ISPRA
National Institute for Environmental Protection and Research

10° ITALIAN ENVIRONMENTAL DATA YEARBOOK 2011

STATO DELL'AMBIENTE

# ENVIRONMENTAL DATA YEARBOOK IN FIGURES

31 / 2012

SISTAN
Sistema Statistico Nazionale

ARPA APPA
Agenzie Regionali e delle Province Autonome per la Protezione dell'Ambiente


Socio-economic framework


Agricolture, forestry and aquaculture


Energy


Transport


Tourism


Industry


Atmosphere


Biosphere

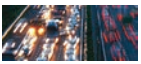

Hydrosphere


Geosphere


Waste


Nuclear activities and radioactivity


Non-ionizing radiations


Noise


Natural hazards


Man-made hazards

Environmental evalutation and certification


Promoting and spreading an environmental culture

Planning tools


Environmental and well-being

This publication contains the highlights of the 2011 Environmental Data Yearbook, the most complete and exhaustive collection of scientific data and information on the environment published in Italy.

A statistical brochure, complementing the 10th edition of the Yearbook. It provides an extremely concise overview of the texts and a selection of the graphs of the complete version.

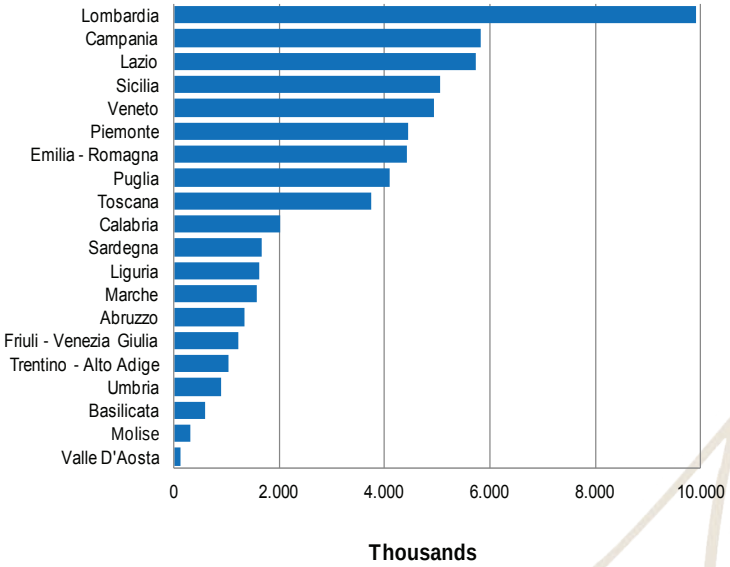
The layout of the brochure features two columns: on the left is a selection of the graphs deemed to be the most representative or which better characterize the single environmental topics, while the narrower colored column on the right features statistical information or short notes.
The selection criteria for the diagrams are the completeness of the time series, reference to nationwide figures, intelligibility, based on the typology of the diagram (bar charts, pie charts, dot plots), and clarity (self-explanatory diagrams). The purpose of the notes is to complement – and not comment on – the diagrams, providing extra information about the various topics.
The overall aim of the layout and selection criteria is to ensure that it can be easily understood by the layman as well.

The topics addressed here are: the Socio-economic background; Agriculture, Forestry and Aquaculture; Energy; Transportation; Tourism; Industry; Atmosphere; Biosphere; Hydrosphere; Geosphere; Waste; Nuclear activities and Radioactivity; Non-ionising Radiations; Noise; Natural Hazards; Man-made hazards; Environmental evaluation and certification; Promoting and spreading an environmental culture; Planning tools; Environment and well-being.

Further information can be found in the Database of Environmental Indicators at http://annuario.isprambiente.it/

The brochure, distributed to institutions, international organizations, media and opinion leaders, can be requested free of charge at ISPRA, via Brancati 48, Rome, and on the following websites: www.isprambiente.it and http://annuario.isprambiente.it.

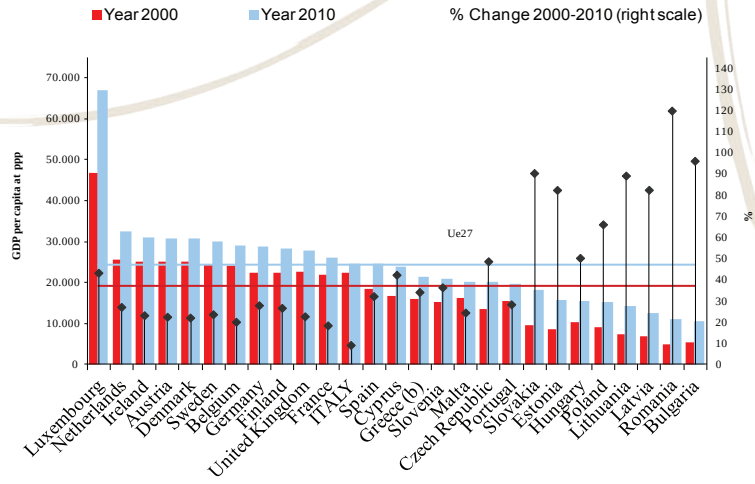
## Resident population (31 December 2010)




**Source:** ISTAT data processed by ISPRA

At 31/12/2010, the resident population of Italy was 60,626,442, 7.5% are foreign nationals (7% in 2009). Year-over-year the population was 60,340,328. The 286,114 increase is due solely to migrations from abroad, which has been the case for a number of years.

## GDP per capita in the EU countries[(a)]

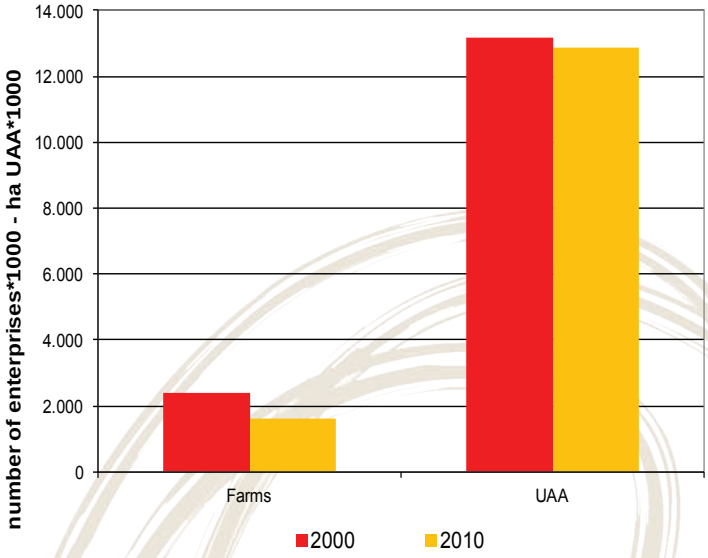



In 2010, the Gross Domestic Product, which represents the total output of goods and services of a country in a given period, measured at market prices, increased in Italy, by 1.1% in real terms. The gross domestic product based on purchasing-power-parity (PPP) GDP per capita in the European Union differs considerably country by country. In 2010, it ranged from € 67,000 in Luxembourg to € 10,600 in Bulgaria.

**Legend:**
* ppp: purchasing power parity

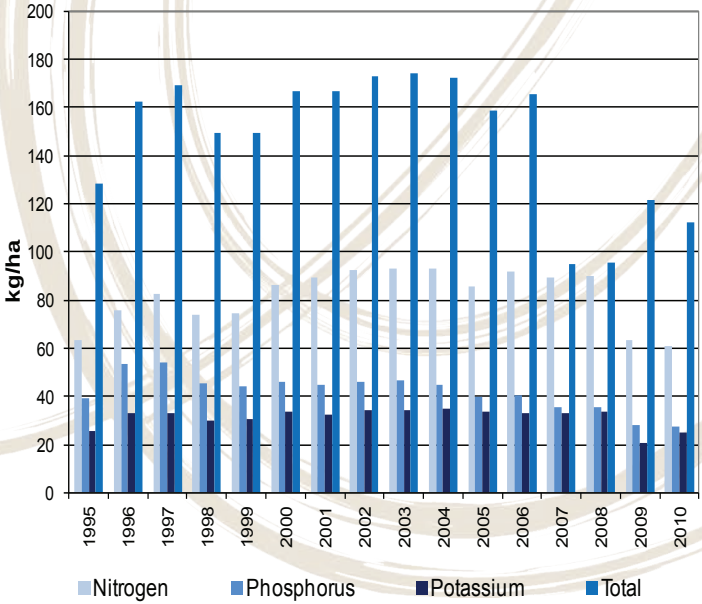
a) The data are update. The figures are updated to 10 November 2011. Any discrepancies with the figures contained in other domestic or international publications or databases may depend on roundings off or to the fact that the latest data revisions have not been taken into account
b) The Greece's data are provisional.
**Source:** Eurostat, National Accounts data processed by ISTAT (http://noi-italia.istat.it)

## Farm enterprises and the UAA (2010,2000)




**Source:** ISTAT data processed by ISPRA

## Nutritional elements per hectare of fertilizable land




**Source:** ISTAT data processed by ISPRA

In 2010 (based on the Agriculture Census of 24 October 2010), in Italy there were 1,630,420 active farm/ livestock enterprises (-32% compared to 2000).

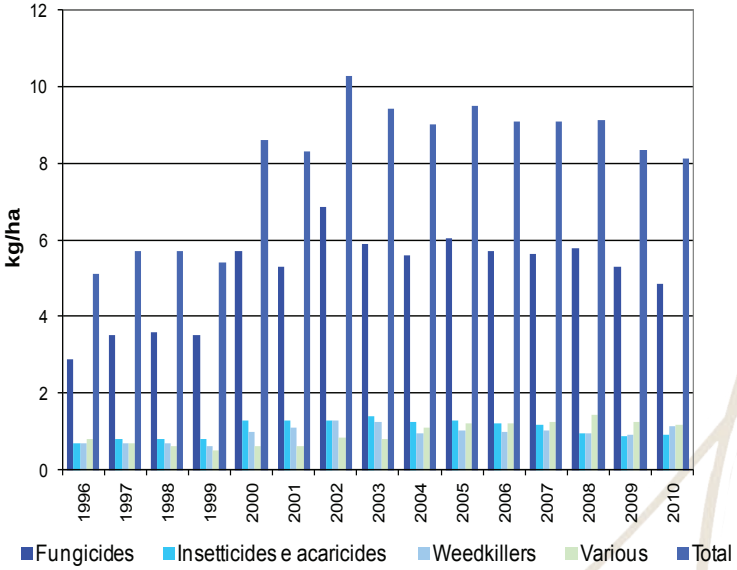
The Utilised Agricultural Area (UAA) totaled 12,885,186 hectares (-2.3 compared to 2000).

At the end of 2010, 1,113,742 hectares (8.6% of UAA) were used to converte to organic farming.

Mineral fertilisers are the most widely sold type of fertilisers, at over 2.1 million tons. Of these, 58% are simple mineral fertilisers, with a prevalence of nitrogen-based fertilizers.

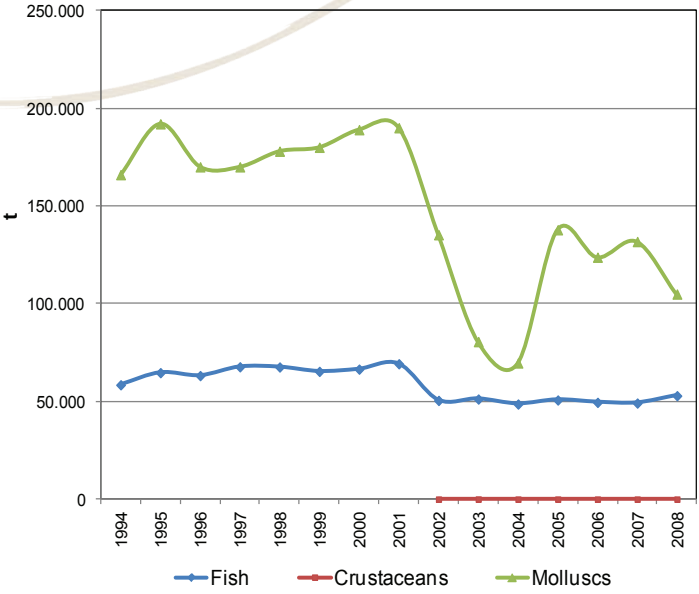
Nitrogen fertilisers are the main type of marketed mineral products.

## Distribution of active substances, broken down by plant protection product category, by hectare of area treated




**Source:** ISTAT data processed by ISPRA

## Time series of national production of fish, mollusc and crustacean farming (1994-2008)

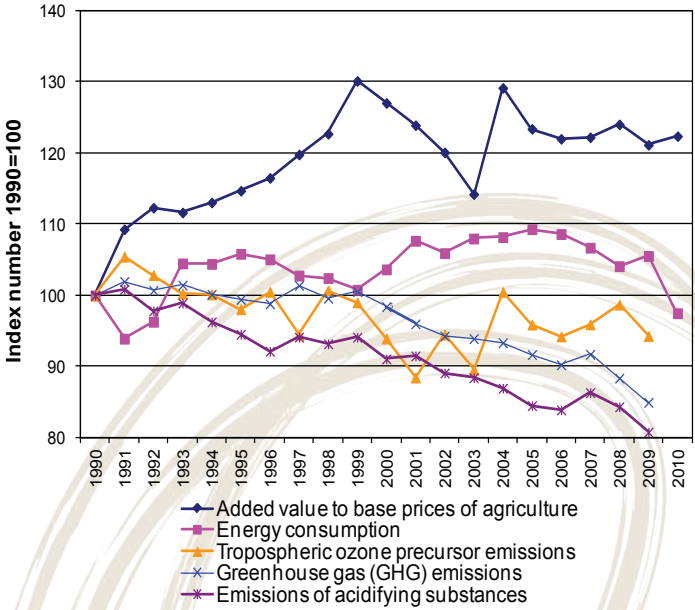



**Source:** Data from MIPAAF-UNIMAR (2007-2008), IDROCONSULT (2002-2006), ISPRA (1994-2001) processed by ISPRA

Between 1996 and 2010, the distribution in kg/ha of active substances stabilized at the values of 2001. In particular, compared to 2001, the use of fungicides and insecticides & acaricides dropped (by -0.44 and -0.38 kg/ha, respectively), that of weedkillers remained stable (+0.03 kg/ha), while the distribution of the various other substances doubled (+0.59 kg/ha).

In Italy, aquafarming accounts for 50% of the entire fishing sector, a percentage that is set to grow further to meet the market demand, which fishing alone is incapable of satisfying, considering the overexploitation of natural fish stocks.

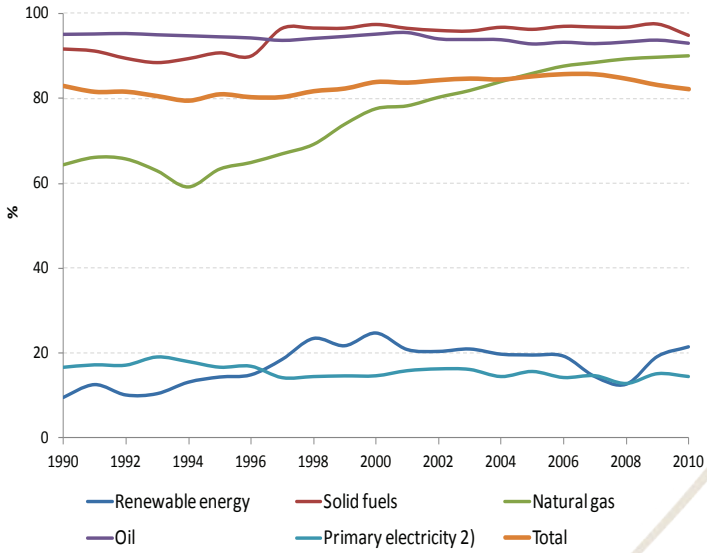
## Eco-efficiency in agriculture shown as the integrated index of added value to base prices of agriculture, energy consumption, and pollutant emissions




**Source:** ISPRA, MSE, ISTAT

The trend of the variables demonstrates the improvement of the eco-efficiency of Italian agriculture in 2005-2010. This can be inferred from the slight recovery of the economic variable represented by the added value to base prices, accompanied by a drop in most of the environmental pressures.

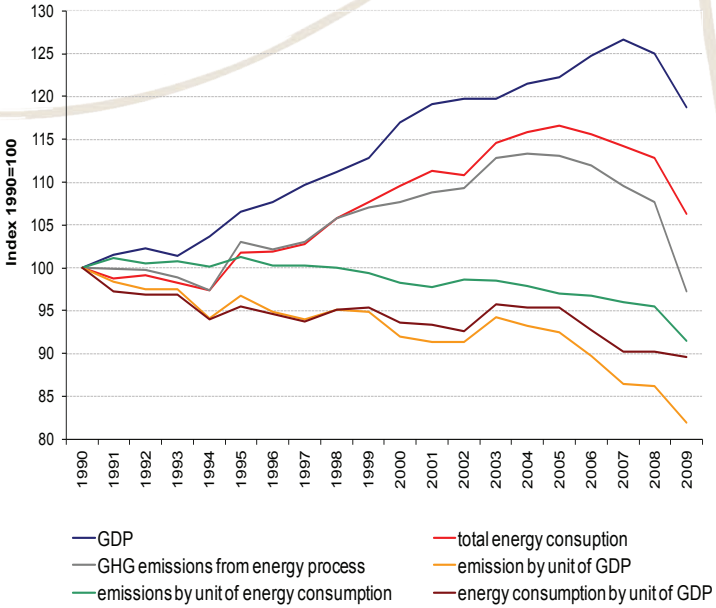
## Energy dependence in Italy[1]




**Source:** MSE data processed by ENEA
1) Net imports/Availability net of stocks
2) Net imports/Availability + Transformation into electricity

In the case of Italy, the energy data highlight that changes are under way in procurement, while confirming certain structural data relating to the country's energy system.
The changes in the mix of primary sources, however, have failed in the intent to reduce the country's high energy dependence, from 82.8% in 1990 to 82.1% in 2010.

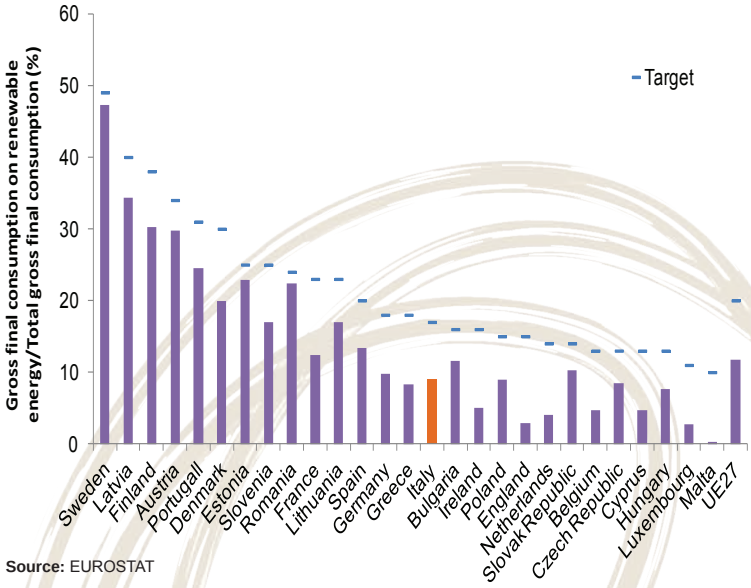
## Economic and energy indicators and GHG emissions




**Source:** ISPRA and MSE data processed by ISPRA

In 2009, 82.8% of total GHG emissions were energy-related.
Comparing the trend of GHG emissions with that of the principal economic growth variables, in 1990-2009, it emerges that GHG emissions rose at a slower pace than economic growth, therefore highlighting a relative decoupling.

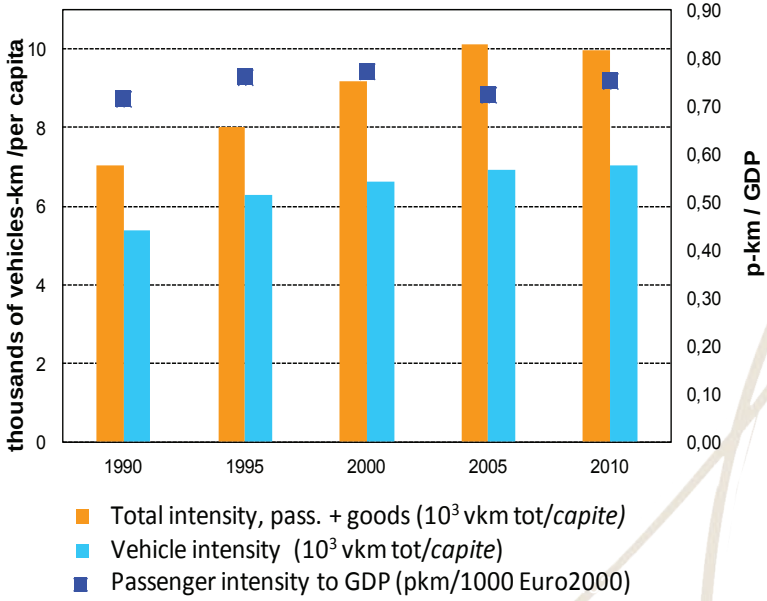
## Share of energy from renewable sources in gross final consumption in EU Member States (2009)




**Source:** EUROSTAT

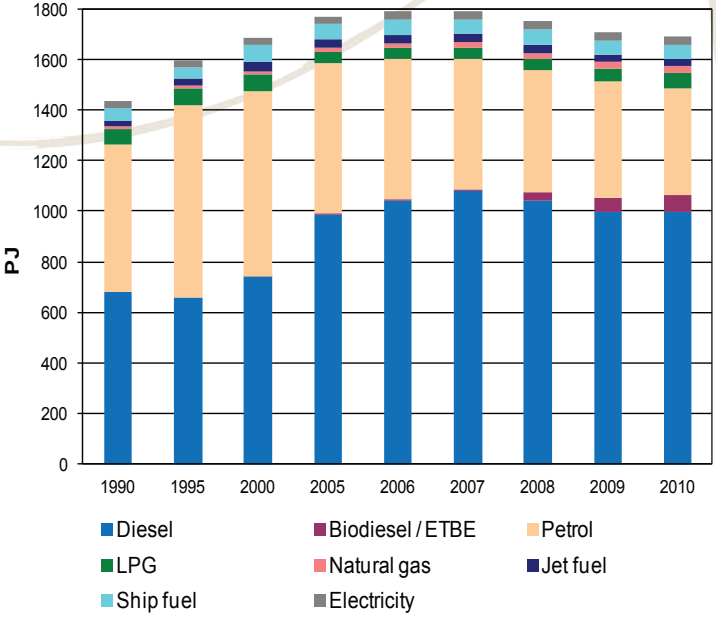
Directive 2009/28/EC sets out the overall targets for the share of energy from renewable sources in gross final consumption of energy, in 2020, for each EU Member State.
The renewable energy target assigned to Italy is 17% of gross final consumption, while the percentage recorded in 2009 (8.9%) is much lower.

## Evolution of intensity of passenger transport




**Source:** ACI, ENEA, ISTAT, MSE and MIT data processed by ISPRA

## Energy consumption in the transportation sector, final consumption

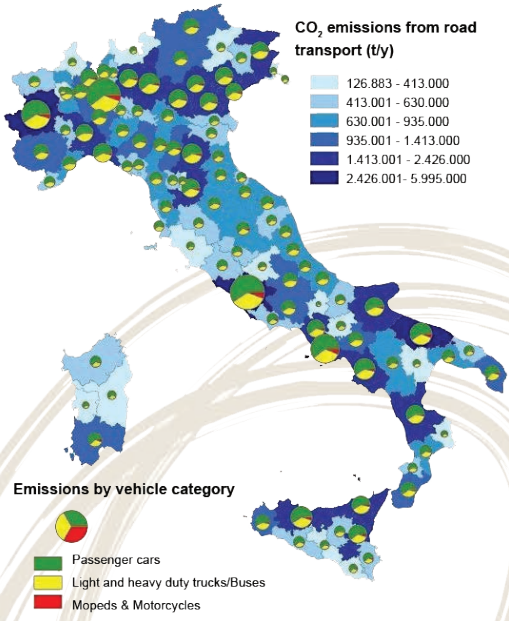



**Source:** MSE data processed by ISPRA


In Italy, in 1990-2010, transport demand has significantly increased: +26.2% for passengers and +14.5% for goods.

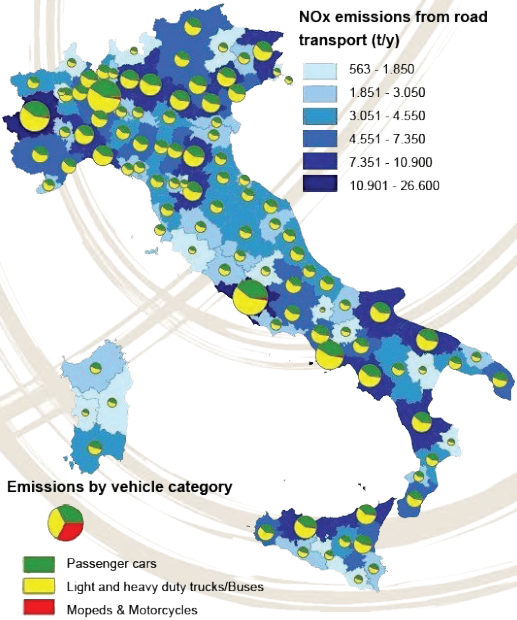
In 2010, the transportation sector accounted for 30.6% of the total consumption of final energy and 63.6% of the final consumption of oil.

## CO2 (carbon dioxide) emissions by province and vehicle type (2009)




**Source:** ISPRA

## NOx (nitrogen oxide) emissions by province and vehicle type (2009)

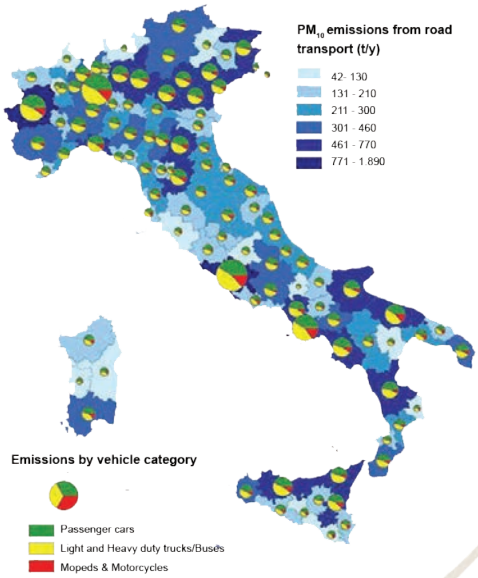



**Source:** ISPRA


In 2010, in Italy, the transportation sector accounted for 23.7% of total GHG emissions. Air transport is one of the fastest growing sources of GHGs, at domestic, European and global levels.

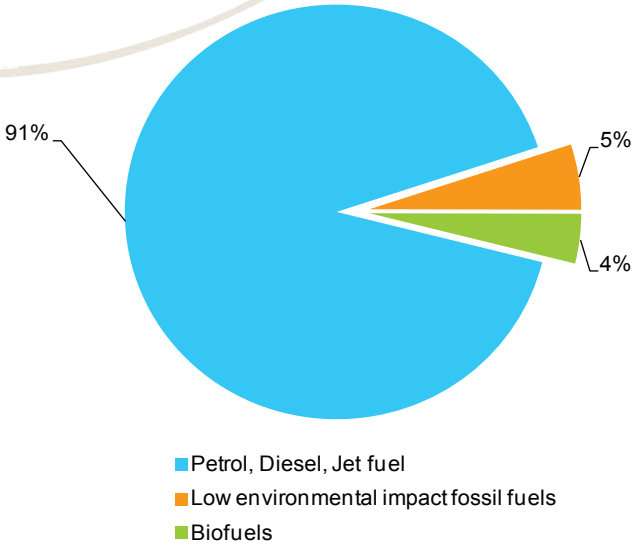
NOx emissions – although decreased by 40% in 1990-2009 – are still rather high, in absolute terms. The transportation sector is the main source of this important pollutant.

## PM10 emissions by province and vehicle type (2009)




**Source:** ISPRA

## Composition of transport fuel consumption



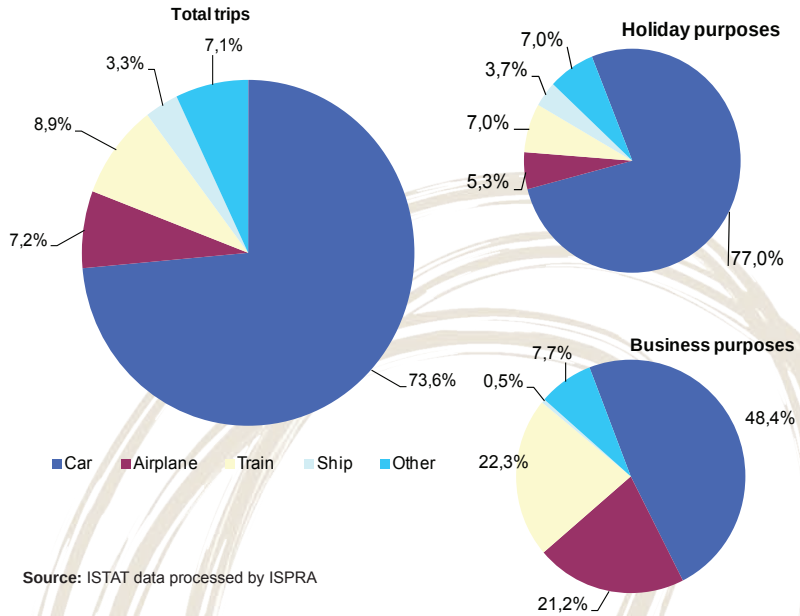

**Source:** MSE data processed by ISPRA

Harmful emissions from road transport have dropped considerably over the last few years, also thanks to the introduction of catalytic convertors, fine particulate filters, and other motor vehicle technologies.

Emissions of sulphur oxides, particulate matter, and nitrogen oxides contribute enormously to air pollution.

The percentage use of biodiesel, and other biofuels, in Italy is still far from the targets set by the European Union.

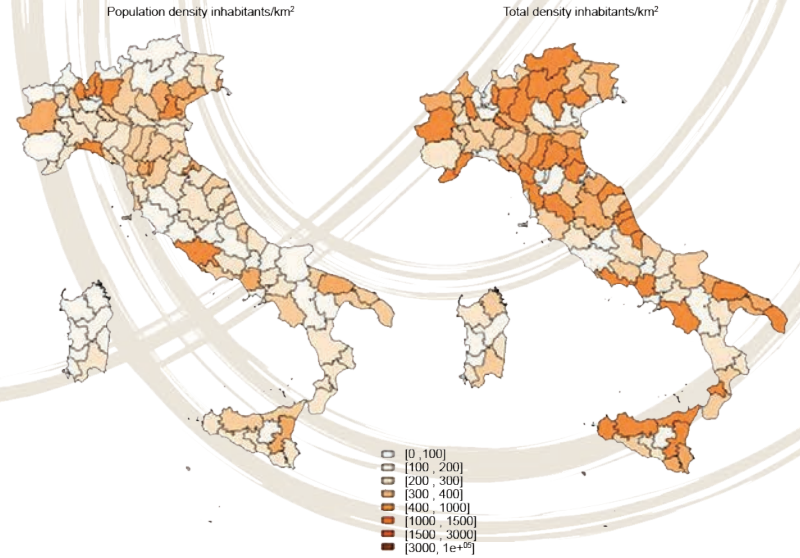
## Percentage distribution of journeys made in Italy by residents, by mode of transport and type of journey (2010)




**Source:** ISTAT data processed by ISPRA

The economic crisis has affected the total number of trips made by Italians, which are down by 12.3%; in any case, 64% of all journeys are made by car.
The car is the preferred mode of transport by foreigners too (65.9%).

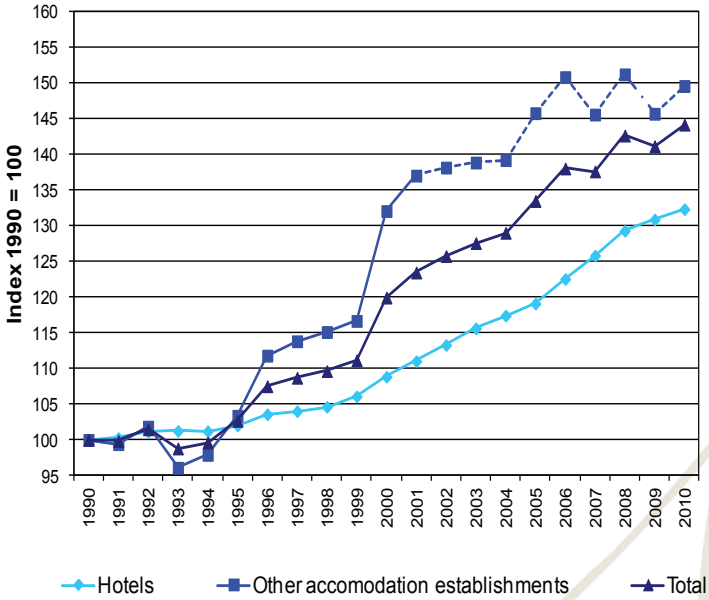
## Change in population density in the Italian provinces as a result of tourist flows (2010)




**Source:** ISTAT data processed by ISPRA

The weather is one of the principal drivers of seasonal tourist flows. In 2010, seasonal flows remained concentrated in the third quarter (with 50% of tourist stays).

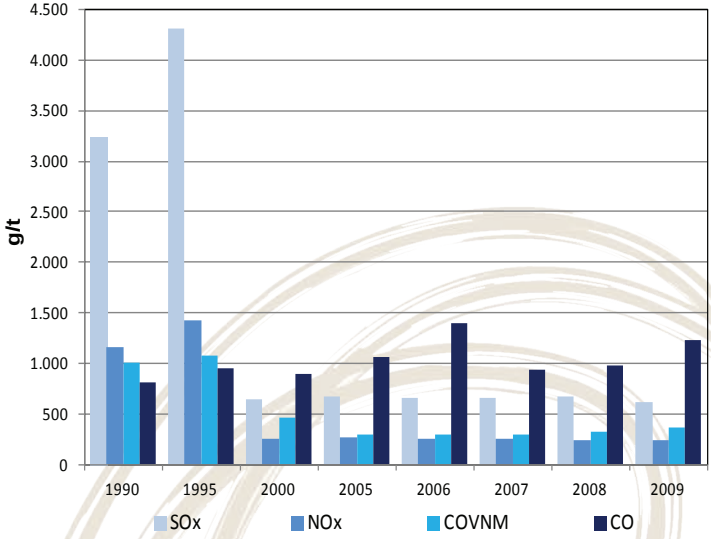
## Change in the number of bed-places in hotels and other tourist accommodation establishments




**Source:** ISTAT data processed by ISPRA

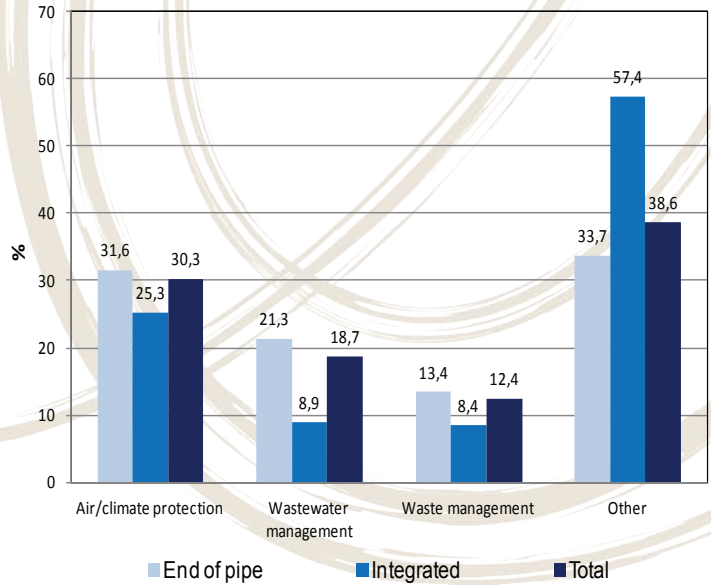
In 2010, in Italy, tourist arrivals and stays in all kinds of tourist accommodation establishments increased by 3.5% and 1.3%, respectively.

## Specific chemical industry emissions




**Source:** ISPRA, ISTAT and Trade Association data processed by ISPRA

## Industrial investments for environmental protection, by environmental sector (%) (2009)



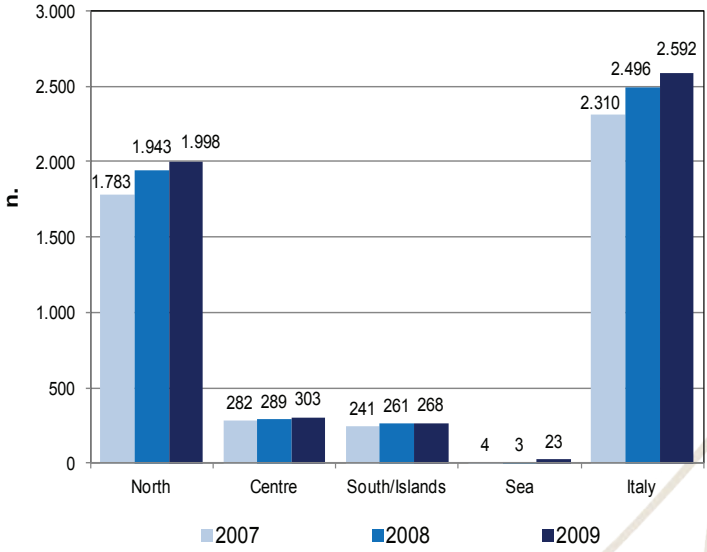

**Source:** ISTAT

The chemical and iron & steel industries are enormously significant, from an environmental point of view, because of the pressure they exert.

Industrial investments aimed at environmental protection amount to 5.1% of all gross fixed investments.

In 2009, Italian industrial enterprises spent 1,648 million euros for investments in end-of-pipe systems and equipment, and 427 million euros for integrated technology systems and equipment, totaling 2,075 million euros, up by 12% year-over-year.

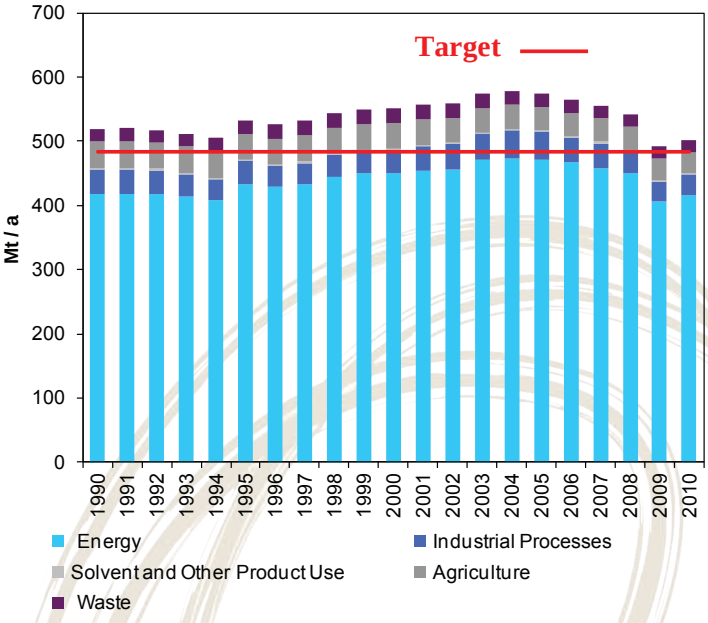
## Industrial facilities reporting to the E-PRTR (*European Pollutant Release and Transfer Register*)




**Source:** ISPRA

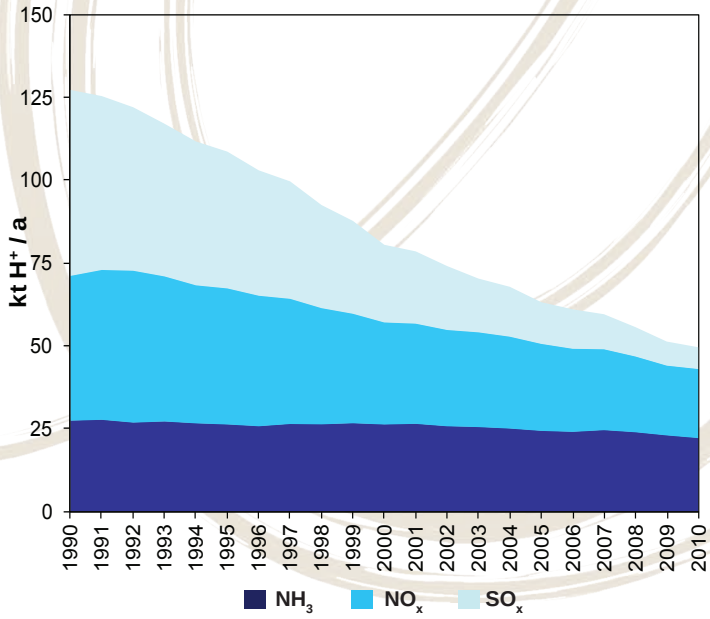
The European Pollutant Release and Transfer Register (E-PRTR) is an information system for collecting and disseminating quality and quantity information on the release of pollutants into the environment by industrial facilities falling within the scope of the EC Regulation 166/2006.

## National total GHG emissions




**Source:** ISPRA

## National total emissions of sulphur oxides ($SO_x$), nitrogen oxides ($NO_x$) and ammonia ($NH_3$)




**Source:** ISPRA

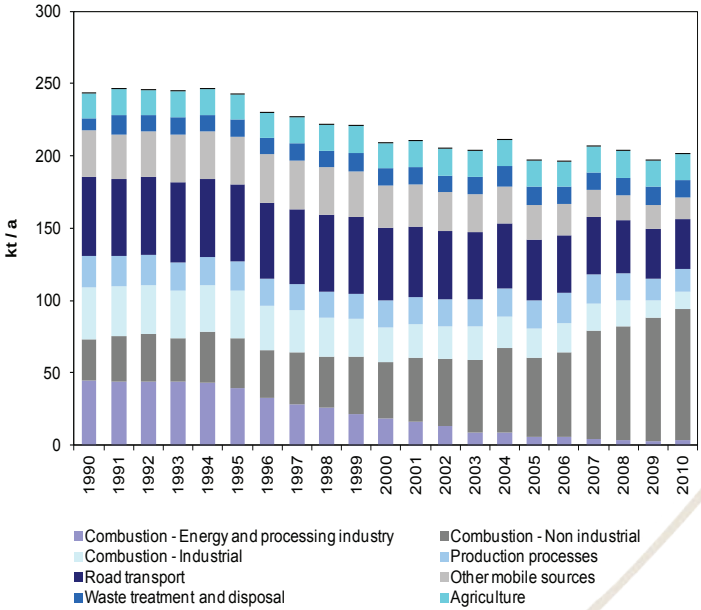
Total GHG emissions dropped by 3.5% in 1990-2010, from 519.25 MtCO2eq to 501.32 Mt-$CO_2$eq, while according to the Kyoto Protocol, Italy should reduce its emissions – between 2008 and 2012 – by 6.5%, down to 483.26 Mt$CO_2$eq.

Therefore, GHG emissions are 18.1 MtCO2eq higher than the Kyoto target. Since 2008, Italy has accumulated an emissions debt of 84.7 Mt$CO_2$eq.

GHG emissions are primarily due to the energy sector, which accounts for 4/5 of total emissions; emissions by this sector decreased by 7% in 2004-2008 and 10% in 2008-2010.

The anthropogenic emissions of sulphur oxides ($SO_x$) are mostly due to the use of fuels containing sulphur. Nitrogen oxides ($NO_x$) are produced by high-temperature combustion processes; while ammonia ($NH_3$) is almost exclusively produced by agriculture (including livestock breeding).

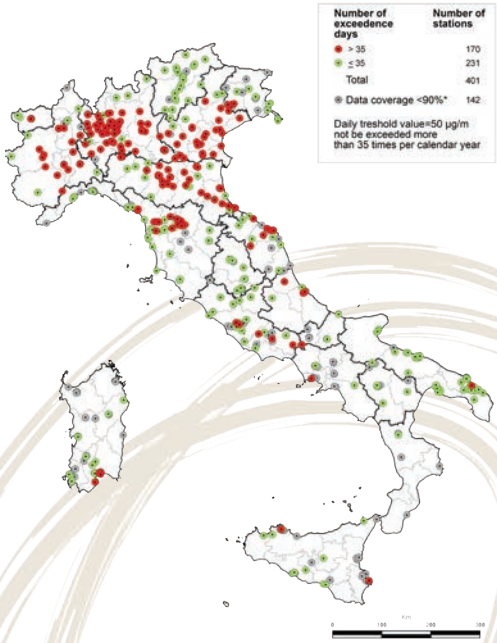
## National emissions of $PM_{10}$ disaggregated by sector




**Source:** ISPRA

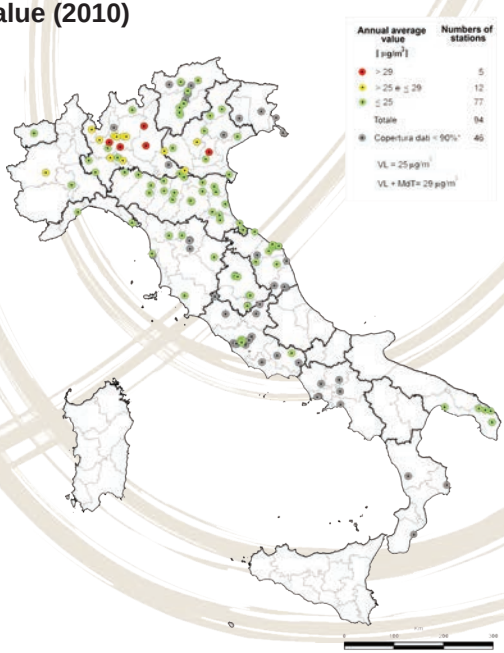
Particulate matter less than 10 µm in diameter, can come from natural and man-made sources.
These dust particles pose a health concern because they can be inhaled into and accumulate in the respiratory system.

## $PM_{10}$ – Monitoring stations and exceedance of the daily threshold value (2010)




**Legenda:** * Data coverage of 90% is reported net loss of data due to the regular calibration or the normal maintenance
**Source:** ISPRA

## $PM_{2.5}$ – Monitoring stations and exceedance of the annual threshold value (2010)



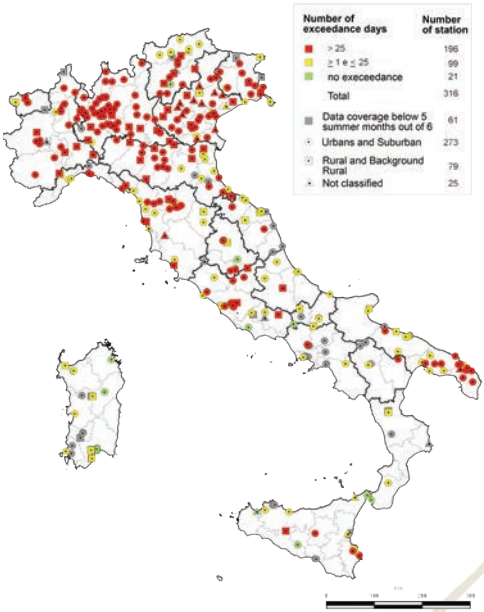

**Legenda:** * Data coverage of 90% is reported net loss of data due to the regular calibration or the normal maintenancea
**Source:** ISPRA

In Italy, in 2010, concentration levels in the atmosphere were satisfactory for sulphur dioxide (no exceedances of the limit value were recorded) and benzene (below limit values were recorded at the majority of stations).

In the case of arsenic, cadmium, nickel and benzo(a)pyrene, although the information does not guarantee a sufficient and uniform coverage of the entire country, compared to the target values, only one case of exceedence (at 59 stations) was recorded for nickel and 9 (at 61 stations) for benzo(a) pyrene.
The most critical pollutants, due to their high concentrations in the atmosphere, are still $PM_{10}$, ozone and nitrogen dioxide.
The daily limit value of $PM_{10}$ was met at 58% of the monitoring stations.

With regard to the $PM_{2.5}$ indicator, the available information is still insufficient. Comparing the annual average values with the limit value for human health (Legislative Decree 155/2010), which will enter into effect in 2015, an annual average below the annual threshold value was recorded at 77 stations (82% of the total).

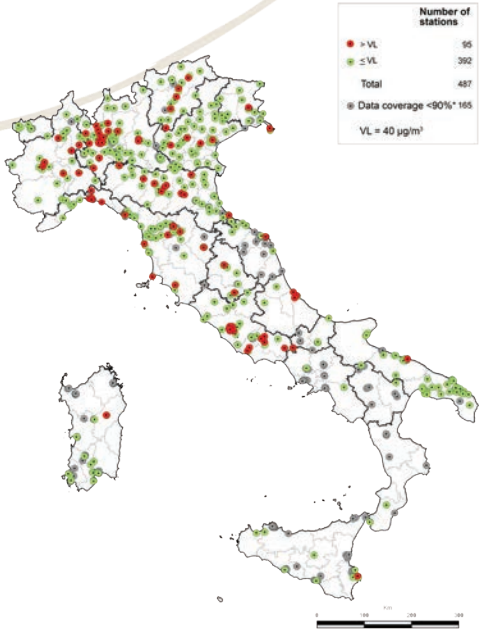
## $O_3$ – Monitoring stations by classes of days of exceedance of the long-term target value (120 µ/m3) and type of station (2010)




**Source:** ISPRA

Ozone – the long-term target for human health protection was met at 7% of monitoring stations (21 stations out of 316).

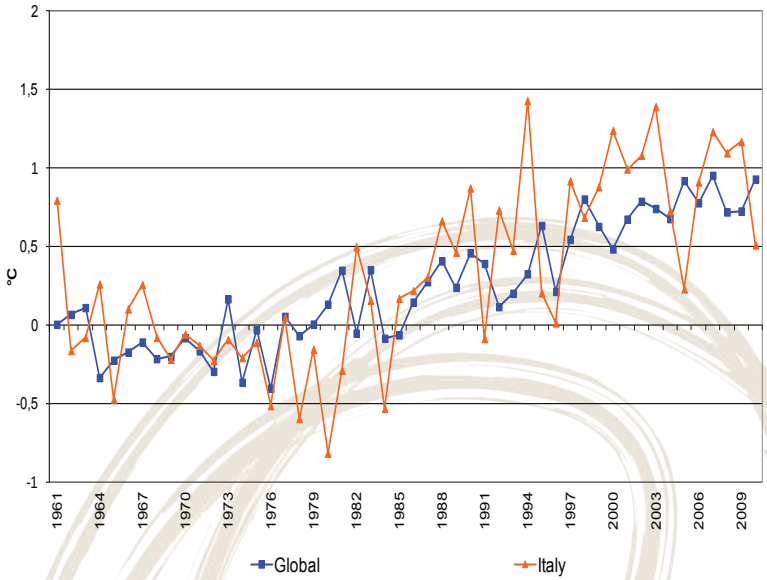
## $NO_2$ – Monitoring stations and exceedance of the average annual value (2010)




In the case of nitrogen dioxide, the annual limit was met at 80% of the monitoring stations.

**Legenda:** * Data coverage of 90% is reported net loss of data due to the regular calibration or the normal maintenance
**Source:** ISPRA

## Time series of global and Italian average temperature anomalies, compared to normal climatological values 1961-1990



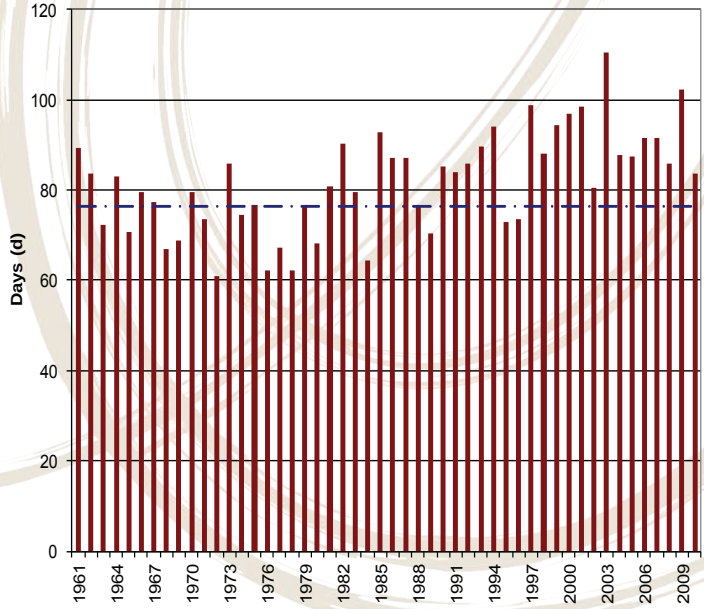

**Source:** ISPRA and NCDC/NOAA

Today, there are no longer any doubts about global warming.

In Italy, the increase in average daily temperatures over the last three decades has been consistently higher than the average global increase on land.

In 2010, however, the temperature anomaly recorded in Italy (+0.51° C) was below the global anomaly value on land (+0.93° C).

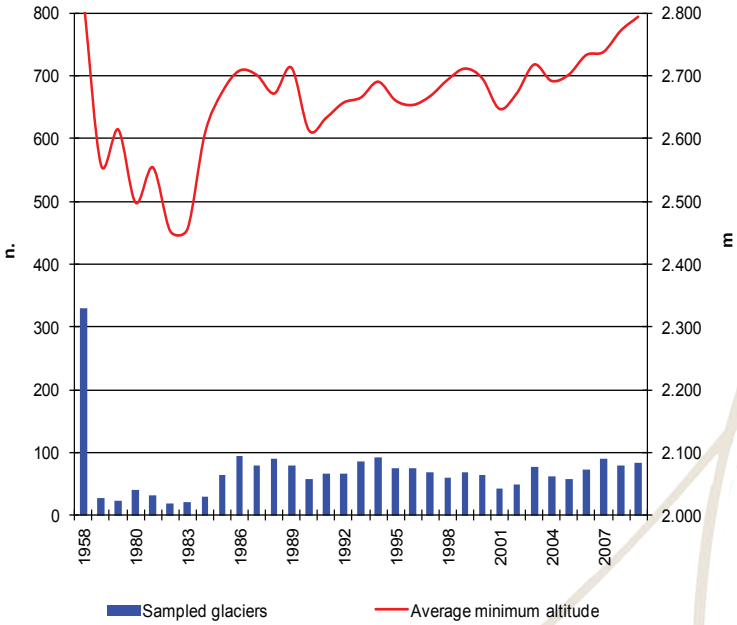
## Average annual number of summer days (1961-2010)




**Legend:**
The dotted line indicates the average value in the reference period 1961-1990.
**Source:** Synoptic station network data processed by ISPRA

In Italy, over the last 14 years, the number of summer days (i.e. days with a maximum air temperature in excess of 25° C) and tropical nights (i.e. nights with a minimum air temperature in excess of 20° C) were consistently above the respective average climatological values.

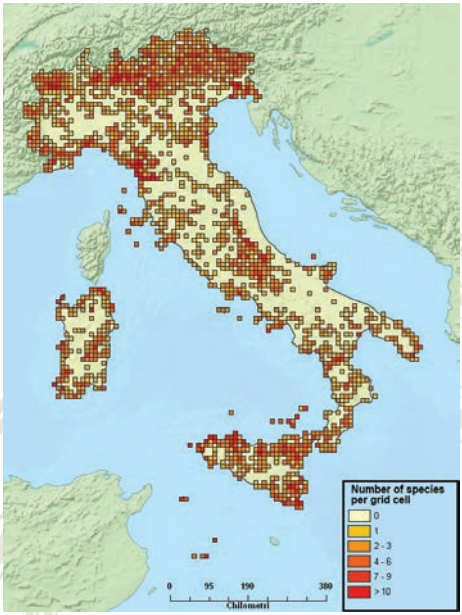
## Changes in the average minimum altitude of the glacial fronts in the Western Alps




**Source:** Comitato Glaciologico Italiano data processed by ISPRA

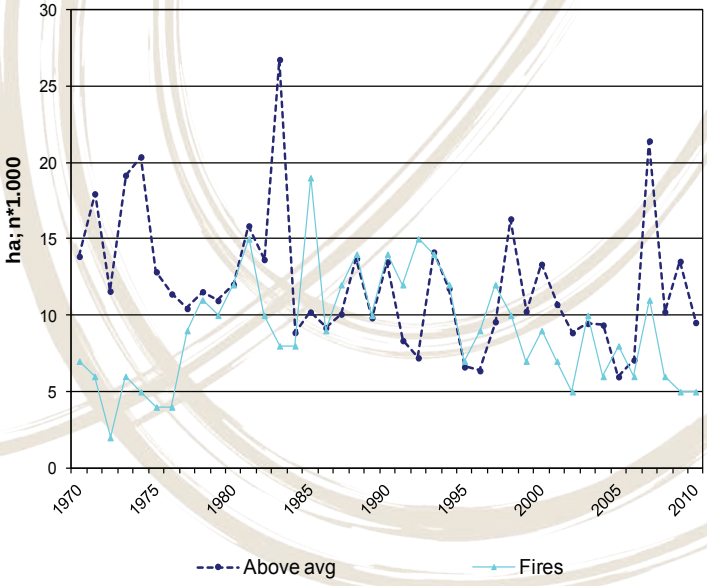
Changes in the glacial fronts point to an overall rise, and the ensuing thawing of the glaciers, although the more recent changes show differing trends in the three Alpine sectors.

## Density grid (10 x 10 km resolution) of vascular flora species included in the Red Lists

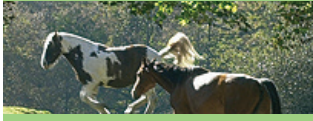



**Source:** Data extracted from Scoppola, Spampinato, 2005 – Atlante delle specie a rischio di estinzione (CD-ROM), MATTM, DPN, SBI, Univ. Tuscia, Univ. La Sapienza, processed by ISPRA

## Average extension and number of forest fires




**Source:** Corpo Forestale dello Stato (www.corpoforestale.it)

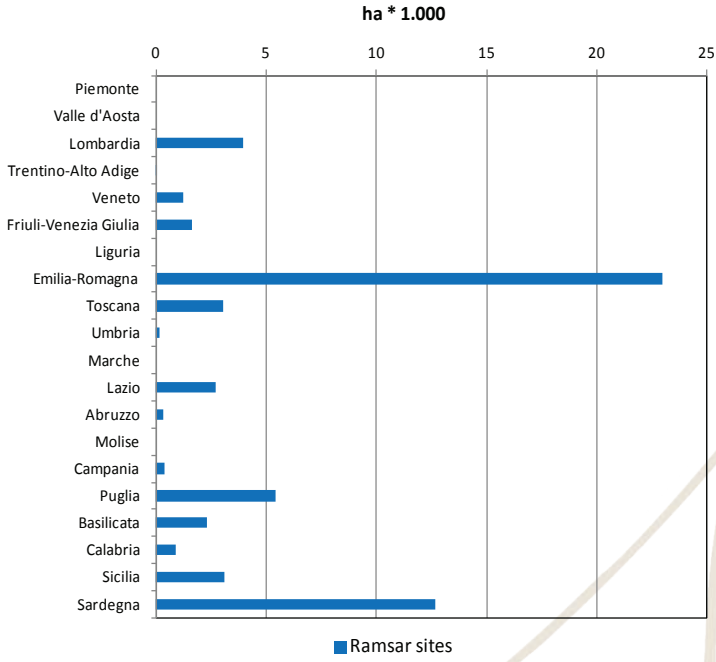


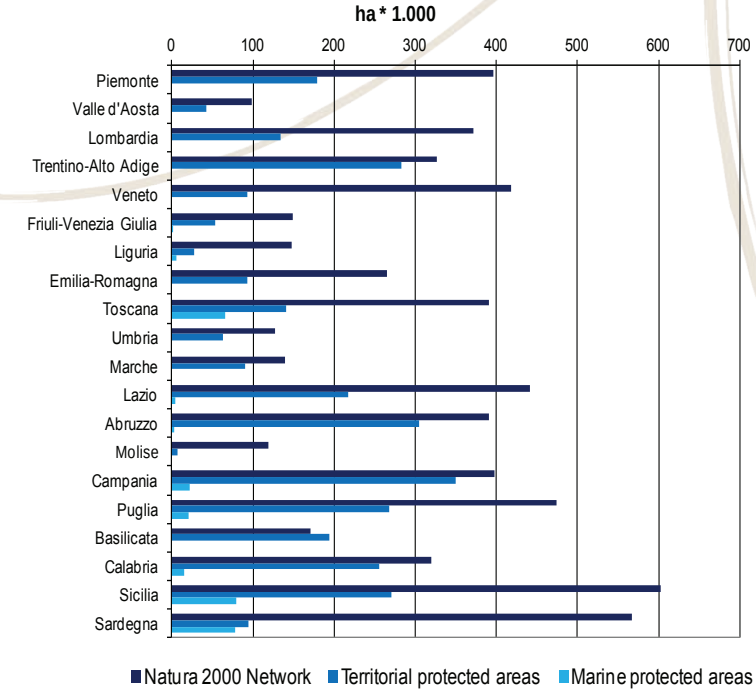
Italy is one of the European countries with the highest levels of biodiversity, possessing half of the European plant species and a third of the animal species.
It is also the European country with the highest number of animal species (over 58,000), with a high incidence of endemic species.
Vascular plants species are 6,700, 15.6% of which are endemic species.

The level of threat, however, is high: over 50% of Vertebrates (in particular, freshwater fishes, amphibians and reptiles), 15% of higher plants and 40% of the lower plants are at risk.

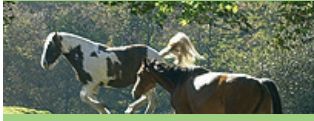
The forest area index rose from 28.8% in 1985 to over 36% in 2010.

## Regional distribution of protected areas (not included the Marine Mammal Sanctuary)




**Source:** MATTM data processed by ISPRA



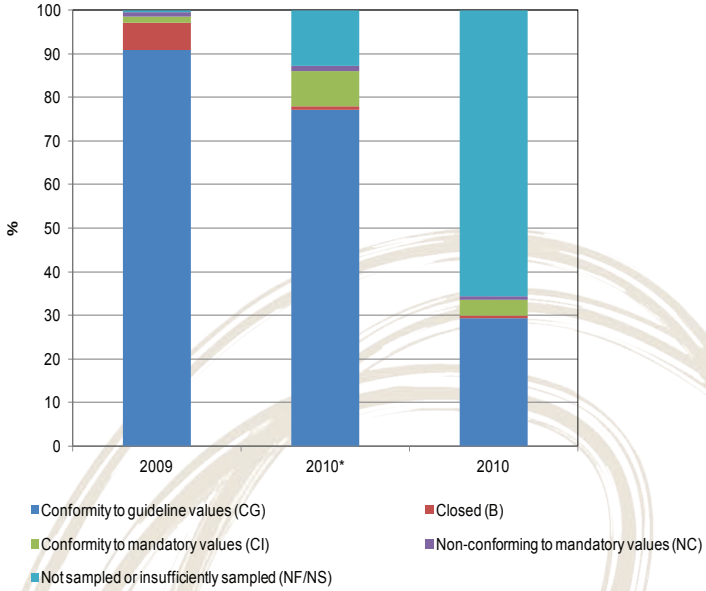
The agricultural environment is the predominant type of environment surrounding wetland areas; this is due to the fact that ponds and marshes, by their real nature, tend to form on flat-lying land, where competition with agriculture has always been very strong 51% of the buffer zones around the Ramsar areas (29 areas out of 57) presents 70% of land cover used by agriculture.
Italy has endorsed numerous conventions and international agreements geared towards safeguarding biodiversity, such as the Convention on Biological Diversity.

The Natura 2000 Network consists of SPAs and SCIs which, minus any overlapping, total 2,564 sites, and occupy a surface area of 6,194,451 hectares, equal to 20.6% of the country's total area.

Moreover, in Italy there are also 871 protected areas occupying a territorial surface area of over 3 million hectares (10.5% of the total area of the country).
At sea, the protected areas also include 27 Marine Protected Areas.

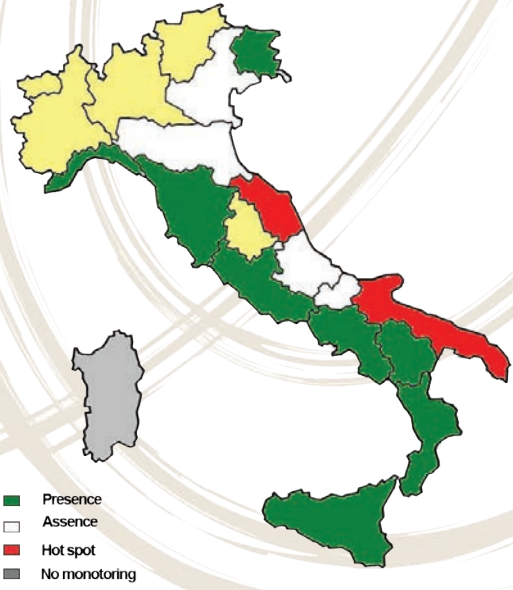
There are 57 wetland sites, within the meaning of the Ramsar Convention, covering 60,000 hectares.

## Conformity assessment of bathing water sites




**Source:** EEA data processed by ISPRA

## *Osteopsis ovata* along the Italian coasts (2010)




**Source:** Data collected by the coastal regions and processed by ISPRA

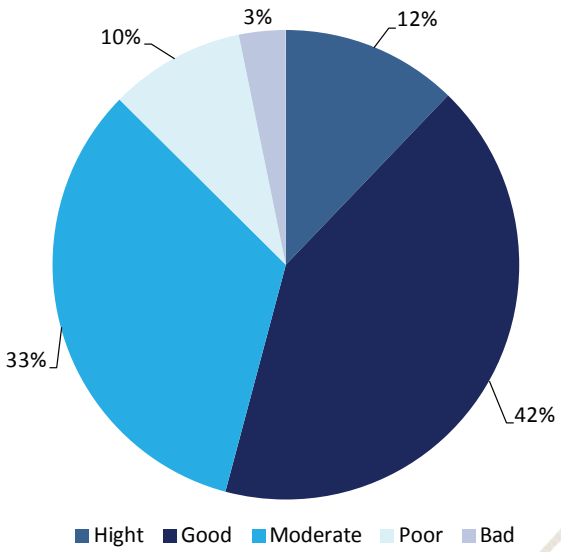
In 2010, out of 4,896 bathing water sites in Italy, 3,779 conformed to the guiding values and 396 to the mandatory values.

There are many potential sources of pollution, predominantly microbiological pollution, as a result of which water may become unsuitable for bathing.

The ecological status of a surface water body is classified based on the lowest class, resulting from the monitoring data relating to the biological, physico-chemical and chemical elements.

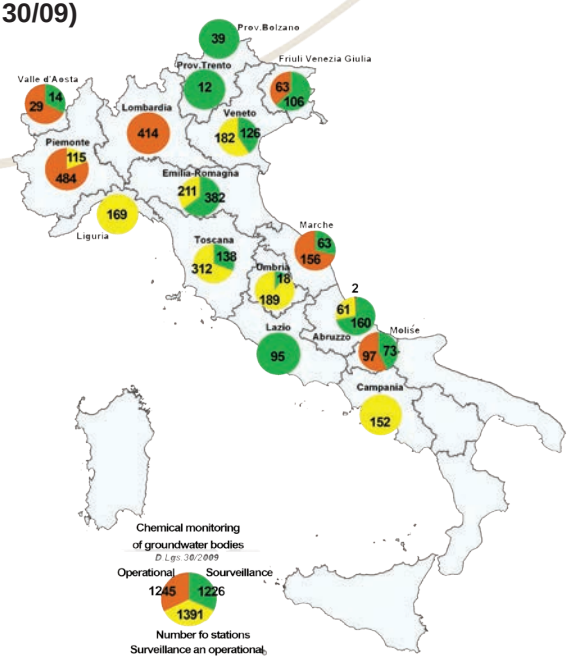
The proliferation of the benthic microalga Osteopsis ovata may give rise to toxicity for both human beings and the environment.

## Stations in the 5 quality classes, using macroinvertebrate BQEs




**Source:** Data collected by the regions/autonomous provinces and processed by ISPRA

## Geographical breakdown of the type and extent of the chemical monitoring of groundwater bodies2010-2015 (Legislative Decree 30/09)



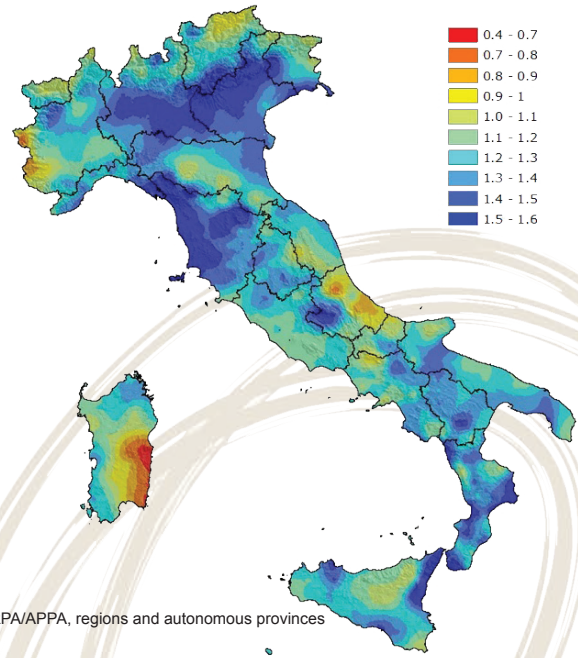

**Source:** Data collected by regions, autonomous provinces and ARPA/APPA and processed by ISPRA

The national framework on quality status will available only at the end of the monitoring cycles operating and monitoring .With regard to regions/autonomous provinces 5 ( 491 stations ) about half falls in the class good and high.

To date, regarding the progress made in implementing Directive 2000/60/EC, almost all the regions have completed the typification and definition of their water bodies.
The risk analysis has been completed in 76% of cases, while monitoring network and activity plans have been defined in 50% of the regions.

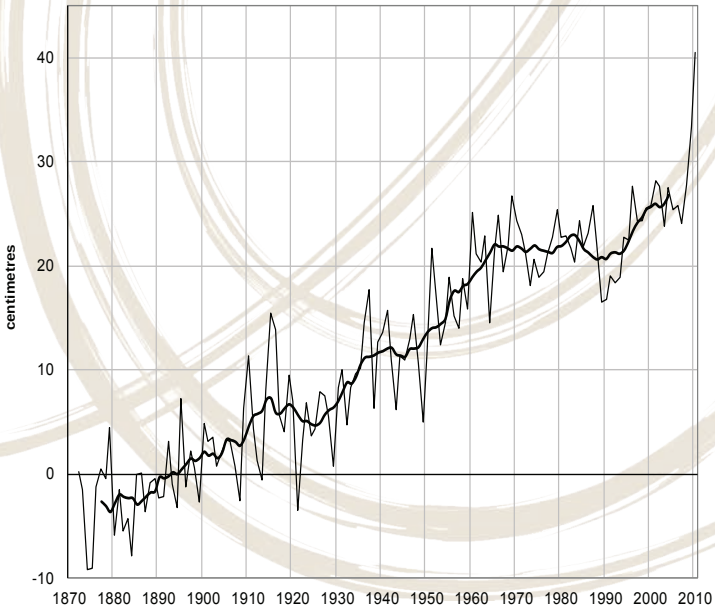
The situation in the catchment area outlets of Italian rivers is more or less stable.

## Ratio of total annual rainfall in 2010 to the average total annual rainfalls in the 1961-1990 (30-year period)




**Source:** ARPA/APPA, regions and autonomous provinces

## Mean sea level in Venice



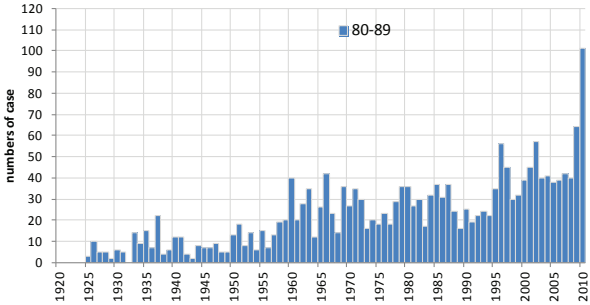

**Source:** ISPRA

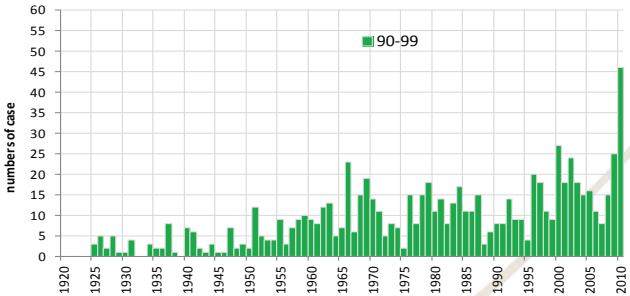
Rainfall deficit or surplus is determined according to the Standardized Precipitation Index (SPI); in Italy, in 2010, no drought events were recorded (SPI<0) such as to affect the discharge of rivers or the availability of grandwater.

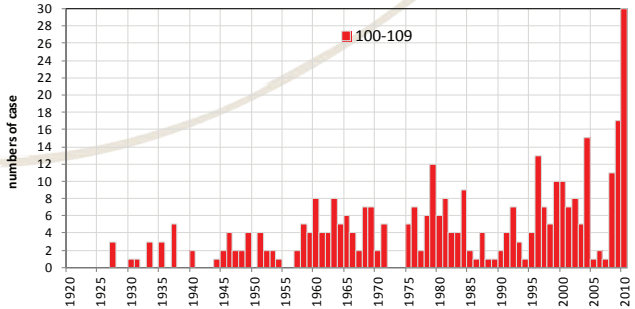
Surface water temperatures of the italian seas between October 2010 and September 2011, were averange. Although the surface temperature of Adriatic icreased in September.

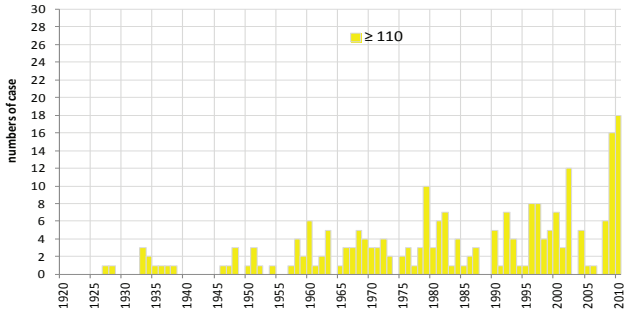
The mean sea level is consistently increasing in Venice. The absolute maximum value was recorded in 2010, at 40.5 cm above the Zero Sea Level of Punta della Salute. The previous maximum of 33.4 cm was recorded in 2009.

# Frequency of ‘high water’ events in Venice, by height class



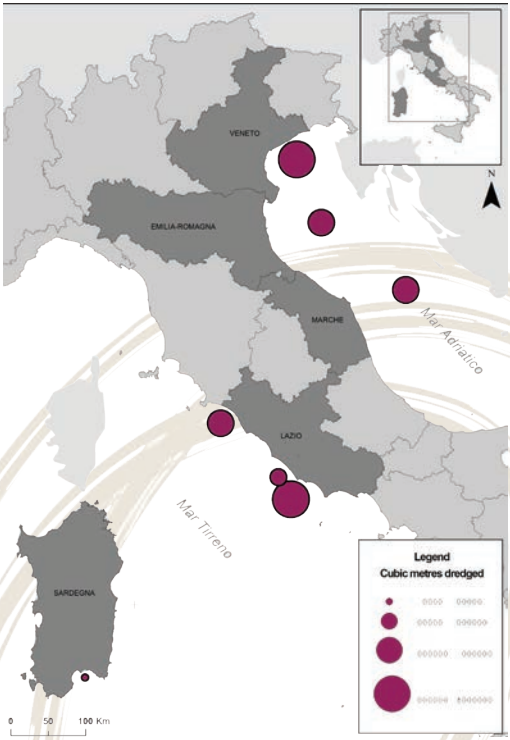




**Source:** ISPRA

2010 was a record year for all the height classes, and exceptional for the frequency of cases of medium-high to high (90-109 cm) and high (110 cm and more) water.

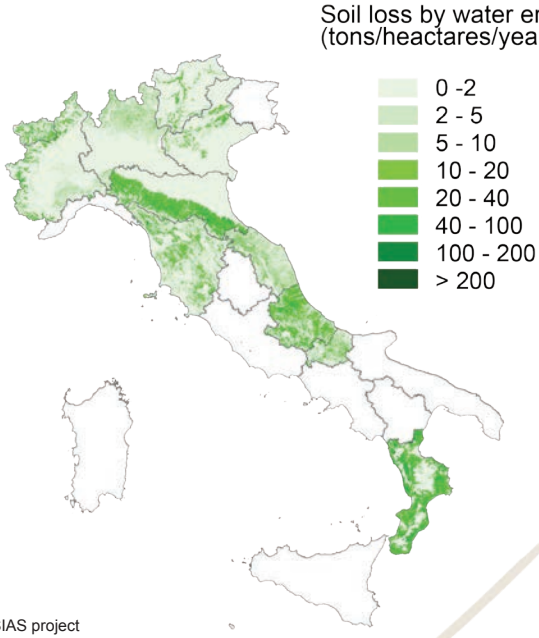
## Relict sand volumes dredged along the Italian continental shelf




**Source:** Data collected by Magistrato delle Acque, Regions of Abruzzo, Marche, Emilia-Romagna, Lazio and processed by ISPRA

Between 1994 and 2007, over 14,000,000 cubic metres of relict sand was dredged for beach nourishment purposes, in the province of Venice and along the coast of Lazio. Between 2008 and 2010, however, no dredging operations were recorded.

## Soil loss due to water erosion assessment (2011)

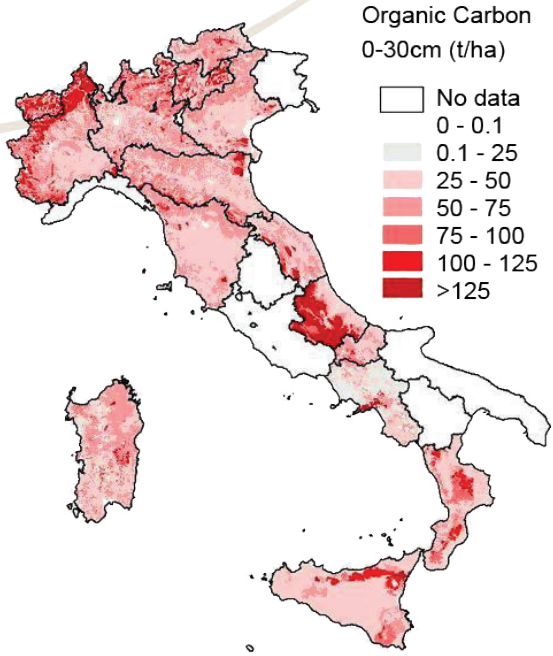



**Source:** SIAS project

Large areas of Italy feature erosion rates well above the tolerance limits. In Italy large areas are characterized by erosion sites that exceeds tolerance limits.

Hilly areas with high-quality crop production are exposed considerable economic losses due to soil erosion.

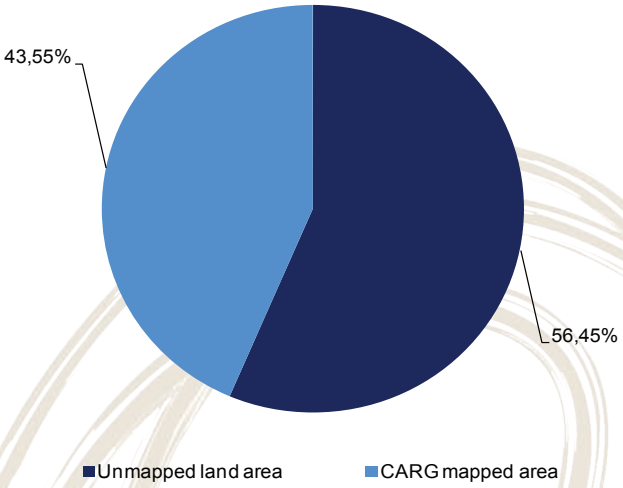
## Organic Carbon (OC) content (tons/ha) in the topsoil layers of Italian soils (2011)




**Source:** SIAS project

In Italy, a 1.2% OC content in agricultural land is considered adequate to guarantee sufficient nutritional elements for crops.

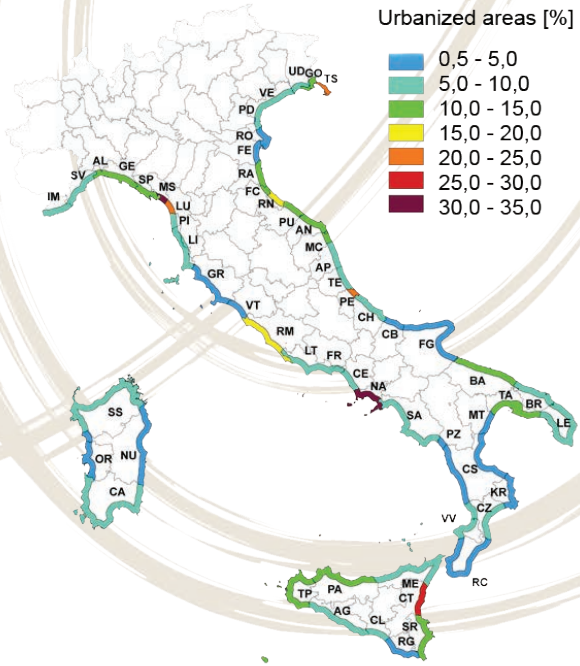
## Percentage of area covered by official Italian Geological Cartography project (CARG), at scale 1:25,000 (2011)




The availability of geological maps at an adequate scale is one of the most important steps in understanding the geological structure of the country.

**Source:** ISPRA

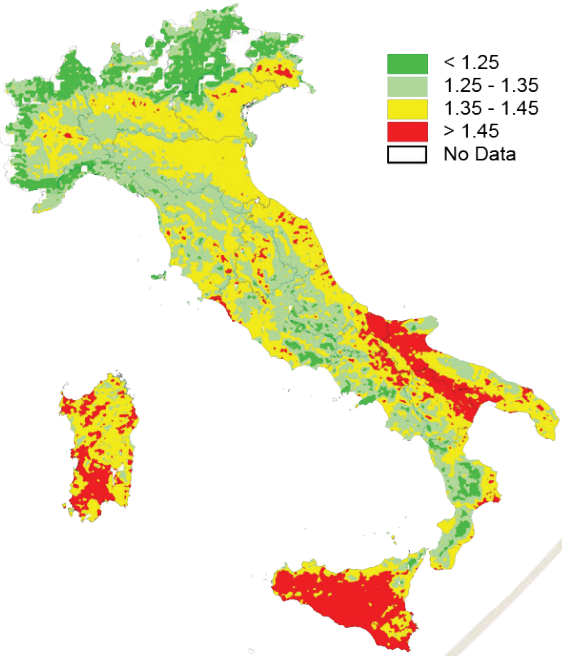
## Percentage of urbanized land within 10 km from the coastline




Between 2006 and 2008, urbanization within 10 km from the coastline took place mainly at the expense of cropland (47%) and heterogeneous agricultural areas (27%).

**Source:** Data collected in connection with the Lacoast and CLC 2006 project and by the national soil use monitoring network (ISPRA-SINAnet) and processed by ISPRA

## National Environmental vulnerability index (2000)




**Source:** CRA-CMA, CNLSD, MATTM

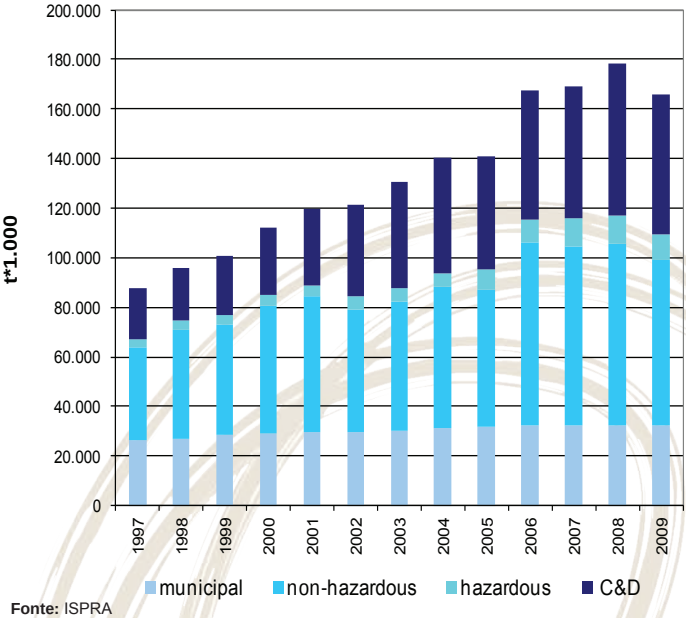
Environmental vulnerability due to desertification shows warning signs in Sardinia, Sicily, Basilicata, Puglia and Calabria, and there are negative signs from central-northern areas as well.

## Map of hydrocarbon exploration and mining titles (2011)


**Source:** Ministry for Economic Development

At 31 December 2011, a total of 121 exploration permits (of which 96 on land and 25 at sea) and 199 mining concessions (of which 133 on land and 66 at sea) had been granted.

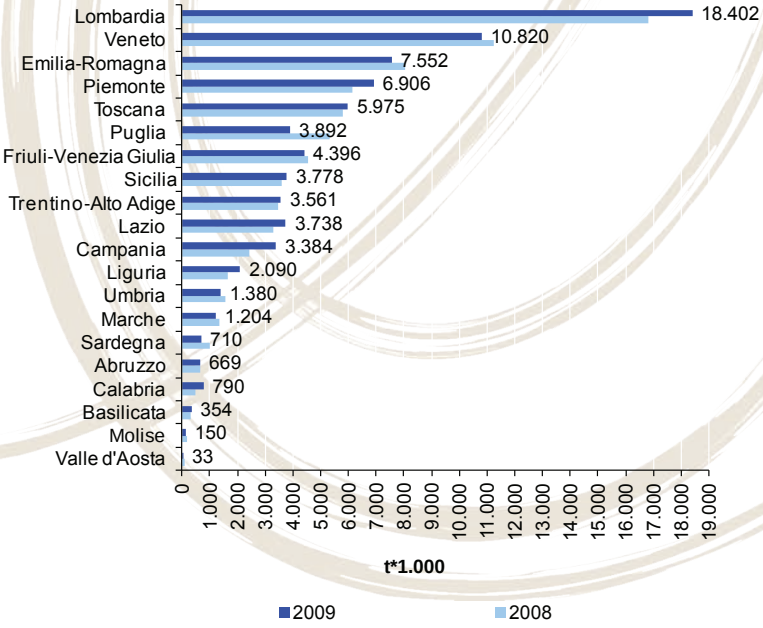
## Waste production




**Fonte:** ISPRA

The total waste generation in 2009 is 160 million tons. Hazardous waste is increasing at rates in excess of the GDP.
Municipal waste are more correlated, in time, with the socio-economic indicators (GDP and expenditure households).

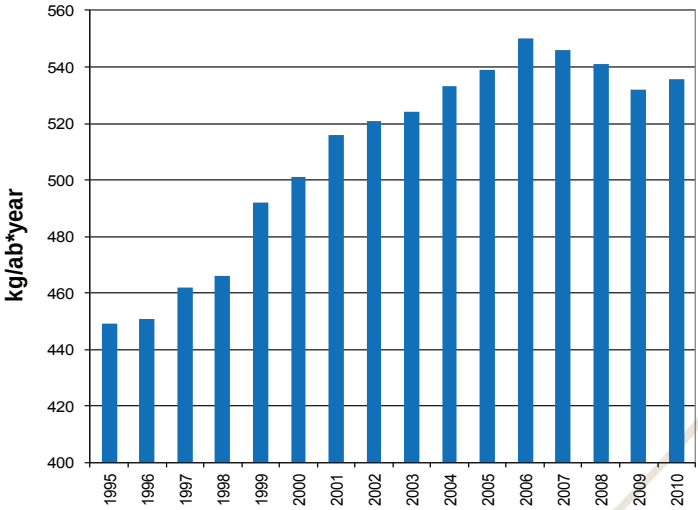
## Amount of total hazardous and waste recovered




**Source:** ISPRA

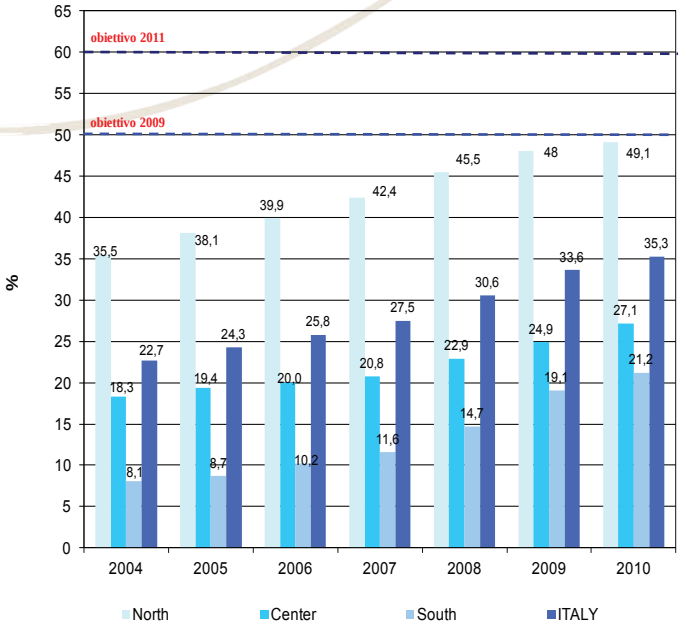
57.5% of special waste was recovered and only 9.6% disposed of at landfills.

## Per capita municipal waste generation




**Source:** ISPRA

## Percentage of separate collection of municipal waste

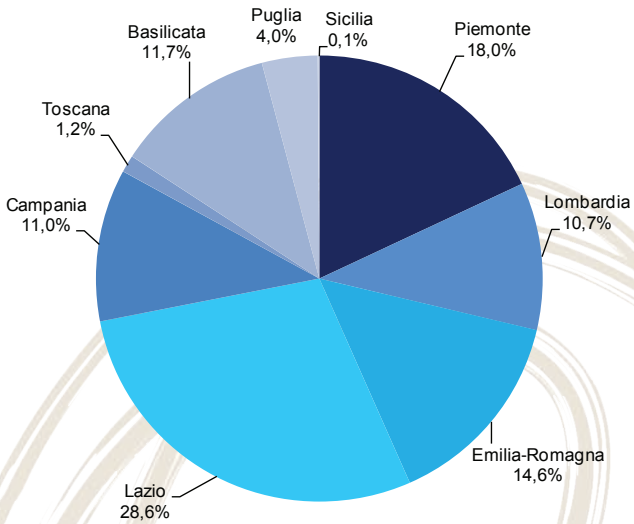



**Source:** ISPRA

In 2010, 32.5 million tons in Italy (+1.5% year-over-year). The per capita generation of municipal waste (536 kg/inhabitant) is increased by 4 kg/inhabitant per year. At macro geographical level, the highest per capita generation values, in 2010, is found in the centre with 613 kg/inhabitant per year, showing a gradually reduction from 2006. The North and South, with 533 and 495 kg per person per year, respectively, feature values similar to 2005.

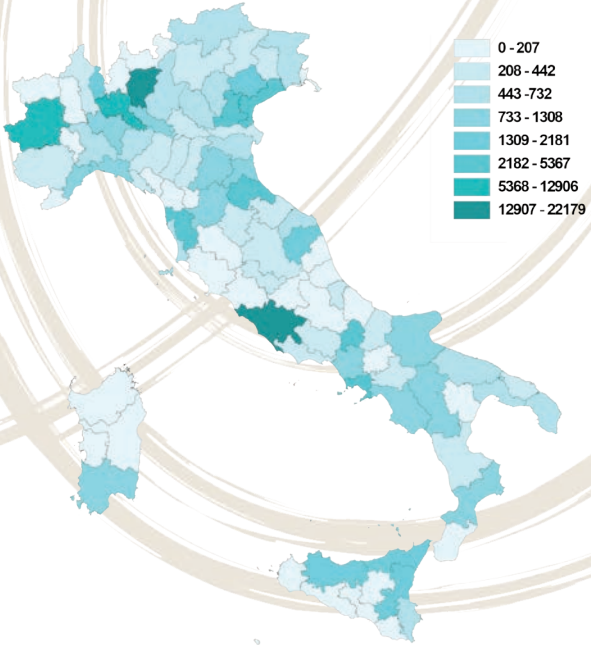
In 2010, the highest percentages of separate waste collection were recorded in Veneto and Trentino-Alto Adige, both of which feature rates in excess of 57% (58.7% and 57.9%, respectively), and in Piemonte and Friuli Venezia-Giulia, with rates of about 50% (50.7% and 49.3%, respectively). The regions with the lowest rates of separate waste collection are Sicily (9.4%), Calabria (12.4%), Molise (12.8%) and Basilicata (13.3%).

## Distribution of radioactive waste in terms of volumes (2010)




**Source:** ISPRA

## Radioactive material transport indexes (m SV/h*100) (2010)




**source:** ISPRA

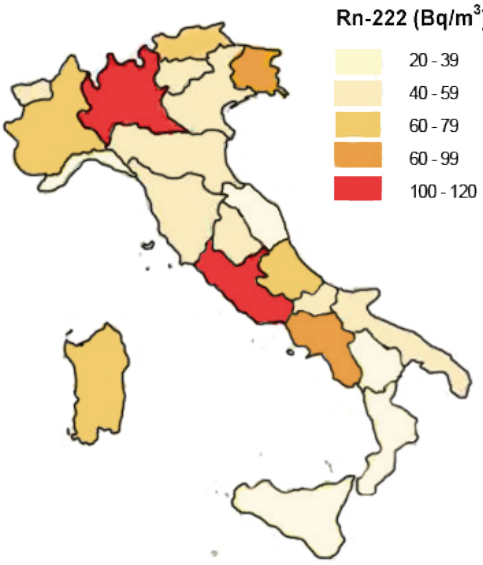
In Italy, nuclear activities entailing the risk of exposure to ionizing radiations of the population and the environment comprise: the facilities built in connection with the since-discontinued nuclear program (undergoing decommissioning) and research reactors; radioactive waste storage facilities; activities using ionizing radiation sources; radioactive material transport.

190 tons of fuel from the Caorso Plant were moved to France, and 45 tons are being transferred from the Avogadro Deposit to the Trino Plant.

The transport of radioactive materials in Italy concerns sources used for medical (82.2%) and industrial (6%) purposes, and waste (11.6%).

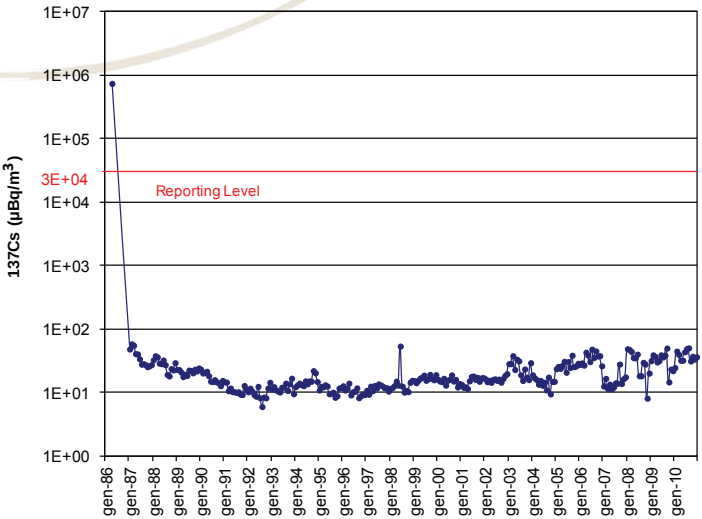
The containers with radioactive materials are transported primarily by road followed by air.

## Average concentration of indoor radon activities (1989-1997)




**Source:** Bochicchio F., Campos Venuti G., Piermattei S., Torri G., Nuccetelli C., Risica S., Tommasino L., Results of the National Survey on Radon Indoors in the all the 21 Italian Regions, Proceedings of Radon in the Living Environment Workshop, Atene, Aprile 1999

## Tend of the concentration of Cs-137 in particulate airborne matter, in Italy



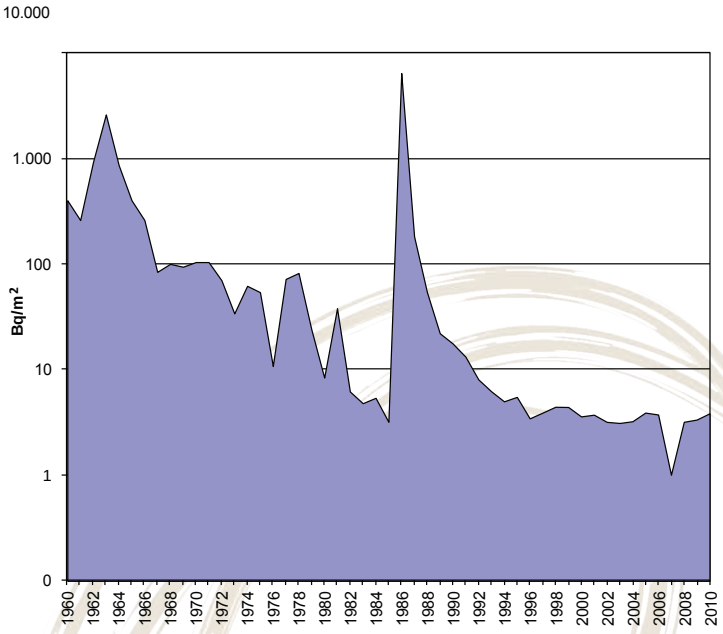

**Source:** Data collected by ENEA-DISP, Annual Report on environmental radioactivity in Italy. National networks, 1986-87, 1998; Annual Report on environmental radioactivity in Italy, 1991; 1992; 1994-97; 1998; APAT, National surveillance networks of environmental radiation in Italy, 2002; ISPRA, processed by ISPRA

Lacking significant nuclear incidents, Radon represents the principal source of exposure to radioactivity.
In Italy, the average concentration is 70 Bq/m3 higher than the global average, which is estimated at 40 Bq/m3, and higher even than the European average, which is 59 Bq/m3. The geographical concentration of Radon differs considerably, in particular with regard to rock composition.

The GAMMA network, set up by ISPRA for the real time monitoring of the gamma dose rate absorbed in the air, comprises 58 monitoring units distributed throughout the country.

Radioactivity monitoring activities are deemed to be adequate for population protection purposes, albeit with regional differences.

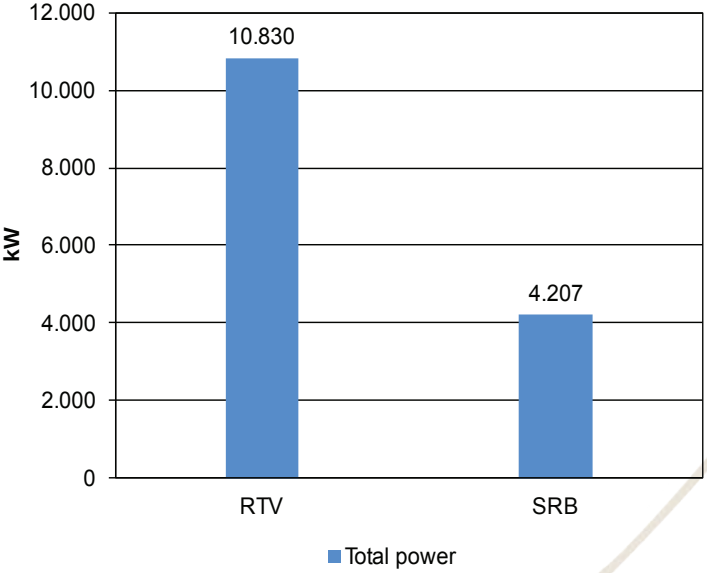
## Trend of wet and dry depositions of Cs-137 in Italy




**Source:** Data collected by ISPRA/ARPA/APPA; ISPRA; OECD-ENEA, 1987, The radiological impact of the Chernobyl accident in OECD countries, Paris, and processed by ISPRA

Environmental radioactivity surveillance is based on a number of networks, at local, regional and national levels.
The local networks control the areas surrounding nuclear facilities; the regional networks are responsible for monitoring environmental radioactivity at regional level; and the national networks collect data, for representing the nationwide situation, also in connection with the occurrence of anomalous events.

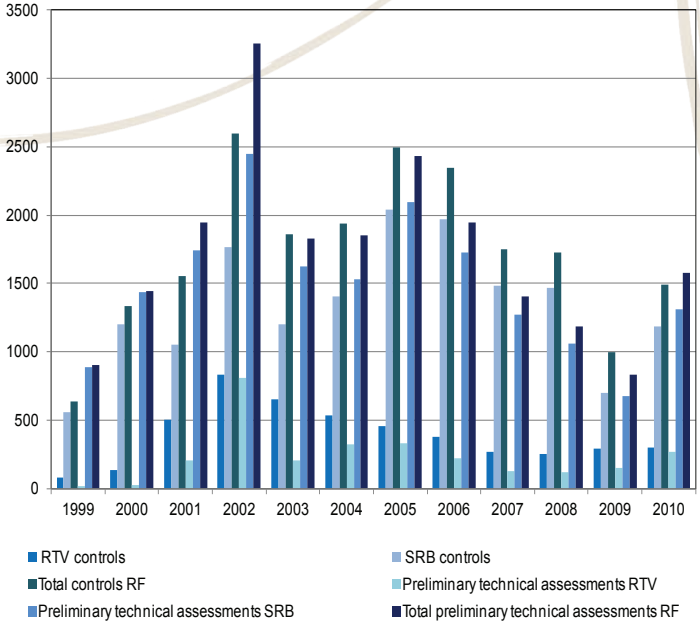
## Total power, comparison between RTV and RBS, for regions where complete datasets are available (2010)




**Source:** ARPA/APPA data processed by ISPRA (CEM Observatory)

Between 2009 and 2010, there was an increase in the number of cell phone towers and sites, of 15% and 12%, respectively, while the number of radio and television broadcasting antennas remained practically unchanged.

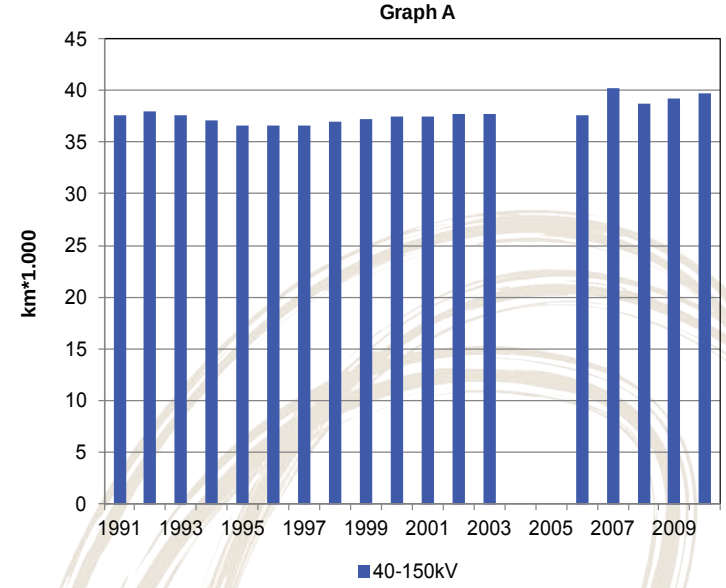
## Assessments and controls carried out on RF plants in Italy, broken down by source type

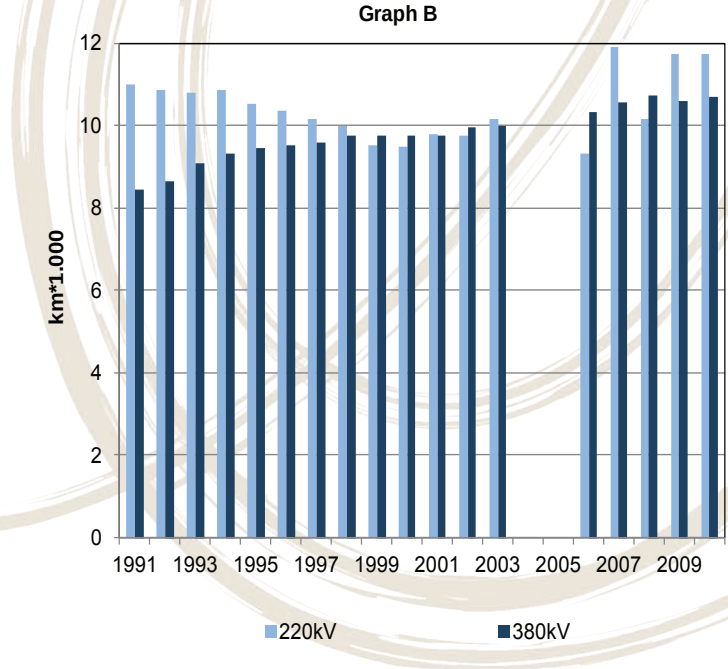



**Source:** ARPA/APPA data processed by ISPRA (CEM Observatory)

Cases of exceedance of the legal limits by radio/television broadcasting antennas are about 10 times higher than those relating to cell phone towers.
However, more controls have been carried out on cell phone towers (3,787) than radio/television broadcasting antennas (1,079), due to the fact that the former cause greater social concern because they are more widespread.

## Trends of HV (graph A) and very HV (graph B) power line lengths in Italy (2010)

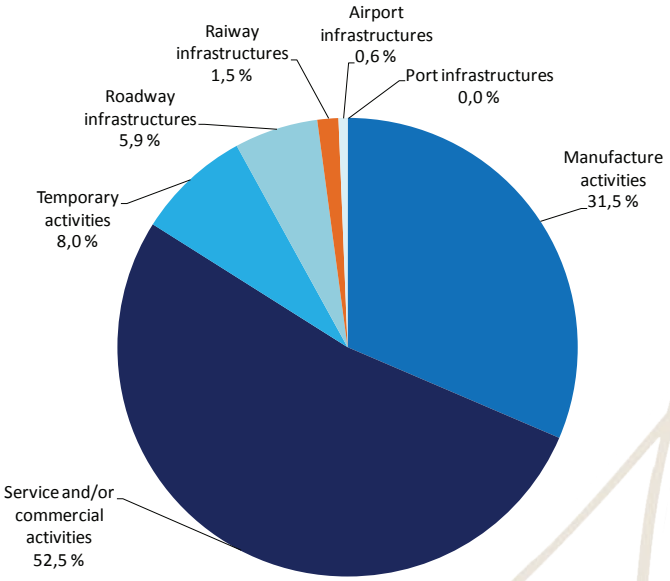



Most of the Italian electrical grid consists of medium and low-voltage power lines (<40 kV), which represent the final section of the electricity production, transmission and distribution process, and the density of which, therefore, is considerably higher than that of the higher voltage power lines (the length of power lines > 40 kV account for only 5% of the total figure). The trend over time (1999-2010) for HV (graph A) and very HV (graph B) power lines is practically unchanged.

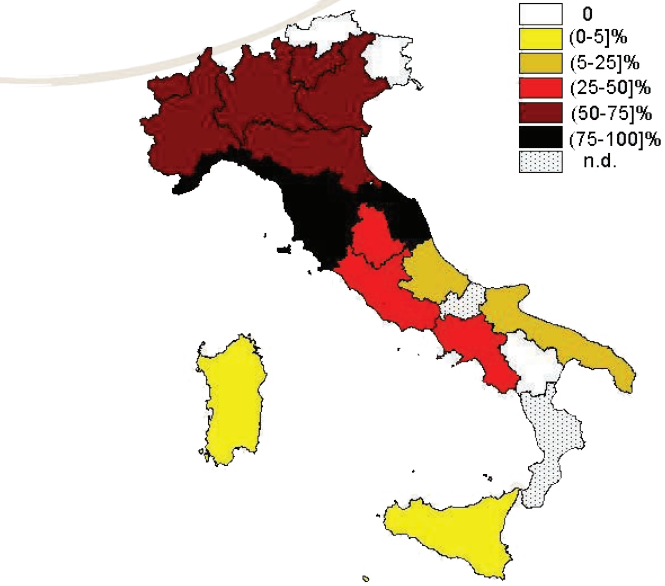
**Source:** Terna SpA, Enel Distribuzione SpA and Deval SpA data processed by ISPRA

## Distribution of controlled sources (2,529) amongst different types of activities/infrastructure (2010)




**Source:** ARPA/APPA data processed by ISPRA

## Percentage of municipalities that have approved acoustical classifications plans of territory out of the total number of municipalities for each region/autonomous province



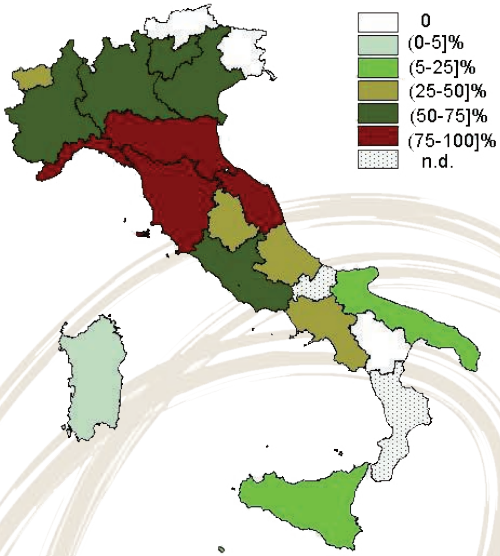

**Source:** ARPA/APPA data processed by ISPRA

The controls undertaken were in the majority of case in reason of complaints made by citizens. About 89% of sources are controlled in consequence of citizens complaints.

46.2% of municipalities have approved acoustical classification plans.

Although the number of acoustical classification plans approved has increased, compared to the past (+7.7% between 2009 and 2010), compliance by the local authorities of the Framework Law 447/95 (for protecting against noise pollution) is still insufficient.

**Percentage of population residing in municipalities with an approved acoustical classifications plans of territory, out of the total population of each region/autonomous province (2010)**



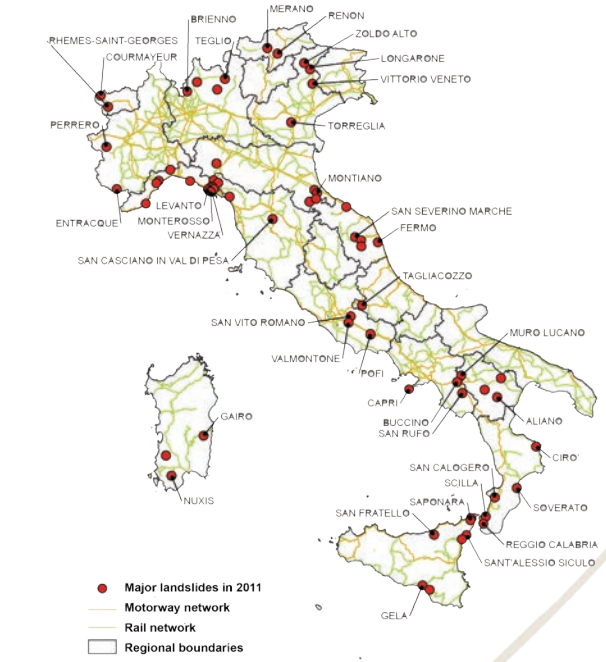

**Source:** ARPA/APPA data processed by ISPRA

The acoustical classifications is still insufficiently applied, with considerable differences among the regions.

The percentage of population residing in areas where the municipalities have approved zoning plans is 52%; to date, local authorities covering 46% of the country have introduced noise zoning plans.

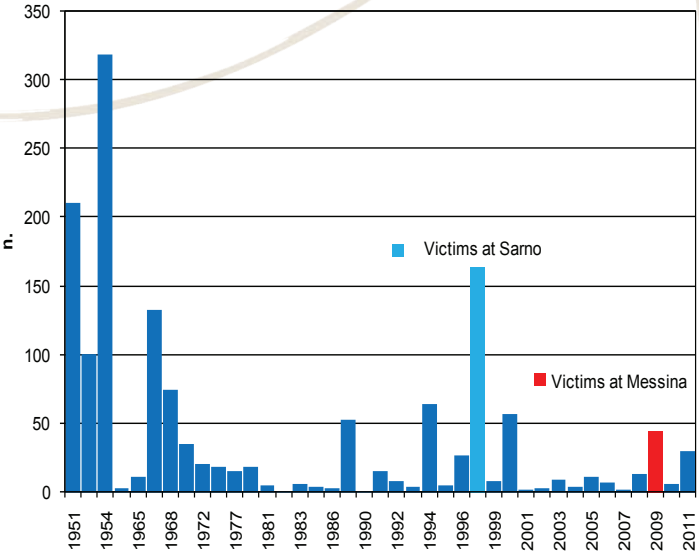
The regions with the highest percentage of noise zoning plans are: Marche (97.1%), Toscana (94.1%), Liguria (84.7%), while those featuring values below 10% are Puglia (9.7%), Abruzzo (6.2%), Sardinia (3.2%) and Sicily (1.0%).

## Major landslides in 2011




**Source:** ISPRA

## Victims of the main floods in Italy

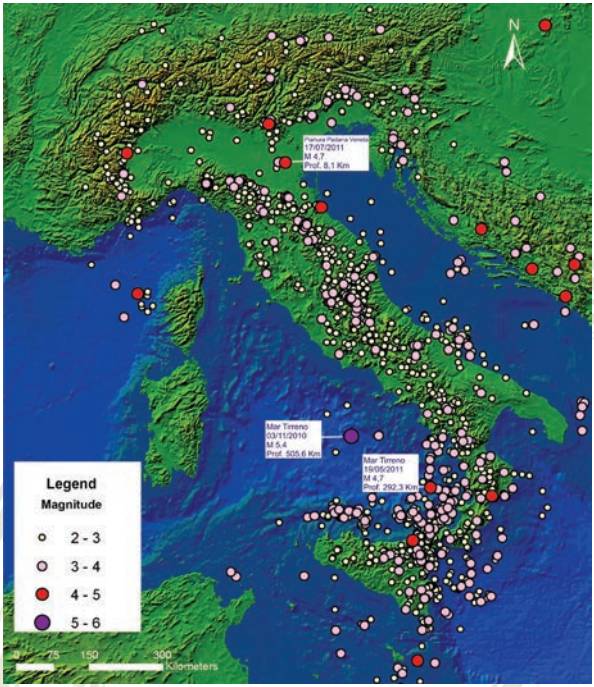



**Source:** Coldiretti; CIA; MiPAF; CNR; DPC; Regione Veneto; Commissario Alluvione Piemonte; Comune di Genova; Agenzie di Stampa; http://www.protezionecivile.it; www.ilgiornaledellaprotezionecivile.it.

Due to its particular position in the geodynamic context of the Mediterranean region, Italy is one of the countries with the highest seismic risk in Europe. Due to its particular climatic and geomorphological conditions, it is also one of the countries featuring the highest hydrogeological risk.

Landslides are natural disasters occurring with increasing frequency, and second only to earthquakes for number of victims and damage to buildings and infrastructure. About 486,000 landslides have been identified, in the Italian Landslides Inventory, involving an area of 20,700 km2, equal to 6.9% of the country.

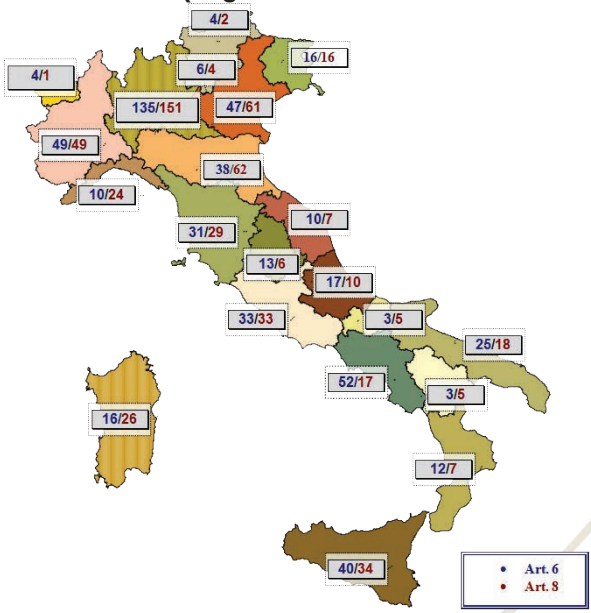
## Seismic events of magnitude equal to or higher than 2 recorded by the INGV National Seismic Network, from 1 October 2010 to 31 October 2011




**Source:** INGV © ISIDe Working Group (INGV, 2010), Italian Seismological Instrumental and parametric database: http://iside.rm.ingv.it Bollettino Sismico Italiano, Istituto Nazionale di Geofisica e Vulcanologia, Centro Nazionale Terremoti. http://bollettinosismico.rm.ingv.it/ data processed by ISPRA

It is necessary to reduce the vulnerability of buildings in seismic risk areas.

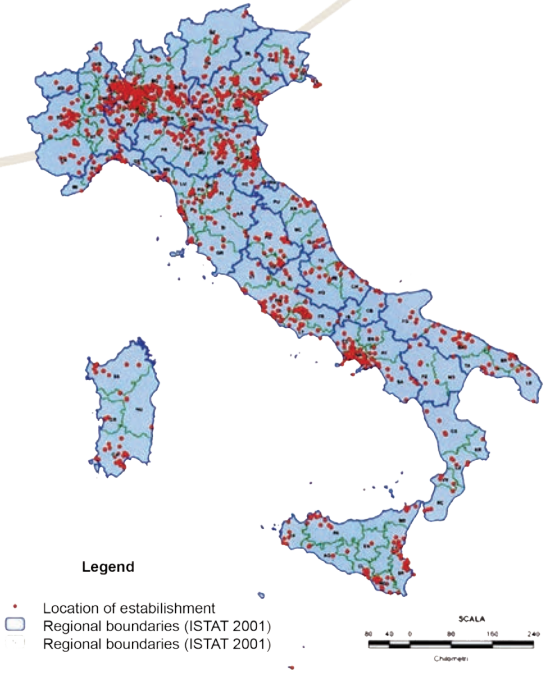
## Number of establishments at risk of significant incidents, regional distribution (Legislative Decree 334/99 as amended)




**Source:** MATTM 31/01/2012 processed by ISPRA

In Italy there are 1,131 establishments at risk of significant incidents, 25% of which are located in Lombardia. The European and domestic regulatory framework of significant incidents is now final and mature, featuring three successive directives and related national transposition measures.

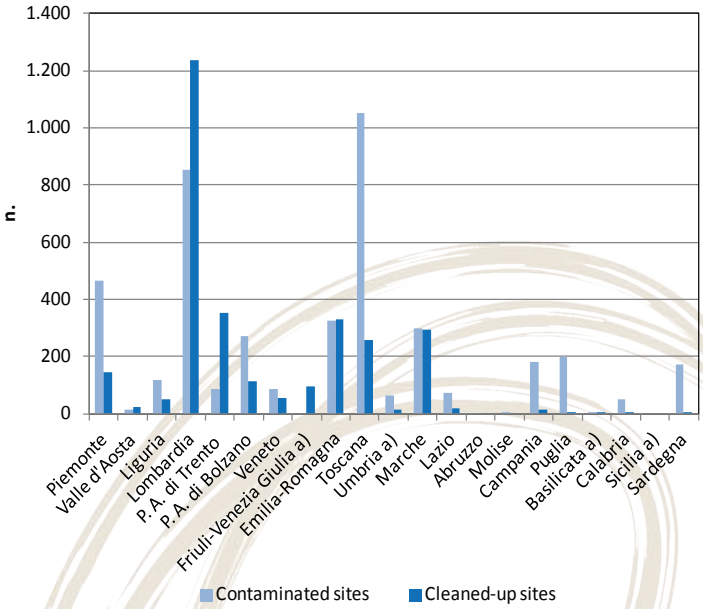
## Local distribution of establishments subject to Legislative Decree 334/99 as amended.




**Source:** MATTM 31/01/2012 processed by ISPRA

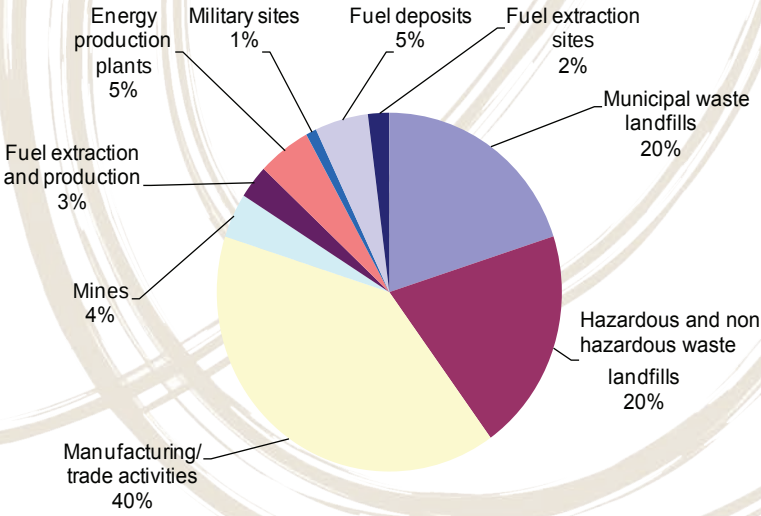
In Italy there is a prevalence of petrochemical and LPG establishments, which, together, account for 50% of the total.

## Contaminated and cleaned-up sites by region




**Source:** Parliamentary select committee on waste management offences, 2012, processed by ISPRA.
Note: a) Does not include SIN

## Contribution to soil contamination, by source type (figures relating to 57 Sites of National Interest)

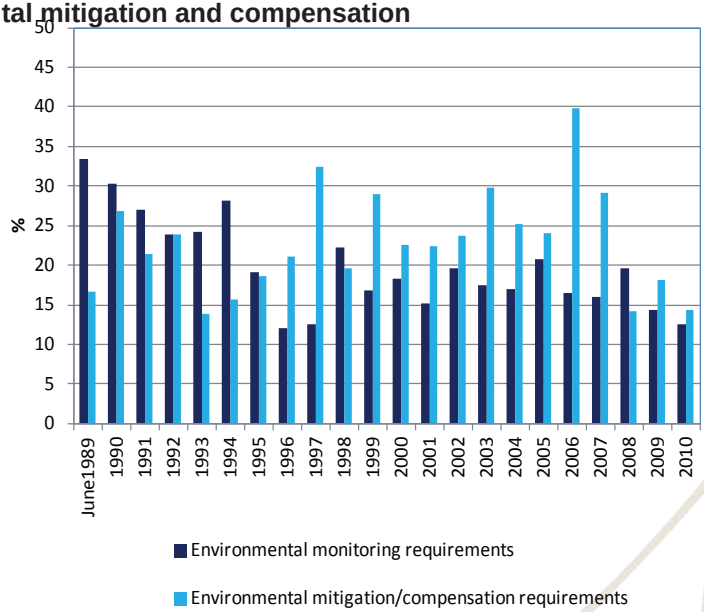



**Source:** Parliamentary select committee on waste management offences, 2012, data processed by ISPRA.

Contaminated sites include areas where – due to past or present human activities – there have been alterations of the natural characteristics of the soil caused by polluting agent, based on the applicable regulations.

The principal pollutants present in the soil are: heavy metals (39%), followed by hydrocarbons (CHC, IPA, BTEX) (35%). In the case of groundwater and surface water bodies, the principal pollutants are hydrocarbons (48%) and heavy metals (30%).

## Requirements set out in the environmental compatibility decrees, relating to environmental monitoring and environmental mitigation and compensation

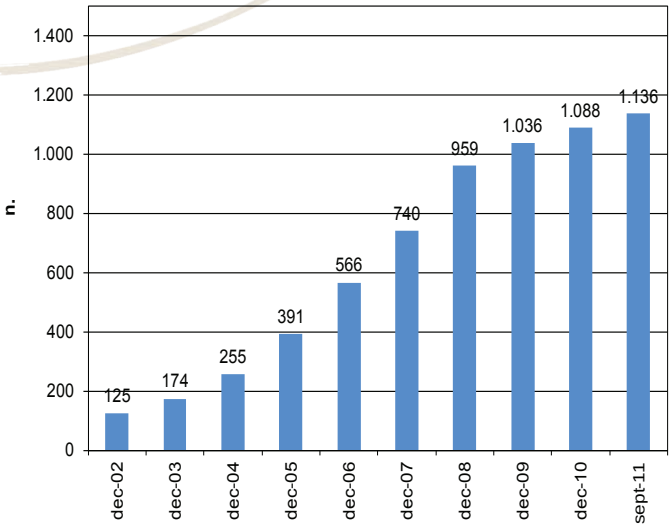



**Source:** ISPRA

EIA (environmental impact assessment) procedures feature a positive outcome in 82% of cases.

18% of positive decrees is represented by the design typology “roads”, 18% “waste”, 16% “thermoelectric power plants”, 18% “hydrocarbon prospection, exploration and exploitation plants at sea”.

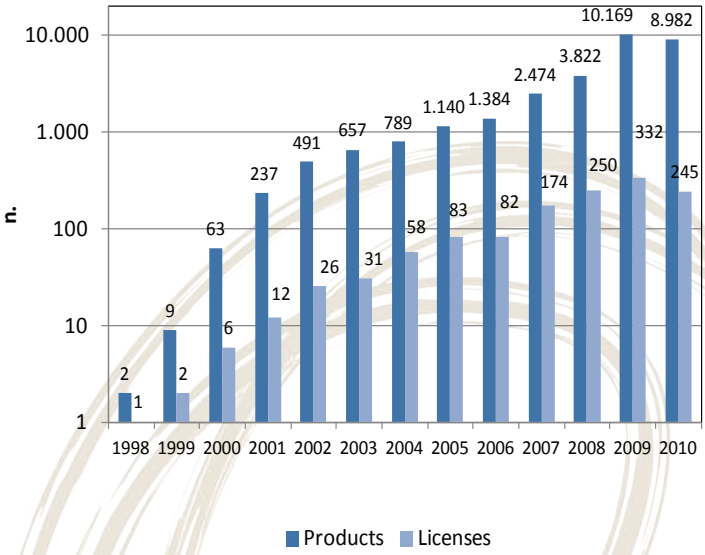
## EMAS certification trends in Italy (30/09/2011)




**Source:** ISPRA

56% of certifications are issued in the North (Emilia-Romagna, Lombardia, Toscana and Trentino-Alto Adige). The largest number of certificates are awarded to small enterprises (36%).
Lombardia features the largest number of ISO 14001 certified sites (2,500), followed by Emilia-Romagna, Piemonte, Veneto, Campania and Toscana (over 1,000 certified sites).

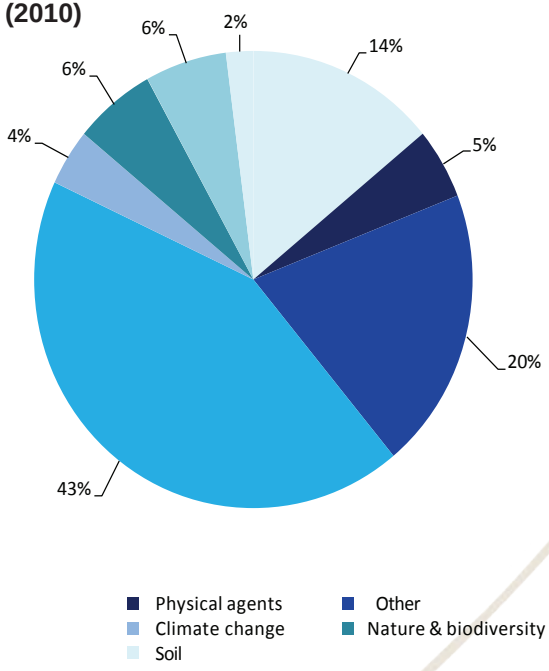
## Trend of EU Ecolabel producs and licenses in Italy (2010)




**Source:** ISPRA

The group of products featuring the largest number of EU Ecolabel licenses are “tourist accommodation services” (137 licenses), while “hard coverings” is the product group with the largest number of certified products (6,602).

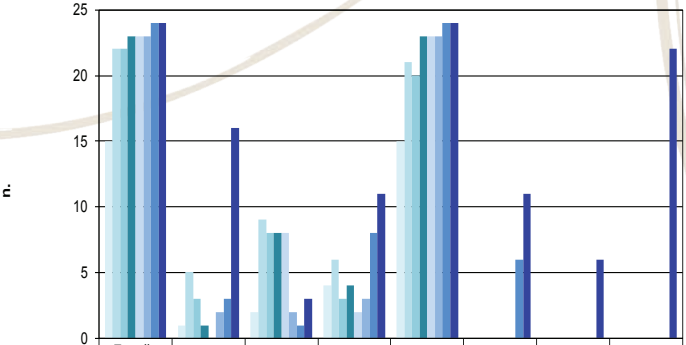
## Percentage of topic areas for which topic reports have been published (2010)




**Source:** ISPRA-ARPA/APPA data processed by ISPRA

In 2010, the network of environmental agencies produced over one hundred topic reports.

## Web environmental comunication

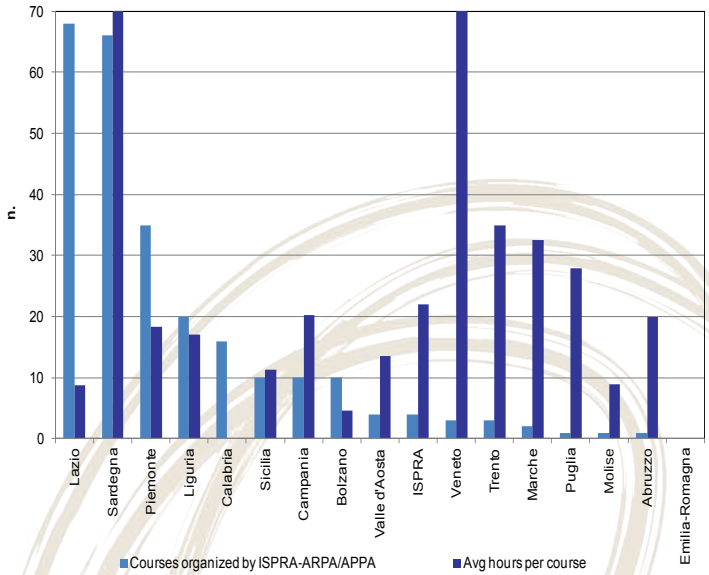



| | E-mails and/or online forms | Forum e FAQs | Online registrations | Opinion surveys | News and events | Multimedia area | Social media | Pec |
|---|---|---|---|---|---|---|---|---|
| 2003 active sites 23 | 15 | 1 | 2 | 4 | 15 | | | |
| 2004 active sites 23 | 22 | 5 | 9 | 6 | 21 | | | |
| 2005 active sites 22 | 22 | 3 | 8 | 3 | 20 | | | |
| 2006 active sites 23 | 23 | 1 | 8 | 4 | 23 | | | |
| 2007 active sites 23 | 23 | 0 | 8 | 2 | 23 | | | |
| 2008 active sites 23 | 23 | 2 | 2 | 3 | 23 | | | |
| 2009 active sites 24 | 24 | 3 | 1 | 8 | 24 | 6 | | |
| 2010 active sites 24 | 24 | 16 | 3 | 11 | 24 | 11 | 6 | 22 |

Compared to 2009, the lower participation in exhibitions and conferences has been set off by an increase in the use of multimedia tools (videos/cd-roms), which points to new forms of communication with the institutions and the public.

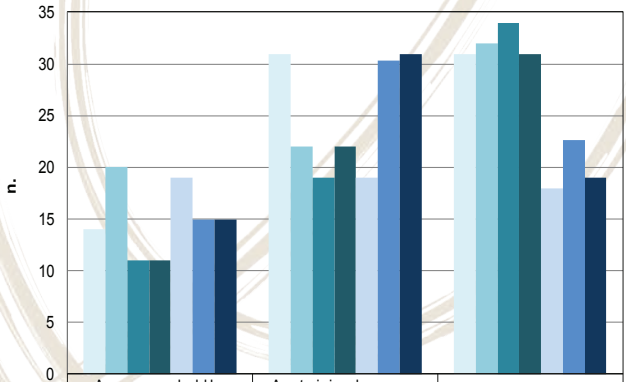
**Source:** ISPRA-ARPA/APPA-MATTM data processed by ISPRA

## Environmental training, courses held and average training hours (2010)




**Source:** ISPRA-ARPA/APPA data processed by ISPRA

## Environmental training, training courses (2004-2010)



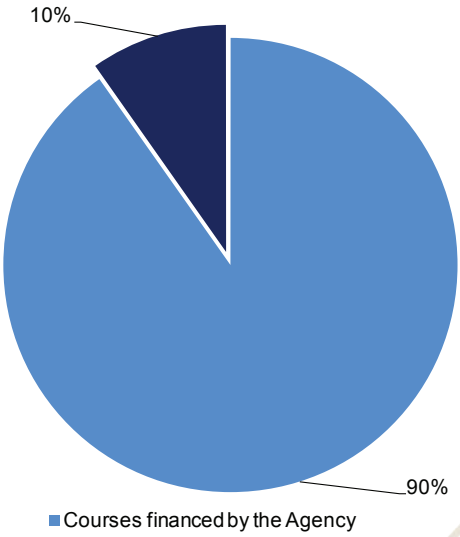

| | Avg courses held by Agency | Avg trainimg hours per course | Avg trainees per course |
|---|---|---|---|
| 2004 - 11 Agencies | 14 | 31 | 31 |
| 2005 - 10 Agencies | 20 | 22 | 32 |
| 2006 - 18 Agencies | 11 | 19 | 34 |
| 2007 - 15 Agencies | 11 | 22 | 31 |
| 2008 - 19 Agencies | 19 | 19 | 18 |
| 2009 - 14 Agencies | 15 | 30 | 23 |
| 2010 - 17 Agencies | 15 | 31 | 19 |

**Source:** ISPRA-ARPA/APPA data processed by ISPRA

In 2010, 96.5% of the environmental training courses held were short in length, medium length courses accounted for 3.1% of the total, while long courses accounted for only 0.4% of all courses.

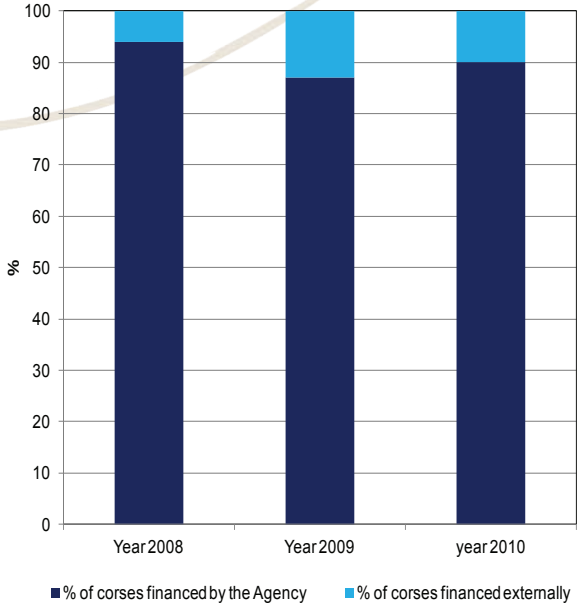
The total number of trainees attending environmental training courses was 4,827, 19 trainees per course, on average, 48% of which females.

## Courses organized with internal/external funding (2010)




**Source:** ISPRA-ARPA/APPA data processed by ISPRA

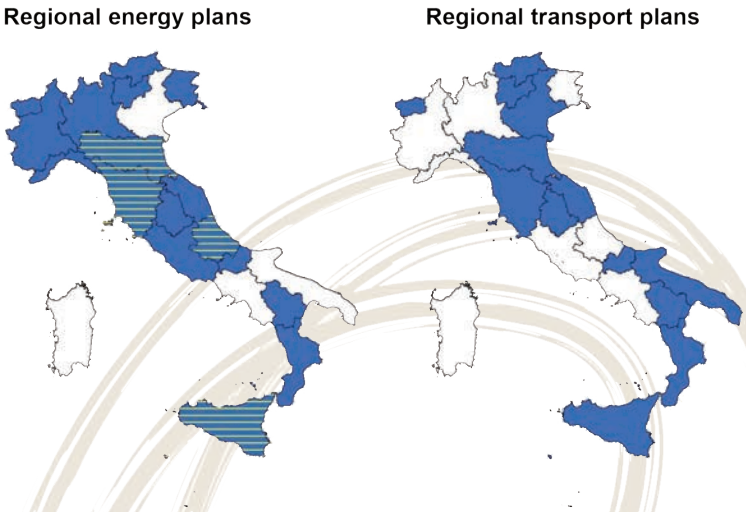
## Courses organized with internal/external funding




**Source:** ISPRA-ARPA/APPA data processed by ISPRA

E-learning courses, and the use of websites for disseminating technical and scientific contents, are still not very widespread within the environmental agency network. Only ARPA Piemonte has developed an E-learning course, while only ISPRA has used a website to publish the contents of its courses, seminars and workshops.

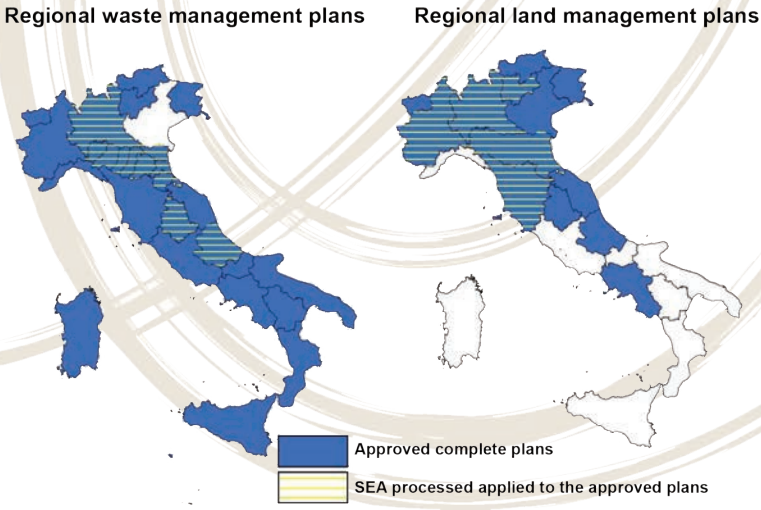
## Geographical distribution of complete energy and transport plans, approved and to which the SEA process has been applied (Nov 2011)




Source: ISPRA

Among the complete approved plans featuring the application of the SEA (Strategic Environmental Assessment) process, water protection (9/21) and transport plans (none) stand out, while the others feature the application of 4 or 5 SEA processes.

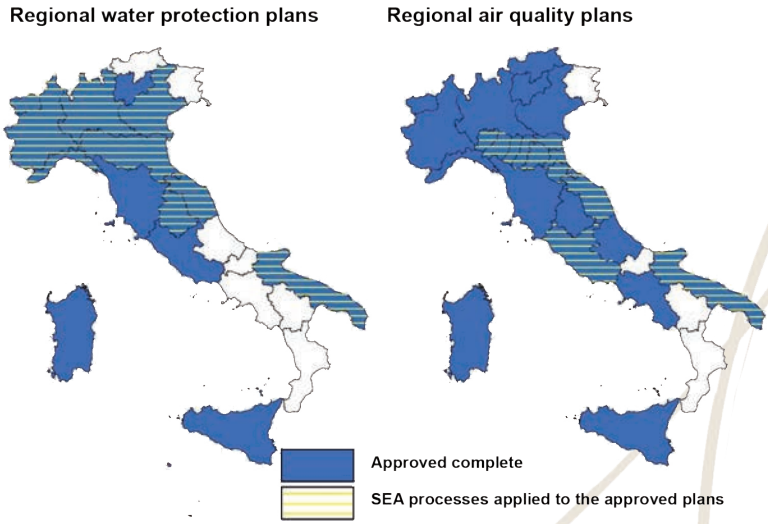
## Geographical distribution of complete waste and land management plans, approved and to which the SEA process has been applied (Nov 2011)




Source: ISPRA

With regard to the number of approved complete plans (with or without the application of SEA processes), waste management plans feature a high level (20/21), while energy and air quality plans feature a medium-to-high level (17/21). The response level is lower for the other types of plans (13-14/21)

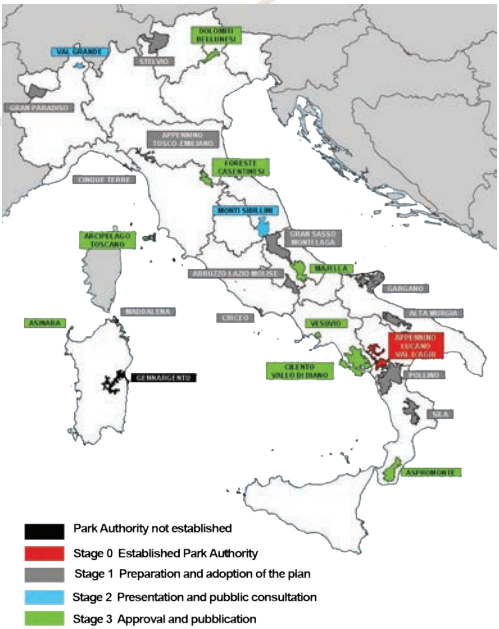
## Geographical distribution of complete water protection and air quality plans, approved and to which the SEA process has been applied (Nov 2011)




**Source:** ISPRA

Emilia-Romagna is the region with the highest number of complete plans, approved applying the SEA process, while Molise has not yet started any SEA process for the examined plans.
Valle d'Aosta, Province of Trento, Emilia-Romagna, Toscana, Umbria and Marche have fully approved all the examined plans, while Molise, Campania, Basilicata and Calabria have approved 3 plans and adopted 1.

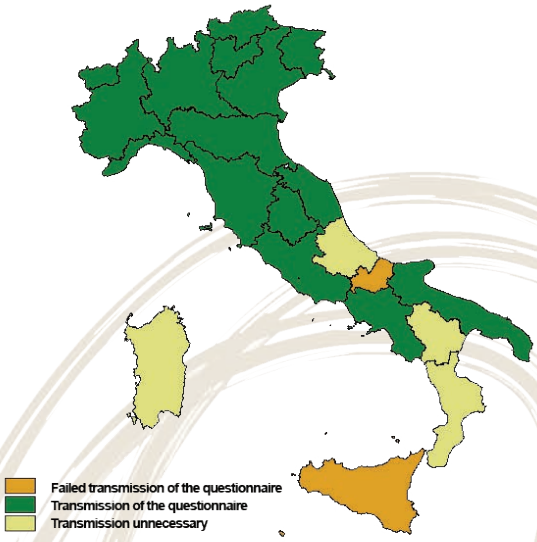
## National Parks Plans by implementation progress (updated to 31/12/2010)




**Source:** Data collected at national and regional levels and by the park authorities processed by ISPRA

Overall, the National Parks Plans implementation progress trends can be considered rather successful.
42% of Parks is currently in the most advanced stage of implementation (Stage 2: Presentation and public consultation, and Stage 3: Approval and publication).

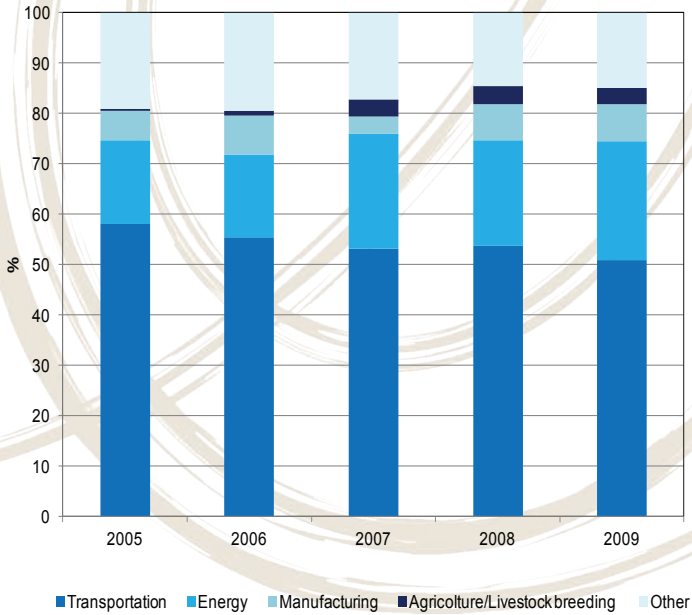
## Transmission of information on the air quality plans (2009)




**Source:** Data collected by the regions/autonomous provinces and processed by ISPRA

The transmission of information on the air quality plans by the regions and autonomous provinces is running behind the schedule envisaged in the applicable regulations, moreover there are significant shortcomings also with regard to the assessment of the effectiveness of the measures, in terms of both emissions reduction and air quality improvement.
Based on the analysis of the rehabilitation measures, it can be concluded that most of them have been applied in the transportation sector.

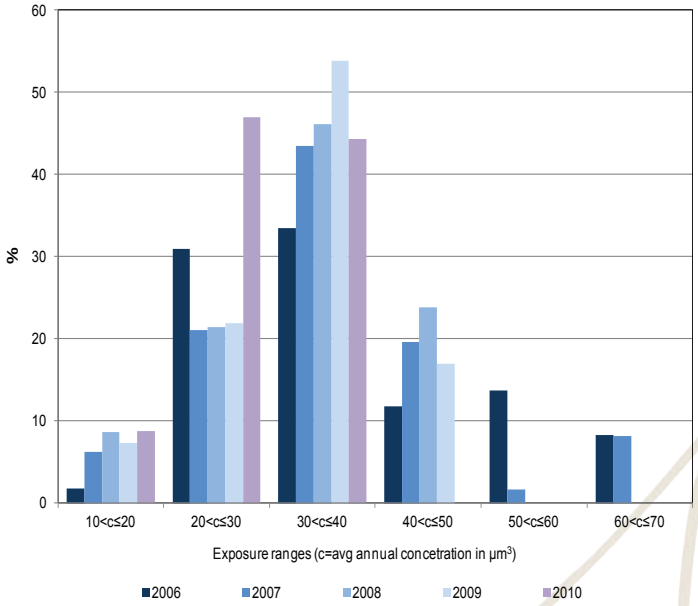
## Sectoral breakdown of the implemented rehabilitation measures




Between 2005 and 2009, the sector most concerned by the rehabilitation measures was the transportation sector, although a downward trend can be observed in this sector, while there was an increase in the energy and agriculture/livestock breeding sectors.

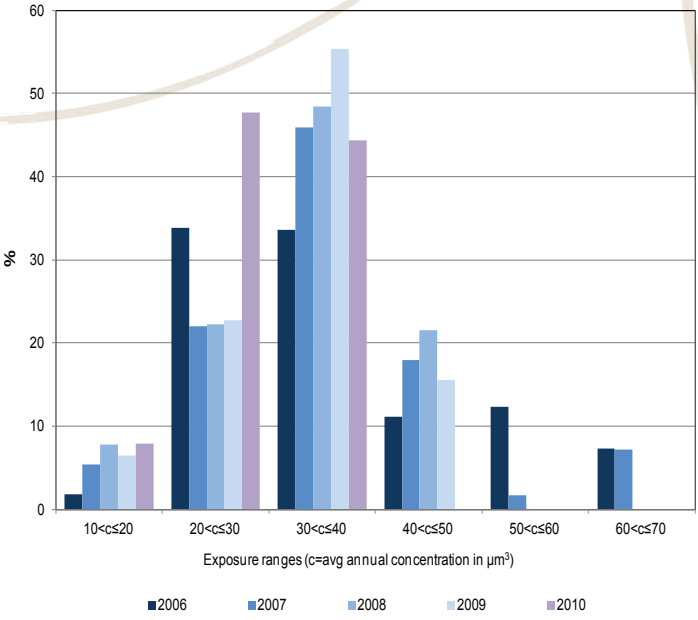
**Source:** ISPRA

## Population exposed to $PM_{10}$ concentration ranges




**Source:** ISPRA and ISTAT data processed by ISPRA

## Population aged below 20 exposed to concentration ranges of $PM_{10}$

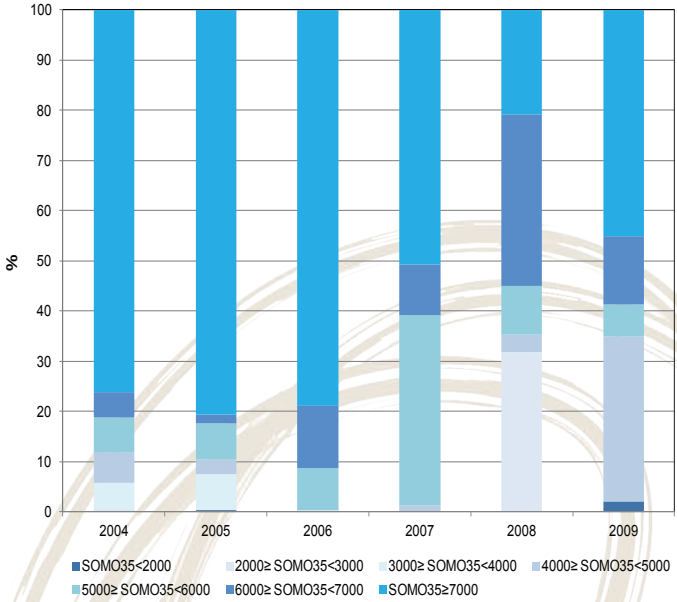



**Source:** ISPRA and ISTAT data processed by ISPRA

Many studies have been highlighting, for several years now, the association between the levels of atmospheric pollutants to which the population is exposed and a series of negative effects on health. Exposure to particulate matter (especially the smaller particles, PM10 and PM2.5) is the air quality indicator most consistently associated with harmful effects on health.

Children and teenagers belong to a social group that is particularly sensitive to the effects of pollution.
Their greater sensitivity is due to the biological characteristics of the different stages in the development of human beings, from conception to adolescence, as well as to social variables.

## Population aged below 20 exposed to ozone ranges (SOMO35)




**Source:** AEA and ISTAT data processed by ISPRA

Exposure to ozone may intensify the conditions of people suffering from chronic respiratory diseases.
There is scientific evidence of an increased frequency of hospitalization for asthma and COPD, increased hospital consulting for asthma and respiratory diseases, reduction in the respiratory disturbance indices, and the onset of respiratory symptoms after exposure to ozone.

## LEGAL INFORMATION



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