

2.13 URBAN ENVIRONMENT



The city is the human race's native ecosystem, an artificial environment which, through its creation and operation, generates an immense ecological footprint, but where the battle for sustainability must be waged.

In its drive towards urban sustainability, facing up to the environmental challenges to be overcome by Europe's towns and cities in terms of their populations' health and quality of life, while also focusing on economic performance and social cohesion, the EU, in accordance with the guidelines of the Sixth Community Environment Action Programme, approved the "Thematic Strategy on the Urban Environment" (COM 2005, 708 final) in January 2006. It presents Member States with measures with which to turn towns and cities into places where people can live, work and engage in activities in a pleasant and healthy manner whilst minimising the environmental impact involved.

In accordance with the guidelines of the European Thematic Strategy, Spain has produced an Urban Environment Strategy⁽¹⁾ (*Estrategia de Medio Ambiente Urbano*) with a local focus. This is sponsored by the Spanish Ministry of the Environment (*Ministerio de Medio Ambiente*) and will be implemented in partnership with the Network of Sustainable Local Development Networks (*Red de Redes de Desarrollo Local Sostenible*)⁽²⁾,

(1) Spanish Ministry of the Environment, Network of Sustainable Local Development Networks, 2006: "Urban Environment Strategy".

(2) For further information about the Network of Local Development Networks, see the "Sustainable Local Development" indicator in this chapter.



INDICATOR	GOAL	TREND
Urban pressure on land	Achieve a sustainable balance in land use	Urban pressure continues to increase, growing at levels above the national average in eight Autonomous Communities
Air quality in the urban environment	Maintain within established limits	PM ₁₀ particles and NO ₂ are the only legally regulated pollutants above established limits
Environmental noise	Maintain within established limits	The first noise maps are to be produced in 2007 in accordance with the Noise Act 32/2003 (<i>Ley 32/2003 de Ruido</i>)
Monumental heritage of Spain's cities	Ensure heritage sites are comprehensively protected	The number of 'SIC' designations continues to increase in all categories except Historic Gardens
Local mobility and passenger transport	Promote less polluting modes of transport	Increase in the number of journeys by public transport (net figure) in all metropolitan areas, but also growing dependence on private transport
Sustainable Local Development (SLD): towns and cities registered with the 'Network of Networks'	Undertake local sustainability commitments	Almost 20 million citizens are covered by this initiative

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the final document of which was approved by the Plenary Session of the Network of Networks, held in Albacete on 15 June 2006. This document covers the challenges facing today's society in the four areas specified in the European Thematic Strategy: town and country planning, transport, construction and urban management. It also adds a section on the relationship between the rural and urban environments in order to establish guidelines to lead Spain's villages, towns and cities towards a more sustainable situation. For each of these fields, the Strategy defines the current conflicts, causes and trends, targets and guidelines, and provides a specific model as an example. It also develops instruments for implementing these, in particular:

- The Green Paper on the Urban Environment (*El Libro Verde de Medio Ambiente Urbano*)
- The Knowledge Portal (*El Portal del Conocimiento*)
- A training plan
- A system of indicators
- Research, development and innovation

As of 2007, Spain has an Interministerial Commission, involving the Ministry of Public Works (*Ministerio de Fomento*) (represented by the Spanish Centre for Public Works Studies and Experimentation (CEDEX - *Centro de Estudios y Experimentación de Obras Públicas*)), the Ministry of Housing (*Ministerio de la Vivienda*), the Spanish Institute for Energy Saving and Diversification (IDAE - *Instituto para la Diversificación y Ahorro de la Energía*), the Ministry of Public Administration (*Ministerio de las Administraciones Públicas*) and the Ministry of the Environment, which is producing a further "Spanish Urban and Local Sustainability Strategy (EESUL - *Estrategia Española de Sostenibilidad Urbana y Local*), which will be submitted to the Spanish cabinet for approval. This proposal is based on the aforementioned (European and local) strategies and covers two major legislative projects: the Land Act Reform Bill (*Proyecto de Reforma de la Ley del Suelo*) and the Spanish Building Code (*Código Técnico de la Edificación*), which are described in brief below.

Land Act Reform Bill

Although urban growth continues to be necessary, it seems clear today that town and country planning must meet the requirements of sustainable development, minimising the impact of growth through a commitment to regenerating existing towns and cities. This is the philosophy behind the proposed reforms to Spain's Land Act, first of all regulating the basic conditions to guarantee equal rights and duties concerning land use, and secondly establishing the financial and environmental bases for the legal framework. In light of the considerable urban development pressures seen today, the Bill could serve as a powerful instrument in curbing property speculation and rises in house prices.

The aims of the Land Act Reform Bill cover four main areas: increasing transparency in the sector and citizens' involvement in the process of making and overseeing town planning decisions; establishing urban policy on the basis of sustainable urban development; guaranteeing greater effective provision of land for social housing; and increasing the efficiency of the land market, curbing property speculation, as required by the Spanish Constitution.

The Bill also includes measures to increase the actual availability of social housing, increasing access to those who find themselves excluded from the open market and requiring a minimum of 25% of new residential land to be set aside for such projects. It also establishes a new band of capital gains tax on property that Autonomous Communities will generally be able to set at between 5% and 15%.

From an environmental point of view, the most significant reforms are the focus on preserving the rural environment, rational use of natural resources, efficient land use and compulsory strategic assessment of development plans, with a requirement that the process involve environmental sustainability reports, natural hazard maps, reports from water authorities and, in developments affecting the coast, a coastal demarcation plan.

New regulatory framework governing building

The need to improve conditions in the urban environment also involves guaranteeing building quality, and the Spanish Ministry of Housing made one of its priorities a review of the regulations governing this sector, drawing up proposals which resulted in the Spanish Building Code. This Code establishes the framework for basic requirements covering buildings and their facilities in order to comply with the terms of the Planning and Building Act 38/1999 (LOE - *Ley 38/1999 de ordenación y edificación*), of 5 November, and so guarantee personal safety and environmental protection. The core of the Building Code centres on three aspects:

- Building functionality.
- Building structure safety.
- Habitability: hygiene, health, noise protection, environmental protection, energy saving and heat insulation.

The Building Code, approved in Royal Decree 314/2006 (*Real Decreto 314/2006*), of 17 March, came into effect on the 29th of the same month and included two transitional periods. The requirements covering energy saving, user safety and fire prevention were mandatory from 2006, with the remaining regulations covering building structure safety and health and hygiene coming into force from 29 March 2007, although the noise protection regulations, scheduled for 2007, are still pending approval.

Noise pollution: a significant environmental problem

Environmental noise is another problem with a major impact on quality of life. In recent surveys, noise problems have often been listed among the public's greatest concerns, alongside climate change.

The Spanish Ministry of the Environment, taking its lead from the Noise Act 37/2003 (*Ley 37/2003, del Ruido*) passed by Royal Decree 1513/2005 (*Real Decreto 1513/2005*) and the corresponding legal regulations (awaiting submission and approval), is developing and implementing basic legislation with which to assess and manage environmental noise. This has involved the transposition in full of Directive 2002/49/EC, with considerable efforts being devoted to the production of strategic noise maps that will be used in drawing up and developing action plans to tackle environmental noise issues. The initial findings of the strategic noise maps, produced in cities with more than 250,000 inhabitants and in areas around road, rail and airport infrastructure, are expected during 2007.

NOTES

- Contributions to production of the Building Code were made by: the Eduardo Torroja Institute of Construction Science (CSIC - *Instituto de Ciencias de la Construcción Eduardo Torroja*), the Spanish Centre for Public Works Studies and Experimentation reporting to the Ministry of Public Works, the Spanish Institute for Energy Saving and Diversification, the Valencian Institute of Building (*Instituto Valenciano de la Edificación*), the Castile-Leon Institute of Construction (*Instituto de la Construcción de Castilla y León*), LABEIN, and the Catalonian Institute of Construction (*Instituto de la Construcción de Cataluña*), along with a number of universities, construction industry experts and professional associations from within the sector.

SOURCES

- Communication of the Commission of 11 January 2006, on a Thematic Strategy on the Urban Environment [COM (2005) 718 final].
- European Commission, EEA, Joint Research Centre. Urban sprawl in Europe: The ignored challenge, 2006.
- Spanish Ministry of the Environment. European Mobility Week: In town without my car! 2005 (*Semana Europea de la Movilidad ¡La ciudad sin mi coche; 2005*). Final report. 2006.
- Bases for the assessment of sustainability in urban projects (*Bases para la evaluación de la sostenibilidad en proyectos urbanos*). Spanish Ministry of the Environment, 2003.
- Spanish Ministry of the Environment and Network of Sustainable Local Development Networks, 2006: Urban Environment Strategy. – 47 pp. General Catalogue of Official Publications (*Catálogo General de Publicaciones Oficiales*).
- Ministry of Housing. Directorate General for Architecture and Housing Policy (*Dirección General de Arquitectura y Política de Vivienda*) [s.a.]. Spanish Building Code: Building safety, habitability and sustainability regulations (*Normativa de seguridad, habitabilidad y sostenibilidad de las edificaciones*). - 20 pp.
- Ministry of Housing. Land Act Reform Bill and Opinions. Approved by the Spanish cabinet on 14 July 2006 and presented before the Spanish Parliament.

FURTHER INFORMATION

- www.mma.es
- www.vivienda.es
- www.habitat.aq.upm.es
- www.europa.eu/scadplus/leg/es/lvb/128171.htm
- www.codigotecnico.org

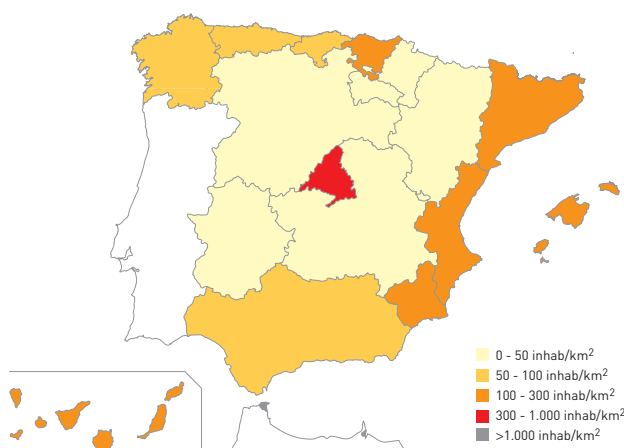
Urban pressure on land

Pressure exerted by demographic growth in towns of more than 10,000 inhabitants has risen by 10% on average since 2001

URBAN DENSITY BY AUTONOMOUS COMMUNITY, 2005 (INHAB/KM²)

Population in towns of more than 10,000 inhabitants in proportion to area of Autonomous Community

Autonomous Community	Urban density 2005	Rate of change compared with 2001
SPAIN	67.86	+ 10.07 %
Andalusia	70.45	+ 9.13 %
Aragon	18.10	+ 5.89 %
Asturias	87.38	+ 1.82 %
Balearic Islands	161.29	+ 21.13 %
Canary Islands	233.18	+ 19.72 %
Cantabria	72.06	+ 8.23 %
Castile-Leon	14.91	+ 4.12 %
Castile - La Mancha	12.25	+ 11.60 %
Catalonia	175.7	+ 11.61 %
Valencia	165.70	+ 15.98 %
Extremadura	12.46	+ 10.97 %
Galicia	62.43	+ 3.60 %
Madrid	698.32	+ 9.58 %
Murcia	110.25	+ 12.68 %
Navarre	30.24	+ 9.48 %
Basque Country	236.28	+ 1.60 %
Rioja	38.22	+ 15.49 %
Ceuta and Melilla	4,398.88	+ 2.07 %



Source: INE. Municipal Register as at 01/01/2006

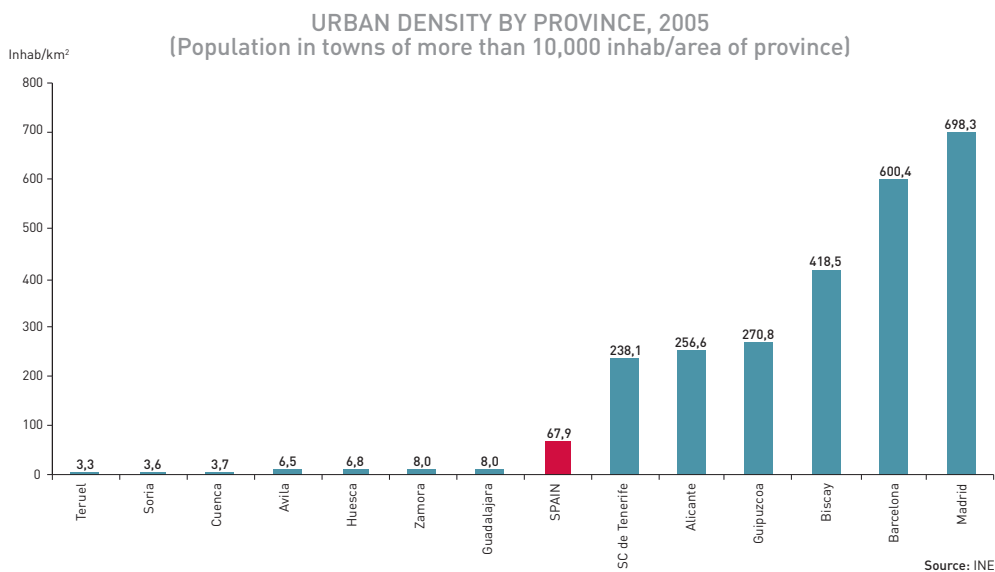
Since the 1970s, the urban population in towns of more than 10,000 inhabitants has risen ceaselessly, growing with particular intensity in the period examined here, 2001–2005, as seen in the rates of change. This indicator measures the pressure exerted by population centres with more than 10,000 inhabitants on the land in their respective Autonomous Community. The population living in towns of less than 10,000 inhabitants (rural population) is not taken into consideration, although the boundaries between the urban and rural environments are increasingly blurred as a result of the new model of scattered residential development through which Spain's towns and cities are growing. As a sub-indicator, this pressure is also presented in terms of its effect on a provincial scale. This indicator was calculated using the Census of Population and Housing (*Censo de población y vivienda*) figures for 2001, together with those included in the Municipal Register as at 1 January 2006,

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which provides figures for 2005, in order to give an idea of population growth in Spain over this five-year period. There is a considerable discrepancy between these figures, since the influx of migrants into Spain was not properly recorded in the 2001 Census.

As can be seen in the table below, the highest urban density is to be found in the autonomous cities of Ceuta and Melilla (4,398.88), followed by Madrid (698.32), the Basque Country, Canary Islands, Catalonia, Valencia, the Balearic Islands and Murcia. Extremadura is at the other end of the scale (12.46), preceded by Castile-La Mancha, Castile-Leon, Aragon, Navarre and Rioja.

The rate of change since 2001 is particularly significant, with the highest figures coming from those Autonomous Communities seeing the biggest influx of immigrants, as reflected in the figures provided by the Spanish National Institute of Statistics (INE - *Instituto Nacional de Estadística*) in the Municipal Register as at 1 January 2006. The national average is 10.07%, with eight Autonomous Communities above this figure: Balearic Islands (21.13%), Canary Islands (19.72%), Valencia (15.98%), Rioja (15.49%), Murcia (12.68%), Catalonia (11.61%), Castile-La Mancha (11.60%) and Extremadura (10.97%). Those with the lowest growth rates are: the Basque Country, Asturias, Galicia, Castile-Leon and Ceuta and Melilla. In the latter case, the saturation of these two cities and the extremely high degree of urban pressure they exert on the surrounding land, explain the low rate of change.



By province, Teruel, Soria, Cuenca, Avila, Huesca, Zamora and Guadalajara exert the lowest urban pressure on the land, and also have fairly low rates of change since 2001, despite some slight increases (for example, Guadalajara rose from 7.28 in 2001 to 8.01 in 2005), probably as a result of its proximity to Madrid. At the other end of the scale we have Madrid, Barcelona, Biscay, Guipuzcoa, Alicante and Santa Cruz de Tenerife, with high or very high rates of change.

NOTES

- INE. Advance figures for the Municipal Register (*Padrón Municipal*) as at 1 January 2006. Provisional data. Press release, 25 July 2006. Concerning the number of non-Spanish citizens resident in Spain (3.88 million), it should be remembered that this has for the first time been calculated in accordance with the regulatory modification brought in by Organic Law 14/2003 (*Ley orgánica 14/2003*), of 20 November, making it compulsory for non-EU residents without a permanent residence permit to renew their municipal registration every two years.

SOURCES

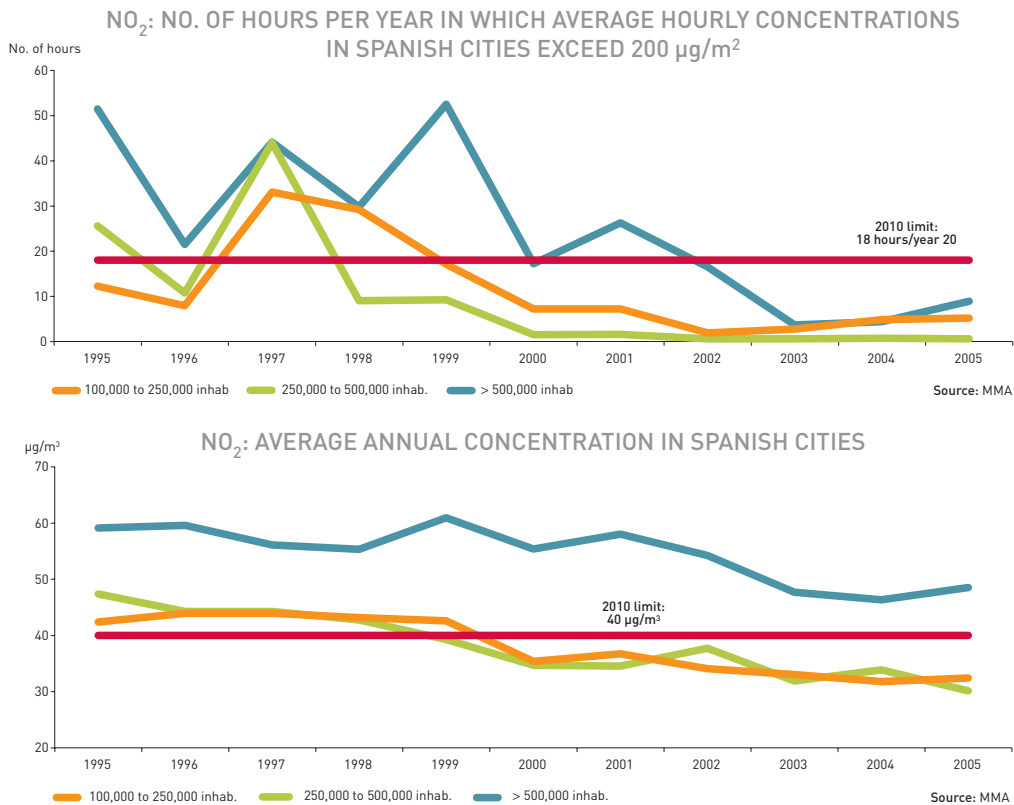
- INE. Census of Population and Housing, 2001.
- INE. Municipal Register as at 1 January 2006.
- Geographic area: INEbase figures.

FURTHER INFORMATION

- www.ine.es

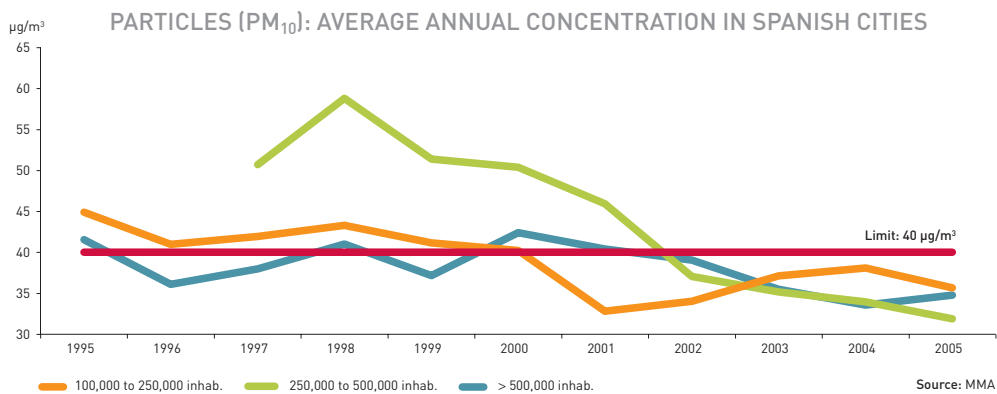
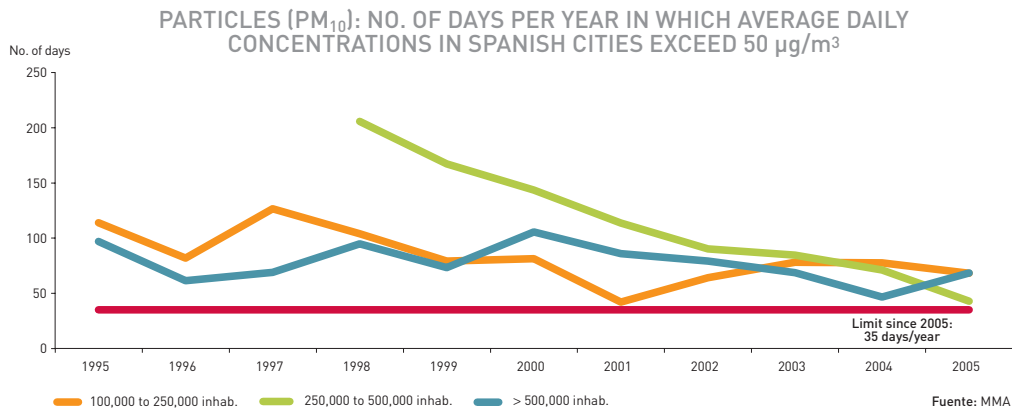
Air quality in the urban environment

PM₁₀ particles and NO₂ are the only legally regulated pollutants present in quantities above established limits



For all Spanish cities in the three population size bands there is a positive trend in nitrogen dioxide concentration levels. Firstly, the limit set for 2010 of 18 hours per year with levels above 200 µg/m³ has scarcely been exceeded since 2000. Secondly, the average annual concentration of this pollutant has fallen practically every year for each of the three groups, and has been below the limit set for 2010 every year since 2000 in all cities of less than 500,000 inhabitants.

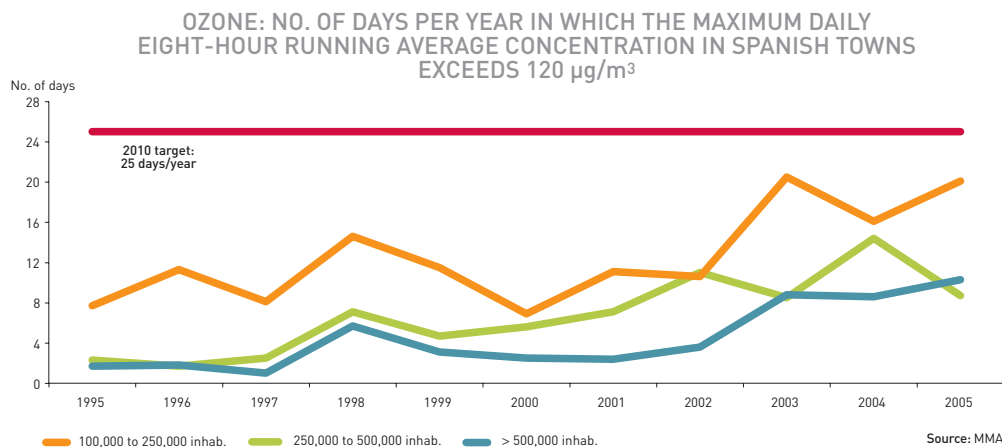
The limit established for this pollutant in Royal Decree 1073/2002 (*Real Decreto 1073/2002*), applicable from 2010 onwards, essentially states that the concentration must not rise above 200 µg/m³ for more than 18 hours per year, and must remain below an average annual concentration of 40 µg/m³.



The average annual concentration of PM₁₀ reveals a clear downward trend, with figures below the established limit for each of the three groups every year since 2001. Meanwhile, although the number of days when levels of 50 µg/m³ of PM₁₀ are exceeded is clearly declining, the limit set for 2005 is still being breached.

It should be remembered that Spain's proximity to the African continent means that it receives dust from North Africa at certain times of the year. Moreover, due to Spain's climatic conditions, which produce limited rainfall over much of the country's geography, natural means of removing particulate matter from the environment (produced, for example, by tyre wear) are not as effective as they are in other countries, leading to an increase in particulate matter concentration in the air.

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In general, ozone concentration levels are not particularly high in inner-city areas, with such pollution being more evident in regions far from the source of precursor emissions. However, there is a rising trend, albeit with occasional fluctuations, in the number of days per year in which concentration exceeds 120 $\mu\text{g}/\text{m}^3$ (the target health protection figure which will enter into force in 2010), for all of the population bands analysed.

Ozone precursors have a greater oxidising effect at higher temperatures, meaning that the summer months and the middle of the day, when solar radiation is more intense, tend to witness increases in ozone concentration. This is when public alert and warning procedures need to be activated so as to enable exposure prevention measures to be taken.

NOTES

- It is difficult to describe a city's air quality using a single indicator, and this difficulty increases if one attempts to describe aggregate air quality for all of Spain's cities. Any attempt to provide an average value to represent a broad area using values obtained from a non-uniform series of monitoring stations distributed in accordance with varying criteria is inevitably subject to the risk of producing inaccurate interpretations. The location and type of monitoring station (background, traffic, industrial, etc.), maintenance and calibration of the analysers, and the number of monitoring stations taken to produce average values are just some of the aspects which affect calculation of the variables, and thus the final indicator which one is attempting to calculate.
- The indicator monitors the variables covered by the European Common Indicators (ECI) Project, and shows changes over time in excess values for NO_2 , PM_{10} , and ozone, together with average annual concentration levels for the first two, comparing them with the target and limit values set for 2005 and 2010 under current legislation: Royal Decree 1073/2002 on nitrogen dioxide (NO_2) and particulate matter smaller than 10 μ (PM_{10}), and Royal Decree 1796/2003 (*Real Decreto 1796/2003*) on ozone.
- The graphs show the figures for cities of more than 100,000 inhabitants (according to the 2005 Municipal Register). Grouped together in the three categories below, these may be representative (in average terms) of air quality in these cities, and so reflect the quality of the air breathed by more than 17 million of Spain's inhabitants:
 - Cities of between 100,000 and 250,000 (6,982,662 inhabitants)
 - Cities of between 250,000 and 500,000 (3,299,469 inhabitants)
- The following methodology has been used for each pollutant and year:
 - The indicator for each city of more than 100,000 inhabitants was obtained, averaging the value of the indicator at each monitoring station with more than 85% of annual data (50% to estimate annual averages)
 - The indicator average was obtained for each population range.

- The total number of monitoring stations considered in calculating the indicators varied throughout the period under consideration (1995-2005). This is because stations are currently being relocated to comply with criteria established by current legislation. However, there are still many monitoring stations, especially in large cities, in areas known as 'hot spots' that only measure traffic. It would be better to follow the rest of the EU in having more 'background' stations (monitoring all types of pollution including traffic, domestic and industrial) so as to provide a more representative picture. The changes in the number and type of monitoring stations used to obtain the indicators over the period 1995-2005 are as follows, revealing once again an increase in the number of background stations and a reduction in traffic stations:

BREAKDOWN OF AIR QUALITY MEASURING STATIONS BY TYPE (%) AND YEAR

Year	Industry	Traffic	Background
1995	17.8	75.4	6.8
1996	17.3	75.7	7.0
1997	19.6	74.9	5.5
1998	19.3	75.2	5.5
1999	17.3	76.6	6.0
2000	15.4	75.6	9.0
2001	16.4	75.0	8.6
2002	14.9	71.6	13.4
2003	11.1	69.8	19.0
2004	11.6	65.1	23.3
2005	11.8	60.2	28.0

- It is important to highlight that modifying monitoring stations' location, in accordance with legislative recommendations to make them increasingly representative, has a notable impact on the indicator and the trends shown by the same. It should also be remembered that the analysis does not include changes in concentrations of SO₂ and CO (which were covered by previous editions), essentially as a result of the apparent absence of problems involving these substances. Use of low-sulphur fuels and the replacement of coal-burning boilers with natural gas units, among other measures, have led to an improvement in air quality in terms of SO₂ concentration and it has been some years since the limits set for 2005 have been exceeded.
- With regard to the source of tropospheric ozone, it is known that urban areas generate the primary pollutants (above all through traffic) which are responsible, following a series of chemical processes (conditioned by high temperatures and solar radiation) for ozone production. These precursors or primary pollutants, having been transported out of cities by the wind, produce an increase in ozone concentrations, with pollution becoming evident as a problem in suburban and rural areas, where the highest levels of the pollutant are to be found.

SOURCES

- Air Quality Database (*Banco de Datos de Calidad del Aire*). Directorate General for Environmental Assessment and Quality (*Dirección General de Calidad y Evaluación Ambiental*). Spanish Ministry of the Environment.

FURTHER INFORMATION

- www.mma.es
- www.eea.europa.eu

Environmental noise

Strategic noise maps covering cities of more than 250,000 inhabitants and major transport infrastructure must be in place by 2007 in order to comply with environmental noise legislation

According to recent Ombudsman reports, noise is one of the most common causes of complaint within the urban environment. Many of these complaints are based on citizens' right to enjoy a decent quality of life, a situation corroborated by various surveys conducted by the Eurobarometer, as well as by the most recent survey on living standards, quality and conditions published by the Spanish National Institute of Statistics (INE).

The Noise Act 37/2003 and the implementation of this legislation are expected to have a significant impact on future developments, greatly improving the current situation and preventing new, undesirable situations from occurring.

Royal Decree 1513/2005, for example, which serves to develop the Noise Act in terms of the assessment and management of environmental noise, defines the noise indices L_{den} and L_n for assessing overall and sleep disturbance levels respectively. The definition of environmental noise and its negative impact on the population are also developed, together with a series of measures with which to achieve the planned targets, establishing an action schedule and setting the minimum contents of strategic noise maps and action plans, as well as the information which must be available to the public.

Basic Noise Pollution Information System (SICA - *Sistema básico de información de la contaminación acústica*)

In order to improve the information available about noise pollution, and compile the necessary data regarding strategic noise maps and action plans, the Spanish Ministry of the Environment has set up a basic noise pollution information system (SICA). The SICA comprises a Data Reception, Analysis and Processing Centre, with a range of responsibilities involving notifying the competent authorities of information received, compilation and publication of information and noise pollution research⁽³⁾.

Regulatory development of the Noise Act will be completed with a new Royal Decree, now in its final procedural stages, defining noise and additional vibration indices, applications, public impact and disturbance, demarcations of different types of area and acoustic buffer zones, and also establishing the applicable noise quality targets both for noise areas and

⁽³⁾ The responsibilities of the SICA's "Reception, Analysis and Data Processing Centre" are described in the notes.

the space within certain buildings, including 'noise sources', setting emission and immission limits and regulating noise and vibration assessment procedures and methods.

Of particular significance is the work carried out by the Spanish Ministry of Public Works, in partnership with the Ministry of the Environment, to meet Spain's commitments deriving from application of Directive 2002/49/EC, relating to the assessment and management of environmental noise, in terms of the requirements to draw up strategic noise maps for major transport infrastructure.

Strategic noise maps: a response to the problem

In accordance with these requirements, the Ministry of Public Works, through the Directorate General for Highways (*Dirección General de Carreteras*), is obliged to produce strategic noise maps for almost 6,000 km of the State Highways Network (*Red de Carreteras del Estado*). One of the main difficulties encountered in implementing this legal mandate was that there had not previously been any specific method for drawing up such maps which could be adapted to the requirements of the Directive. In order to remedy this deficiency, preliminary studies were conducted, on the basis of European Commission documents, making it possible to define a complete methodology for producing these maps and establish quality control procedures to ensure that the entire mapping system is uniform and follows the same criteria and presentational formats.

In the first application phase of the Directive, strategic noise maps are being produced for the State Highways Network and are designed to provide an overall assessment of exposure to noise in a given area. They comprise two separate parts: sound level map and noise exposure map.

The basic information and results are to be included in a Geographic Information System (GIS) which will structure the information into different layers with associated databases, allowing for both use and dissemination over the Internet. The entire process will conclude with the strategic noise maps being submitted by the Directorate General for Highways to the Spanish Ministry of the Environment by June 2007.

Pilot study: strategic noise map for the A-42 (Madrid-Toledo)

The section of motorway covered by this pilot study affects the Autonomous Communities of Madrid and Castile-La Mancha and passes through 23 municipal districts. It is a high-capacity radial road connecting the metropolitan area of Madrid and the provincial capital of Toledo, while also linking major urban areas of South Madrid and its extensive industrial estates. The motorway has junctions with or links to numerous infrastructure projects.

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STRATEGIC NOISE MAP FOR THE A-42 MOTORWAY (MADRID-TOLEDO, KM 4.320 TO 76.140) Summary of main findings

dB(A)	dB(A) Area exposed (km ²)	No. of housing units exposed	No. of hospitals exposed	No. of schools exposed
55	89.00	8,100	1	38
65	23.52	1,300	1	10
75	6.46	200	0	1

Source: Spanish Ministry of Public Works. Directorate General for Highways, 2005

In order to assess traffic noise, the motorway was sub-divided into 11 sections and the following parameters were taken into consideration: length, vehicles/day, speed and intensity of traffic of both heavy and light vehicles (morning, afternoon and night). The first few sections lie within a highly dynamic environment (the municipalities of Getafe, Fuenlabrada and Parla), which are experiencing considerable urban growth and have many sources of noise other than the motorway itself. Noise impacts have also been recorded in other municipalities (Torrejón de la Calzada, Olías del Rey) and in a number of scattered residential developments. In the city of Toledo, urban areas are better protected against noise pollution by their positioning.

Prior to the study, a number of corrective measures (noise barriers, in particular embankments and acoustic screens) had been implemented along the A-42 to minimise the motorway's noise impact on certain residential areas.

Main findings

The information obtained is presented as a series of maps portraying noise levels around the A-42, together with information about the population and housing units exposed. Comparative data analysis was performed for each of the municipal districts covered by the study, defining the most problematic areas in terms of environmental sound quality. Certain reference values were adopted for this analysis, pending definition of target values

POPULATION EXPOSED TO VARYING L_{den} AND L_n VALUES (MADRID-TOLEDO MOTORWAY, KM 4.320 TO 76.140)

VALUES	L_{den}		L_n	
	No. of people	% of total	No. of people	% of total
55-60	15,900	65.43	7,700	58.33
60-65	4,500	18.52	3,000	22.72
65-70	2,500	10.29	1,700	12.88
70-75	800	3.29	700	5.30
75	600	2.47	100	0.75
	Total: 24,300	100	Total: 13,200	100

Source: Spanish Ministry of Public Works. Directorate General for Highways, 2005

in adoption and implementation of the Noise Act. This pilot study adopted the more restrictive indicator (L_n , with a threshold of 55 dB for residential areas)⁽⁴⁾. Getafe is the only municipality in which the population living in four districts⁽⁵⁾ is exposed to L_n levels of more than 70 dB. The remaining municipalities have a smaller exposed population, in general corresponding to a lower number of buildings. Those affected buildings classified as “sensitive” include two hospitals (in Getafe and Toledo), as well as several educational centres in three municipalities, which are exposed to levels of more than 60 dB during the day.

NOTES

- The Basic Noise Pollution Information System, run by the Ministry of the Environment, comprises a Data Reception, Analysis and Processing Centre, with the following remit:
 - a) Notify the competent authorities of information received at the established intervals.
 - b) Establish standardised formats and process information to be communicated to the European Commission.
 - c) Compile information regarding the competent authorities in drawing up strategic noise maps and action plans.
 - d) Compile information regarding the strategic noise maps and action plans.
 - e) Produce and manage a telematic system providing the public with information on noise pollution.
 - f) Produce and publish studies into noise pollution, and good practice guides for the assessment and management of noise pollution.
- A strategic noise map is designed to provide an overall assessment of noise exposure in a specific area, and comprises two separate parts:
 - a) **Sound level maps:** these present isophonic contours produced by calculating sound levels at receptor points covering the entire area studied, these calculations being performed in accordance with specified conditions.
 - b) **Noise exposure maps:** these depict data concerning buildings, housing units and population exposed to certain noise levels at the building facade, together with other data required under Directive 2002/49/CE and the Spanish Noise Act.
- The work involved in producing these maps takes place in two stages: first the basic noise maps are drawn up, then the detailed strategic noise maps are created. The first stage serves to produce 1:25000 scale maps and define areas by function (residential, schools and hospitals, and those areas which, in accordance with justified criteria, are to be covered by a detailed map). The second stage, focusing on those urban areas defined in the basic map, involves a more detailed study at 1:5000 scale, compiling any data not sourced in the previous phase, allowing for assessment of emission levels caused by the highway, immission levels in the environment and the noise to which the population is exposed in the area under study. All these indicators are calculated at a height of 4 metres above the ground, with all sound levels using the dBA unit. It is important to remember that these maps assessing the noise levels to which the population is exposed only take into consideration noise generated by the highway. Thus, the aim of the study is not to establish the sound levels existing in the area around the highway, or to define corrective measures.
- The following 23 municipalities were involved in the pilot study: Madrid, Leganés, Getafe, Fuenlabrada, Pinto, Parla, Torrejón de la Calzada, Torrejón de Velasco, Cubas de la Sagra, Casarrubuelos, Illescas, Yeles, Numancia de la Sagra, Yuncos, Yuncler, Cedillo del Condado, Villaluenga de la Sagra, Cabañas de la Sagra, Yuncillos, Magán, Olías del Rey, Bargas and Toledo.

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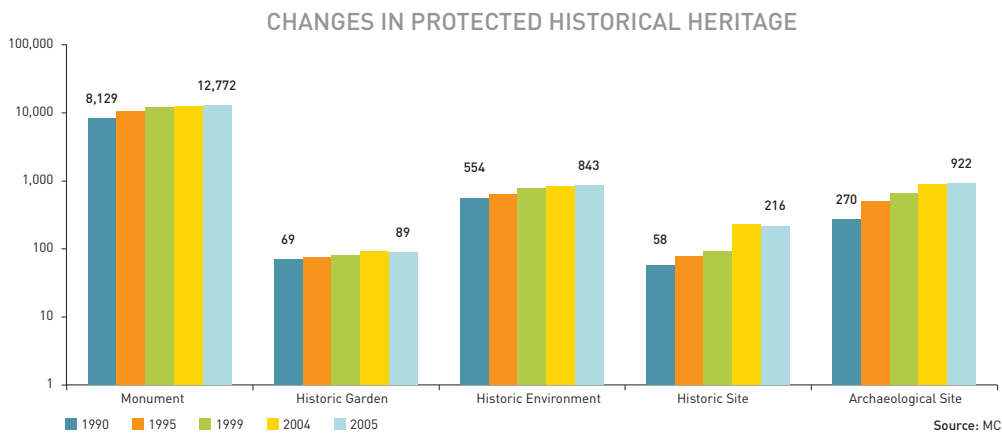
- www.eea.eu.int
- www.europa.eu.int/comm/environment/noise

(4) The more restrictive night time indicator (L_n , with a threshold of 55 dB for residential areas) was adopted as this is the value which has been used for linear infrastructure impact statements, and is recognised in the terms of the Autonomous Community of Madrid’s regional regulations for road traffic.

(5) Districts of Nuevo Hogar, Bañolas, Pablo Iglesias and Getafe 2001, sector III.

Monumental heritage of Spain's cities

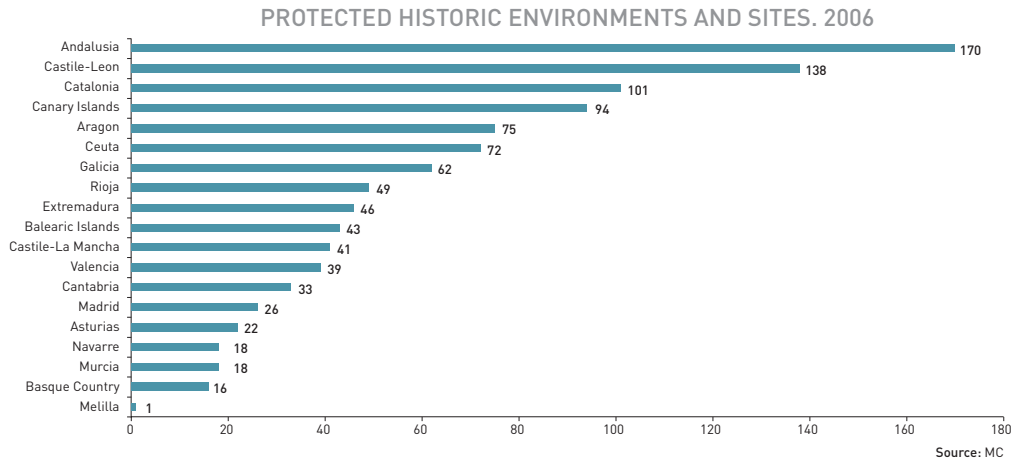
Legal protection applies to more than 12,770 Monuments and 1,059 Historic Environments and Sites, many of them located within towns and cities



The indicator shows the number of Sites of Cultural Interest (*Bienes de Interés Cultural*) (buildings) afforded special legal protection. These sites represent just a small part of Spain's heritage, a legacy of considerable value given the nation's history and the cultural and geographical variety of its regions. Historic Environments (843) and Historic Sites (216) are of particular importance, although the highest figure is that for buildings defined as "monuments" (properties considered in isolation). A very high percentage is located within major towns and cities nationwide.

The total figure of 14,842 included in Spain's Property Register (*Registro de Bienes Inmuebles*) cannot adequately portray the essential nature of historical heritage since, as is well known, its importance is defined not in quantitative but aesthetic, educational and symbolic terms. Comparison with the figures available for 2004 shows a reduction in the number of Historic Gardens, from 91 to 89, and in Historical Environments and Sites, from 1,064 to 1,059.

Since 1990, the move to protect the monuments which make up this heritage has gained considerable impetus. As may be seen in the graph, in the year in question there were 9,080 protected sites (in the five constituent categories), a figure which had risen by 63.45% by 2005. By Autonomous Community, the Balearic Islands has the greatest proportion of Sites of Cultural Interest (SCI) (20.18%), followed by Andalusia (15.34%), Catalonia (14.63%), Castile-Leon (8.48%).



Special reference should be made to the environments declared World Heritage Sites by UNESCO due to the international prestige of this designation and the commitment by both institutions and individuals to their restoration and conservation. Spain heads the worldwide list along with Italy in terms of largest number of nominations (39), the latest addition, in 2006, being the Biscay Bridge (more commonly known as the Portugalete Bridge), the first World Heritage site in the Basque Country. The UNESCO list, in addition to its strictly urban and monumental categories, also includes natural features such as the National Parks of Doñana and Garajonay, and semi-natural sites such as Las Médulas.

UNESCO WORLD HERITAGE SITES IN SPAIN (1984-2003)

“An asset declared a World Heritage Site is a legacy for the international community, and its presence within a particular country requires that country to devote greater imagination, care and expense to its protection and defence.”

- 1984** Güell Park and Palace and Casa Milá
- 1984** Monastery and Site of El Escorial, Madrid
- 1984** Cathedral, Burgos
- 1984** Alhambra, Generalife and Albaicín
- 1984** Historic city centre, Cordoba
- 1985** Monuments of Oviedo and the Kingdom of Asturias
- 1985** Altamira Caves, Cantabria
- 1985** Historic city centre and Aqueduct, Segovia
- 1985** Historic city centre, Santiago de Compostela
- 1985** Historic city centre and churches outside the city wall, Avila
- 1986** and **2001** Mudéjar architecture of Aragon
- 1986** Garajonay National Park
- 1986** Historic city centre, Cáceres

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- 1986** Historic city centre, Toledo
- 1987** Cathedral, Alcazar and Archive of the Indies, Seville
- 1988** Historic city centre, Salamanca
- 1991** Monastery of Poblet
- 1993** Archaeological sites, Merida
- 1993** Royal Monastery of Santa María de Guadalupe
- 1993** The Pilgrims' Way to Santiago de Compostela
- 1994** Doñana National Park
- 1996** Historic fortified city centre, Cuenca
- 1996** Valencia Silk Exchange
- 1997** Palau de la Música Catalana Concert Hall and Sant Pau Hospital, Barcelona
- 1997** Las Médulas, Leon
- 1997** Monasteries of San Millán de Yuso and Suso
- 1998** Cave art of the Mediterranean Arc of the Iberian Peninsula
- 1998** University and historic city centre, Alcalá de Henares
- 1999** Ibiza, biodiversity and culture, Balearic Islands
- 1999** San Cristóbal de La Laguna
- 2000** Archaeological site, Atapuerca
- 2000** Palm groves, Elche
- 2000** Catalanian Romanesque churches of the Boí Valley
- 2000** Roman walls, Lugo
- 2000** Archaeological sites, Tarragona
- 2001** Cultural landscape, Aranjuez
- 2003** Renaissance environments of Úbeda and Baeza
- 2006** Biscay Bridge (or Portugalete Bridge)

Source: UNESCO

NOTES

- The graph showing Monumental Heritage uses a logarithmic scale due to the wide difference between the number of Historic Gardens and Monuments.

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Local mobility and passenger transport

The number of journeys by public transport rose in 2004, although dependence on cars remains strong

Today's urban growth is the source of countless daily journeys, mostly taken by private car. The shift of the economy towards the service sector also generates strong demand for transport of both people and goods, which must necessarily pass through urban centres. In addition, tourist trips are being made increasingly frequently and covering longer distances.

Transport makes up 5.7% of Spain's GDP, consumes 40% of all energy, and accounted for 24.4% of total emissions in 2003. Future transport demands in Spain are expected to increase by an annual average of between 3% and 6% for passengers, and 4.5% and 6% for goods, although this growth will depend to a large extent on changes in GDP and population.

This situation requires a policy capable of directing demand towards lower impact modes of transport, while it also raises the dilemma of reducing passenger and goods traffic without affecting economic growth and the population's needs for accessibility and social interaction. Changes in certain lifestyle choices and the way in which the economic system is organised could make a positive contribution to decoupling growth from mobility.

Metropolitan Areas and Public Transport Authorities (ATP - *Autoridades de Transporte Público*)

Public Transport Authorities have been created in a number of Spanish cities over the course of the last decade to provide a co-ordinated response to problems of transport and mobility in the country's major metropolitan areas. The table shows the basic figures for 13 metropolitan areas with an overall resident population of 18.5 million inhabitants.

These metropolitan areas are a highly heterogeneous group: Madrid and Barcelona are both made up of a central city with a large number of satellite towns, whereas the metropolitan area of Asturias covers both the urban areas of the central belt and extensive rural regions with low population density. In Madrid, the Transport Consortium (*Consortio de Transportes*) covers the entire Autonomous Community, while in Corunna it extends only to the city limits. In the Bay of Cadiz, the area covers 2,000 km² and two urban centres.

According to the third report of the Metropolitan Mobility Monitoring Centre (*Observatorio de la Movilidad Metropolitana*), metropolitan areas have seen both their number of

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inhabitants and hence population density rise since 2002. This demographic increase is taking place on city outskirts, heightening the process of urban dispersion and increased mobility. There is also therefore a consequent increase in the number of journeys made by public transport in all of Spain's metropolitan areas, although in relative terms (for example, number of journeys per inhabitant per year) they are falling, as may be seen in the case of Madrid, where the 279.3 public transport journeys per inhabitant per year of 2002 had fallen to 252.3 by 2004.

BASIC FIGURES FOR METROPOLITAN AREAS CONTRIBUTING DATA TO THE MOBILITY MONITORING CENTRE, 2004

	No. of municipalities	Area (km ²)	MA population (1/12004)	MA density (inhab/km ²)	Main city participating density (inhab/km ²)
Corunna	1	38	242,806	6,389	6,389
Alicante	5	355	413,562	1,165	1,544
Asturias	42	4,907	933,736	190	1,122
Barcelona	164	3,236	4,673,648	1,444	16,174
Bilbao	26	365	878,698	2,409	8,610
Cadiz	7	1,877	629,054	335	21,843
Granada	32	861	426,550	495	2,707
Madrid	179	8,029	5,804,829	723	5,112
Malaga	12	1,228	752,934	613	1,387
Pamplona	17	82	295,432	3,605	7,644
Seville	22	1,397	1,144,837	820	4,994
Valencia	60	1,415	1,664,560	1,177	5,742
Saragossa	35	2,234	712,959	319	601

Source: Metropolitan Mobility Monitoring Centre. Third report, 2006

In terms of number of journeys per year per inhabitant, Madrid continues to head the list, followed by Corunna (248.9), Bilbao (192.6), Barcelona (183.9) and Valencia (109.1). In general, comparison with the 2002 figures reveals a degree of continuity in cities such as Valencia, Seville and Granada, along with a highly significant increase in travel in two metropolitan areas: Bilbao and Barcelona.

As regards the breakdown of journeys by mode of public transport, the 2004 figures reveal that in the most heavily populated areas, city bus services prevail, although in Madrid and Barcelona the Metro is the most frequently used transport mode.

Madrid has also seen an increase in travel by Metro and local rail services (7.38%) as a result of improved and more extensive service, mainly through the extension of Metro lines, alongside an 11.35% reduction in the number of journeys by city/intercity bus. The major investment being made in rail transport in metropolitan areas (above all Madrid and Valencia) helps explain the shift from public road transport to local rail and Metro lines. Together with the increase in demand, there have been significant rises in fare revenue, ranging from 25.5% in Alicante to 5.3% in Valencia.

METROPOLITAN AREAS: ANNUAL JOURNEYS BY PUBLIC TRANSPORT (MILLION) – 2004

	Local rail services	Other rail services*	Metro	Tram	City bus	Intercity bus	Total journeys	Annual journeys/inhabitant (2)
Corunna	-	-	-	-	60,45	-	60,45	248,9
Alicante	-	1,46	-	0,87	19,59	12,47	34,39	81,8
Asturias	8,33	-	-	-	s.d	s.d	8,33	8,9
Barcelona	113,90	33,00	386,30	7,70	207,60	119,80	868,30	183,9
Bilbao (1)	22,00	8,82	73,09	2,20	25,52	36,90	168,53	192,6
B. of Cadiz	3,50	-	-	-	s.d	5,08	8,58	13,6
Granada	-	-	-	-	33,15	9,39	42,54	89,8
Madrid	195,90	-	618,40	-	408,10	262,20	1.484,60	252,3
Malaga	-	-	-	-	9,53	-	9,53	12,6
Pamplona	-	-	-	-	-	31,70	31,70	106,4
Seville	6,06	-	-	-	88,90	13,20	108,16	94,3
Valencia	7,20	-	52,40	5,21	101,10	14,90	183,61	109,1
Saragossa	-	-	-	-	109,90	5,40	114,30	160,3

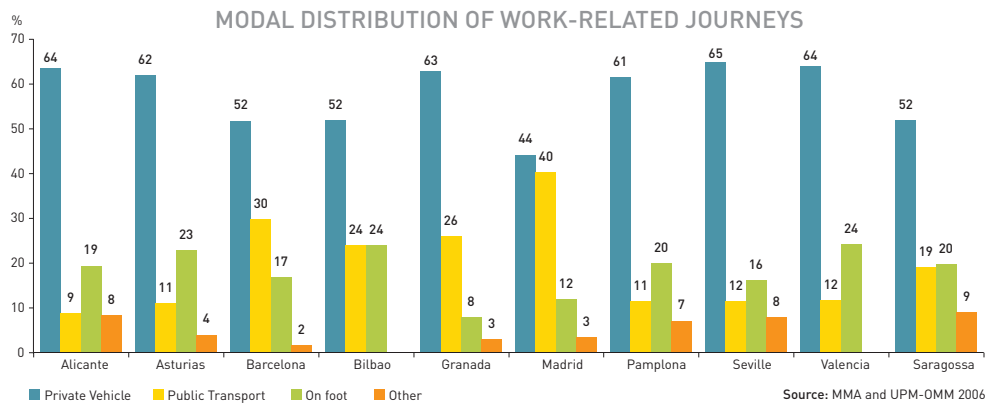
Source: MMA and UPM-OMM

(1) Figures for Biscay

(2) The journey figures for Corunna, Asturias, Bay of Cadiz and Malaga were compiled in-house

Modal distribution of work-related urban journeys

Within metropolitan areas, work-related use of the various transport modes reveals that, except for Barcelona (2001) and Madrid (2004), private vehicles are the most commonly used form of transport, with levels above 50% in all cases. Private vehicles are used relatively less in major cities, which coincides with the denser and more diverse public transport network to be found there.



Work-related journeys by foot scarcely exceed the 30% mark (Barcelona). Nor are there particularly significant figures for the “other modes” recorded in the surveys (bicycle, for example), which reach levels no higher than 9% (Saragossa) in the best case.

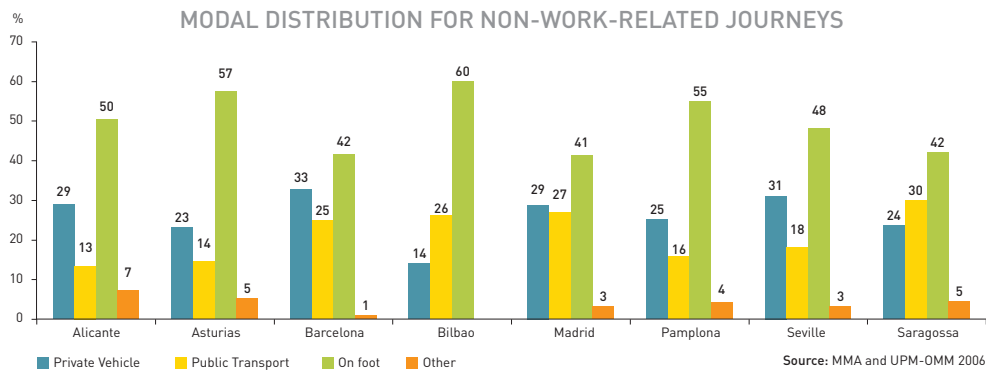
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Modal distribution of non-work-related urban journeys

The modal distribution of journeys not connected with work reveals that city-dwellers prefer to travel on foot (ranging from 60% in Bilbao to 41.3% in Madrid) for leisure, shopping, cultural and sporting events, etc. Public transport use ranges from 13.4% in Alicante to 29.8% in Saragossa, with private transport oscillating between 14% in Bilbao and 31% in Seville.

These figures depend to a great extent on the location of venues for these activities, the ease or difficulty of parking private vehicles, and the morphology of each city, although they would also seem to suggest that non-work-related journeys are made in the area around the home. This situation could be changing as a result of urban sprawl and the location of shopping centres and leisure facilities on the outskirts of cities.

In order properly to interpret these two indicators, it must be remembered that the figures used are not fully standardised. In the case of Madrid, the 2004 mobility survey figures can be compared with those for 1996, revealing two contrasting trends: on the one hand, increased use of public transport for work-related journeys, alongside an increase in private transport for non-work-related travel.



Journey distances and times

The table below illustrates the differences in distance travelled per journey on the various transport modes. Journeys by intercity bus and local rail services are longer (up to 24.35 km in Cadiz), while Metro and city bus services are generally used for shorter trips. Metro journeys, meanwhile, are longer than those by bus (in cases where a city has both forms of transport). As regards average journey times, these vary between 34.4 minutes in the Bilbao metropolitan area, and 15.2 minutes in Alicante. An inverse relationship also exists between car use and municipality size. In small and medium-sized cities, car dependence

(for both work and non-work-related journeys) is even higher than in larger cities, where other alternatives are available.

AVERAGE ESTIMATED DISTANCE (KM) OF JOURNEYS MADE BY PUBLIC TRANSPORT (2004) AND AVERAGE JOURNEY TIME (MINUTES)

	Local rail services	Regional rail services	Metro	Tram	City bus	Intercity bus	Average journey time
Corunna	-	-	-	-	1.83	-	-
Alicante	-	-	-	12.80	8.46	11.29	15.20
Asturias	22.27	-	-	-	-	-	-
Barcelona	20.00	-	7.00	3.00	3.00	7.00	32.10
Bilbao	9.23	18.34	6.15	2.64	3.00	9.39	34.40
Cadiz	24.35	-	-	-	-	-	-
Granada	-	-	-	-	-	12.68	19.20
Madrid	17.85	-	6.24	-	4.06	16.70	28.60
Malaga	11.01	-	-	-	-	-	-
Seville	23.66	-	-	-	3.38	12.00	26.00
Valencia	14.90	-	6.02	4.46	3.05	14.03	-

Source: MMA and UPM-OMM 2005

NOTES

- In order to achieve sustainable mobility the problem must be tackled from three angles: social, economic and environmental. The social aspect must aim to preserve citizens' quality of life, equality of opportunities and equal access to goods and services; the economic aspect needs to balance the interests of the transport sector against the growing costs it involves; and appropriate environmental management must tackle the problems of atmospheric pollution, noise and the impacts generated.
- Various measures have been taken in Spain at a nationwide level to achieve sustainable mobility, in line with initiatives seen in other countries. On the one hand, there is the Action Plan under the Spanish Energy Saving and Efficiency Strategy (*Estrategia de Ahorro y Eficiencia Energética Española*), under which all towns and cities of more than 100,000 inhabitants must produce urban mobility plans and plans for transport to work centres, while the Spanish National Emission Rights Allocation Plan (*Plan Nacional de Asignación de Derechos de Emisión*) covers actions intended to promote alternative modes of transport in urban environments. Meanwhile, the Spanish Strategic Infrastructure and Transport Plan (PEIT - *Plan Estratégico de Infraestructuras y Transportes*), approved in 2005, proposes using sustainable mobility plans as a framework for co-ordinated action by the various local authorities.

DEFINITIONS

- Mobility: refers to citizens' ability to make journeys to access the work opportunities, services and facilities offered by a city. Satisfaction of these needs is closely tied to the way in which the urban environment evolves and the policies developed to establish appropriate transport networks. Very much linked to this is the concept of accessibility, in other words, the proximity between homes and activities in urban areas. It is also applied to the characteristics of a specific transport system, allowing users to reach their desired destination with the greatest possible efficiency.
- Metropolitan area: in accordance with the criteria of the Metropolitan Mobility Monitoring Centre, a metropolitan area is defined as: "an urban geographical area with a high degree of interaction between its various urban centres in terms of journeys, day-to-day relationships, economic activity, etc." The metropolitan areas considered by this indicator are those with a Public Transport Authority (ATP), although figures for other major urban areas without one have also been taken into consideration.

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- Journey: the definition of this term varies according to the mode of transport and pricing system in each metropolitan area. In general, the term 'journey' is used as a synonym of 'complete trip made on one ticket'. However, the Spanish National Rail Network (RENFE - *Red Nacional de los Ferrocarriles Españoles*) counts every time a passenger changes line as a new journey, while the Public Transport Authorities only count a single journey per ticket, regardless of the number of line changes. As a result, the figures do not coincide exactly.

URBAN MOBILITY DATA

- The available data are striking in their heterogeneity. However, they do coincide in suggesting that motorised urban mobility is increasing at a faster rate than intercity mobility. The proportion of such journeys made by public transport is shrinking in the face of increasing private vehicle use. The proportion of non-motorised modes of transport is decreasing within the overall modal distribution. This trend is particularly apparent in medium-sized cities and on the outskirts of major metropolitan areas.

SOURCES

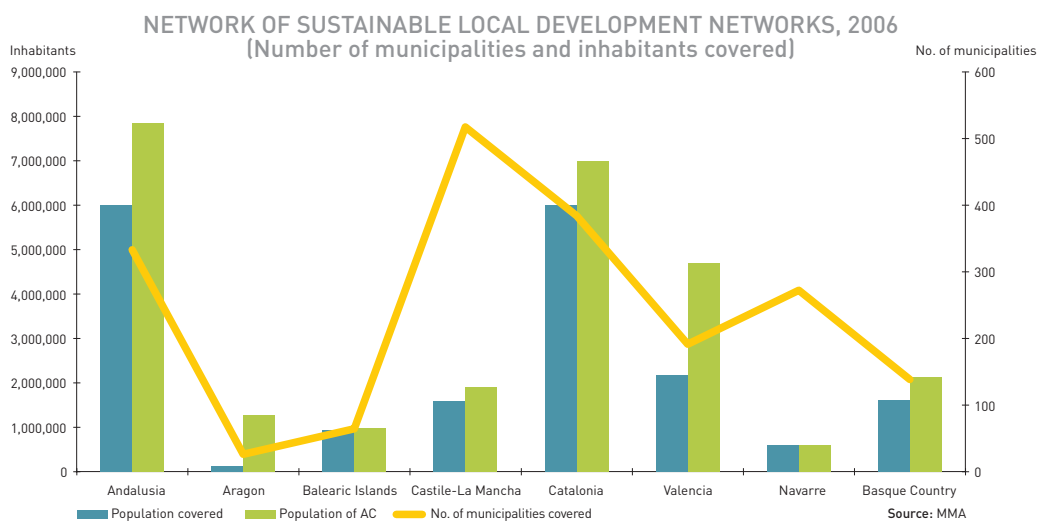
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- www.atm-transmet.org

Sustainable Local Development: towns and cities registered with the “Network of Networks”

43.1% of the population and 23.4% of Spain’s municipalities are covered by a ‘Network of Networks’ to implement local sustainability policies



Programme 21 or Agenda 21 was proposed at the Rio de Janeiro Summit in 1992 and has developed into an international action plan for the 21st century. Its programme contains a wide variety of activities to be carried out by governments, international organisations and non-governmental organisations, the private sector and society at large. In this context, the Aalborg Charter was approved at the European Conference on Sustainable Cities and Towns, held in Aalborg in 1994.

Ten years later (Aalborg+10), the European process was reviewed and a series of commitments adopted in the form of 10 proposals regarding sustainable administration at a municipal level. By then, according to the figures available on the Sustainable Cities and Towns Campaign website, 882 Spanish bodies had signed the Aalborg Charter, including local councils, local authority associations and provincial councils. In percentage terms, 10.4% of Spain’s local authorities had signed up, although only a limited number had ratified their membership. The Local Agenda 21 processes received a fresh boost in 2004 with the ‘Network of Networks’ introduced by the Spanish Ministry of the Environment.

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Network of local networks working towards sustainability

The Network of Sustainable Local Development Networks is a forum founded in December 2005 and based at the Ministry of the Environment. It represents 1,901 municipalities and a population of approximately 20 million inhabitants. Its members are made up of all of the municipal networks at a regional and provincial level which have worked on and have experience of the development of Local Agenda 21 processes; the Spanish Federation of Municipalities and Provinces (*Federación Española de Municipios y Provincias*) and the Ministry of the Environment, which acts as the Network secretariat. Its aim is to work towards local sustainability, essentially through the exchange of experiences and the potential offered by new technologies.

The first task undertaken by this ‘Network of Networks’ was to produce a local “Urban Environment Strategy”, which was approved by the ‘Network of Networks’ plenary session on 15 June 2006 in Albacete. The Strategy deals with the challenges facing today’s society in the four areas set out in the European Thematic Strategy: town and country planning, transport, building and urban management. It also adds a section on the relationship between the rural and urban environments in order to establish guidelines to lead Spain’s villages, towns and cities towards a more sustainable situation, improving citizens’ quality of life and promoting a model based on compact, complex, efficient and socially cohesive population centres. The aim ultimately is to implement a shift from the current trend based on resource consumption to another based on information and knowledge, creating both more countryside and more city.

The figures presented here were compiled within the context of the Ministry of the Environment-sponsored ‘Network of Networks’, and were provided by each of the constituent supra-municipal networks. According to this source, there are 1,901 members, representing 23.4% of Spanish municipalities. The population covered by the process amounts to more than 19 million inhabitants, 43.1% of Spain’s overall population. The figures for each of the National Network’s constituent networks are as follows:

Supra-municipal sustainability networks	No. of municipalities participating*	Total population*
Castile-La Mancha Network of Sustainable Towns and Cities (<i>Red de ciudades y pueblos sostenibles de Castilla-La Mancha</i>)	517	1,584,176
Navarre Network of Local Authorities for Sustainability (<i>Red Navarra de entidades locales hacia la sostenibilidad</i>)	272	584,734
Network of Towns and Cities for Sustainability (<i>Xarxa de ciutats i pobles cap a la sostenibilitat</i>), Barcelona Provincial Government (<i>Diputació de Barcelona</i>)	208	5,456,229
Network of Valencian Municipalities for Sustainability (<i>Xàrcia de municipis valencians cap a la sostenibilitat</i>)	191	2,163,488
Girona Council of Local Initiatives for the Environment (<i>CILMA - Consell d'Iniciatives Locals per al Medi Ambient de les comarques de Girona</i>)	176	537,190
Basque Network of Municipalities for Sustainability (<i>UDALSAREA 21 - Red Vasca de municipios hacia la sostenibilidad</i>)	138	1,618,891
Ciudad 21 Environmental Sustainability Programme (<i>Programa de sostenibilidad ambiental Ciudad 21</i>), Andalusia	111	4,702,560
Provincial Network of Sustainable Towns and Cities (<i>Red Provincial de Ciudades Sostenibles</i>), Huelva	79	483,792
Cordoba Local Agenda 21 Network (<i>Red de Agendas 21 Locales cordobesas</i>)	67	747,968
Jaen Provincial Network of Sustainable Municipalities (<i>Red de municipios sostenibles de la provincia de Jaén</i>)	76	469,309
Balearic Sustainability Network (<i>Xarxa Balear de sostenibilitat</i>)	64	938,995
Alto Aragón Network of Local Authorities for Sustainability (<i>RETE 21 - Red de Entidades Locales del alto Aragón por la sostenibilidad</i>), Huesca	26	131,015
TOTAL (excluding overlapping figures for Andalusia)	1,901	19,018,868

Source: Spanish Ministry of the Environment.
 Note: 24 municipalities in Andalusia belong to both Ciudad 21 and another provincial network. They are included only once in the final figures.

In terms of the degree of development of sustainability processes, a situational diagnosis is the necessary starting point. However, only a minority have adopted an Action Plan. The exceptions are the Basque Country and Navarre, where municipalities joining the Network must necessarily have such a plan. In assessing the effectiveness of initiatives related to local sustainability processes, a system or set of indicators would be required in order, first of all, to monitor actions, and secondly assess processes on three fronts: environmental, economic and social.⁽⁶⁾

It is expected that the number of villages, towns and cities adopting local sustainability policies will continue to rise, although major challenges do exist in ensuring the effectiveness of the process, in particular in terms of monitoring and assessment and uniformity of results. One must finally highlight the importance for the entire process of the effective operation of supra-municipal, regional and state networks, as well as of co-ordination and communication of experiences among municipalities.

NOTES

- According to the Spanish Sustainability Monitoring Centre, the number of associations with a LA21 in March 2006 stood at close to 1,500. Other figures, provided by the Autonomous Communities and Provincial Councils, raise the number as high as 2,604, as there exist some one thousand municipalities undertaking actions connected with Local Agenda 21 but without actually being signed up to a network. These include municipalities in Castile-Leon, Galicia and Extremadura. These figures would raise the percentage of Spanish municipalities with LA21 processes to 32%, the highest level being in the Balearic Islands (84%), and the lowest in Castile-Leon. A meeting was held in March 2006 (2nd Conference of LA21 Networks), with 13 organisations represented.
- The average size of Spanish municipalities in the process of implementing LA21 was initially over 5,000 inhabitants, although many rural municipalities are now covered through associations of local and district authorities supporting the process. A large number of cities of more than 100,000 inhabitants have also joined in. It is known that there are major differences between local councils in terms of population, infrastructure, human resources, capacity for interaction among the various municipal areas and experience of involving citizens and social agents, this final aspect being fundamental to achieving sustainability targets successfully.

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(6) An extensive bibliography on indicators is available. See, for example: Basque Regional Government. Department of Land Use and the Environment, "Local Agenda 21 Indicators: Guide to Methodology for Calculating Sustainability Indicators in the Autonomous Community of the Basque Country" ("*Guía metodológica para el Cálculo de Indicadores de Sostenibilidad en la Comunidad Autónoma del País Vasco*"), 2004, 2nd edition.