle pool and the distances travelled, though, in reality, they decrease, thanks to the upgrading of the vehicle pool to meet increasingly stringent emissions standards[36] whose effect, in terms of reducing emissions, has been even greater.

The renewal of the vehicle pool has played a decisive role in the noteworthy rates of reduction registered for NO_x, COV and benzene in the years following 1995.

Since 1995, there have been significant reductions in NO_x, COV, Pb and C_6H_6, as well as PM_{10}, though to a lesser extent, on account of the renewal of the vehicle pool and the quality of the fuels.

The problem of benzene and lead in transport emissions has been solved by reducing their content in gasoline. Emissions of PM_{10} have fallen to a limited extent, because the renewal of the vehicle pool was characterised by a marked increase in diesel automobiles compared to gasoline-fuelled models, which have lower levels of PM_{10} emissions.

The growing request for mobility of both cargo and passengers is one of the chief demands that accompanies a country's growth. Over the last three decades, the demand for mobility, and especially the roadway transport portion, has grown constantly.

The demand for mobility rises together with a country's economic growth.

During the period 1990-2000 the demand for passenger transport rose by an annual average (a.a.) of 2.8%, a rate higher than the increase in the GDP (a.a. +1.6%, in Euro 2000). In the years 2000-2007 the growth in this demand slowed to a rate of a.a. 0.3%, lower than the growth in the GDP (a.a. +1%).

2000-2007: the demand for transport rose by a.a. 0,3% (GDP + 1%).

[36] These standards were introduced in Europe starting from January 1st 1993 under Directive 91/441/EC (Euro 1), up through the EC regulation of May 7th 2007, which established the standards and dates for Euro 5 and Euro 6

In 2007 private transport satisfied 81.5% of the demand for passenger transport.

Air transport shows extremely rapid growth.

Between 2000 and 2007 cargo traffic, and especially that travelling on roadways, increased by a.a. 1.4% (GDP +1%).

The demand for transport has been satisfied to an increasing extent by private transport, which accounted for 81.5% in 2007, leading to an increase in the vehicle pool. In 1990 the share was approximately 80%.
During the period 2000-2007, passenger transport by rail increased by 6.8% and bus transport by 23%, while air transport was the mode that grew most rapidly: the number of landings and take-offs rose by 135%.
Looking at cargo transport, whose growth is more directly tied to economic growth, the t-km transported over distances of more than 50 km grew by a.a. 1.2% in the period 1990-2000, a rate slightly lower than that of the GDP; during the period 2000-2007 there was growth of a.a. 1.4%, a rate significantly higher than the GDP.
Though the revisions made, during the period in question, in the methodology for collecting data may have affected their consistency, there is no question that changes in production processes ("just in time", delocalisation/fragmentation of production among the EU-27 countries) and in models of consumption have contributed to increasing cargo traffic in recent years at a rate higher than the growth of the GDP. In 2007, roadway transport absorbed 61.5% of national demand, railway transport 11.5% and short-haul shipping 21.7%. Adding to these estimated traffic figures are cargo distribution activities (transports over distances of less than 50 km), carried out exclusively on the road. The lone estimate available for assessing the impact of distribution is the distance travelled by light vehicles: equal to almost 3.5 times the total for vehicles that transport cargo over distances of more than 50 km.

Initiatives designed to improve air quality

Directive 96/62/EC[37], transposed into Italian law under Legislative Decree 351/1999[38], not only sets the quality objectives and the criteria for evaluating air quality, but also establishes the criteria for its management, meaning the maintenance of ambient air quality

[37] Directive 1996/62/EC, issued by the Council on September 27th 1996, with regard to the assessment and management of environmental air quality – Official Gazette, issue L 296 of 21 November 1996
[38] Implementation of Directive 96/62/EC on the assessment and management of environmental air quality – Official Gazette, issue no. 241 of October 13rd 1999

where it is good and its improvement in other cases. Through a series of steps, these criteria lead to the formulation of air quality plans and short-term action plans whose content includes, among other elements, measures for safeguarding air quality.

Regions and autonomous provinces are required to implement air quality plans when the concentration of one or more of the atmospheric pollutants indicated in Ministerial Decree 60/2002[39], or under Legislative Decree 183/2004 in the case of ozone, is higher than the figure for the corresponding regulatory parameter set to protect human health.

Regions/autonomous provinces are required to implement an air quality plan when regulatory limits are exceeded.

The process of drawing up a plan for improving air quality starts with an investigative phase that examines the physical characteristics of the territory, as well as the meteorological, climatic and socio-economic conditions, with local inventories playing a key role in assessing anthropogenic pressures; a phase for assessment of the current state of air quality, plus identification of critical zones in the territory, where initiatives of maintenance or improving must be taken; a phase for the assessment of trends through the modelling of scenarios, concluding with a phase for proposals. Proposals should contain: the objectives for the reduction of emissions of atmospheric pollutants needed to achieve compliance with air quality limits, the improving measures (rulings) with which the region/autonomous province counts on reaching these objectives (the measures in question can involve economic/tax initiatives, such as reductions or incentives; technical considerations, such as the use of low-impact technology; or information efforts, including campaigns to heighten awareness), plus quantification of the air quality benefits to be obtained from application of the improving measures and the estimated time for achieving them.

Plans for improving air quality: investigative phase (local inventories), assessment phase (data on air quality) and proposal phase (reclamation measures, emission and air-quality scenarios).

An analysis of the information on air quality plans communicated to ISPRA by the regions/autonomous provinces, under current regulations[40],

Potential problems with assessing the effectiveness and quantifying the time need for the proposed improving measures.

[39] Transposition into Italian law of Directive 1999/30/EC, issued by the Council on April 22rd 1999, regarding the environmental air-quality limit values for sulphur dioxide, nitrogen dioxide, particulate and lead, plus Directive 2000/69/EC on the environmental air-quality limit values for benzene and carbon monoxide – Official Gazette, issue no. 87 of April 13rd 2002 – Ordinary Supplement no. 77

[40] Communication of information on plans and programs, in compliance with Decision 2004/224/EC, generally occurs after the stipulated deadlines; for the year 2007, only 50% of the regions/autonomous provinces had communicated their information as of 20th October 2009

points to potential problems primarily in the proposal phase, which proves lacking in terms of assessment of the actual effectiveness of the improving measures indicated, as well as quantification of the time needed for these measures to prove effective.
The main sectors of intervention in which the additional measures identified by the regions fall are: mobility, domestic/commercial activities, industry, agriculture, other[41].
Figure 3.16 shows the number of measures implemented by the regions in the three-year period 2005 – 2007, classified by sector of intervention.

From 2005 to 2007, the number of measures taken increased, especially in Emilia Romagna and the Marche. More than half the regional interventions involved mobility.

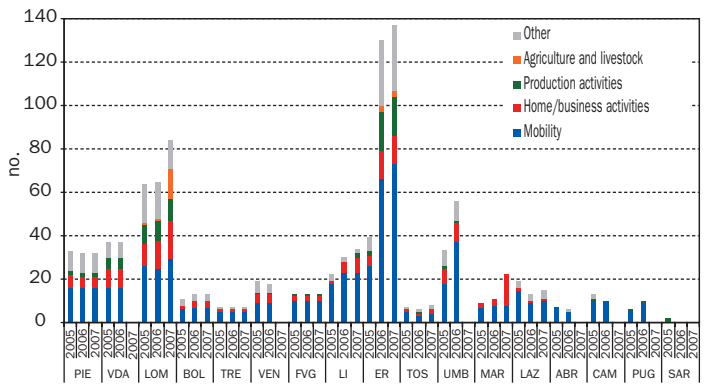

Figure 3.16: Measures taken to restore air quality, detailed by region (2005-2007)[42]

In 2007 the number of measures taken by the regions to restore air quality rose by 15% over the previous year.

As shown by Figure 3.16, the number of measures undertaken by the regions to restore air quality increased during the three-year period 2005-2007. In 2005, there were 341 measures

[41] The category "Other" includes: accessory measures in urban centres; studies and projects and initiatives for restructuring or expansion of air quality monitoring networks; the activation of air-quality control devices and initiatives involving the restructuring, upgrading to quality standards and expansion of monitoring networks
[42] Source: ISPRA processing of data communicated by the regions and the autonomous provinces by October 20th 2009. The regions that did not present the questionnaire (having failed to meet the requirement or because they were exempt) are not shown

throughout the national territory, with the number rising to 457 in 2006, while the year 2007, based on the information available as of 20th October 2009, appears to have registered a 15% increase over the previous year. Mobility continues to be the sector most frequently involved, though agriculture and the raising of livestock have received noteworthy attention by the Lombardy Region. Based on the information received to date, the regions that undertook the most measures in 2007 were Emilia Romagna, with 137, and Lombardy with 84.

In 2007 the regions that undertook the most measures were Emilia Romagna and Lombardy.

Looking specifically at the mobility sector, where the largest number of initiatives were taken, the measures were of the following types:

Measures taken.

- Promotion and dissemination of clean vehicles in public transport[43]
- Reinforcement of local public transport (LPT)
- Promotion and dissemination of clean vehicles in private transport
- Testing of exhaust emissions from motor vehicles
- Traffic restriction measures
- Regulation of urban freight distribution
- Drafting of urban plans (traffic, mobility, transport)
- Structural initiatives regarding mobility
- Initiatives for alternative mobility[44]
- Promotion and dissemination of clean vehicles in freight transport
- Technological support for sustainable mobility.

In order to provide a complete overview of the information received on the measures implemented in the mobility sector, the figures for 2006 have been examined. The number of measures enacted by each region are shown below, broken down by type.

[43] Low Environmental Impact

[44] Examples of initiatives in favour of alternative mobility: initiatives favouring two-wheeled mobility, systems of collective transport, car-sharing, car-pooling, on-call services, collective taxis

Roughly 71% of all the measures on mobility were concentrated in the regions of Piedmont, Aosta Valley, Lombardy, Liguria, Emilia Romagna and Umbria.

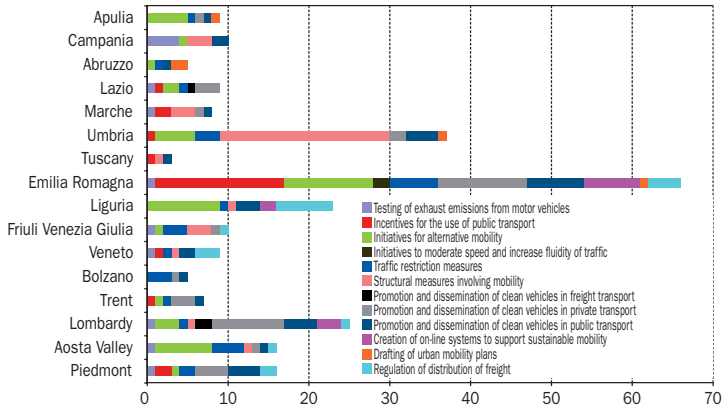

Figure 3.17: Regional restoration measures in the mobility sector (2006)[45]

Measures on mobility: the most frequently adopted regard alternative mobility (18%).

Figure 3.17 shows that the measures most frequently taken were:
- initiatives in favour of alternative mobility (18%);
- rulings regarding the public vehicle pool (14%);
- rulings regarding the private vehicle pool (14%);
- structural measures involving mobility (14%).

In support of the efforts of the regional governments, a national plan is currently being drawn up by the Ministry of the Environment, Land and Sea, in concert with the Ministry of Infrastructures and Transport, the Ministry of Economic Development and the Ministry of Agriculture, containing a package of emergency measures designed to further reduce emissions of the main pollutants in the atmosphere.
For although the measures taken on the regional and national have led to a noteworthy reduction in emissions over the years, this has not guarantee compliance with the limit values within the deadlines established under the legislation currently in force.

[45] Source: Regions and the autonomous provinces data processed by ISPRA

With this in mind, a potential set of emergency measures is currently being jointly drafted by the competent ministries, including:

- reduction of emissions from the domestic heating sector (improved energy efficiency of buildings);
- potential initiatives involving speed limits on highway traffic (lowered in certain sections);
- upgrading of the off-road vehicle pool (i.e. industrial and agricultural vehicles); introduction of filters on old models an replacement with models of less impact;
- improved practices for the use of fertiliser in agriculture (placement belowground instead of spreading, introduction of new generation fertilisers).

Set of emergency measures.

In terms of actions for the restoration of air quality, investigative initiatives, an area in which the ISPRA plays a major role, should not be neglected, nor should information efforts: environmental knowledge and transparency, in addition to constituting evident elements of democracy, serve as tools for improving the actions and forms of behaviour of both government and citizens. As things currently stand in Italy, the prevalent and most reliable source of information on the state of air quality is represented by the monitoring stations distributed throughout the national territory. It should be stressed that the regulations currently in force, and especially the Community measures about to be transposed into Italian law, set aside increasing space for the use of techniques of modelling and spatial surveying in the assessment of air quality. The communication of information from the local level to the national and European levels is, at present, a fairly complex procedure, given the large number of requirements to be met (Decision 97/101/EC, Legislative Decree 351/99, Ministerial Decree 60/2002 and Decisions 2004/461/EC and 2004/224/EC, plus Legislative Decree 183/2004), a situation that all too often gives rise to an excessive quantity of deadlines, coming one after another, as well as overabundance of modes of communication and contacts on the local level. Many of the current difficulties will be resolved with the transposition into Italian law and the enactment of the new Directive 2008/50/EC, which calls for a single flow of information travelling exclusively on-line. An advance

The new directive on air quality calls for a single on-line information flow, with communication of the monitoring data in Near Real Time.

The regional monitoring networks are currently being update an revised, in order to make available information based on more uniform criteria and more suitable for comparison throughout the national territory and with the rest of Europe.

in the communication of information will be the availability of data in *Near Real Time* (NRT), meaning that the data registered by the monitoring stations will be available on-line only a limited amount of time following the period to which it refers. This operating mode, already used on an experimental basis in the European Union for ozone, under the Ozone Web project[46], will make available to the public data, for use as input in the development of models supporting local and national assessments and for forecasts.

In terms of the quality of the monitoring networks and their compliance with regulatory criteria, a process of updating and revision is currently underway, based on standards that call for subdivision of the territory into uniform zones, in order to improve the assessment and management of air quality. Though this revamping of the regional monitoring networks, carried out primarily by the regions and the Agency System on the local level, and by ISPRA and the Ministry of the Environment, Land and Sea on the central level, in the form of an integration of the monitoring data with other techniques (techniques of spatial surveying, modelling, satellite procedures and others), currently makes for complications when comparing data in terms of time and space, it shall ultimately result in information based on more uniform criteria and proving easier to compare for the entire national and European territories.

What continues to occur in our country, unlike the situation in the rest of Europe[47], is continued growth in the number of stations used under the EoI. As the number of stations communicating data for all the main pollutants has increased, so has the number of sets of data whose data coverage complies with the regulatory criteria, as is shown in Figure 3.18 for PM_{10}: all these developments point to an improvement in monitoring activities and, even more to the point, in the communication of information on the local and national levels.

[46] http://www.eea.europa.eu/maps/ozone/welcome

[47] AirBase shows that in 2007, as compared to 2006, the number of monitoring stations fell for all pollutants, except for the IPA and metals of Directive 2004/107/EC

Monitoring activities and, even more importantly, the communication of information from the local level to the national level, are improving.

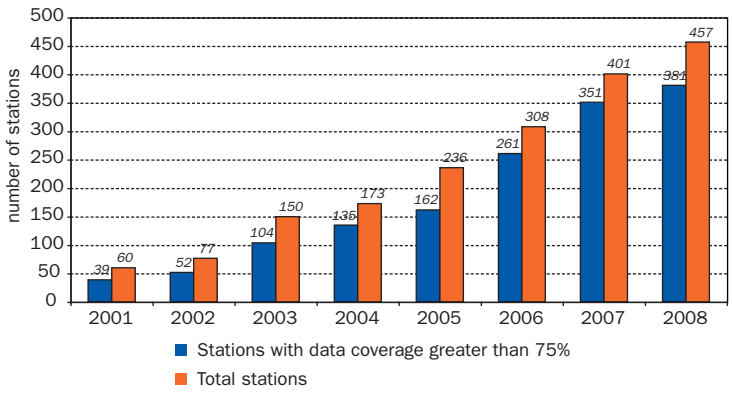

Figure 3.18: PM_{10} - Number of monitoring stations with data coverage of more than 75% and total number of stations[48]

[48] Source: ISPRA