2.2 WATER

In 2007, water management and protection strategies designed to achieve rational and sustainable resource use continued to be applied. The means required to provide access to information were also implemented. The National Water Quality, Sewerage and Treatment Plan 2007-2015 (*Plan Nacional de Calidad de las Aguas: Saneamiento y Depuración 2007-2015*) was approved, along with Special Action Plans for Alert and Temporary Drought Situations (*Planes Especiales de Actuación en Situaciones de Alerta y Eventual Sequía*) for the eight inter-community basin authorities, and the National Plan for the Conservation and Rational Use of Wetlands (*Plan Español para la Conservación y el Uso Racional de los Humedales*), among others.

In March 2007, the Water Information System for Europe (WISE) was set up as a joint project between the European Commission (Directorate General for the Environment, Eurostat and the Joint Research Centre) and the European Environment Agency (EEA).

In Spain, the new Water Information System (SIA – *Sistema de Información de Agua*) incorporates the majority of water information sources in a single centralised system, available on the Spanish Ministry of the Environment (*Ministerio de Medio Ambiente*) website.

All this points to a growing need to improve management both of available resources and their quality. The legislative and technological tools developed

allow for greater control and knowledge of the status of Spain's water, and subsequent resource optimisation.

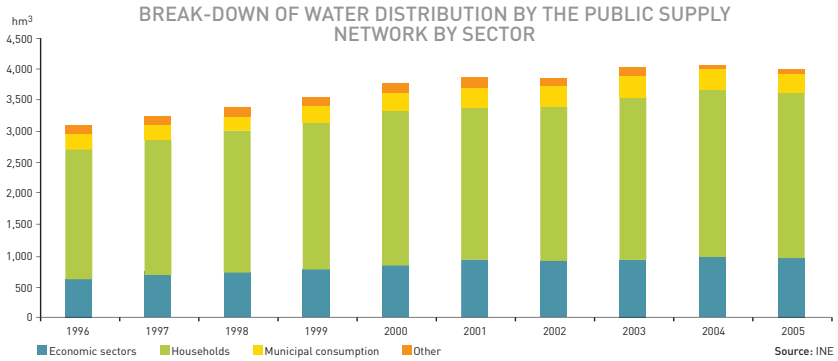
These indicators provide information both on available resources and on water quality. The results indicate a substantial improvement in the latter, though not in quantity, as low rainfall at the beginning of the 2007-2008 hydrological year seems to point to a continuation of the present drought.

INDICATOR	GOAL	TREND
Water consumption	Reduce and optimise consumption	Consumption has fallen in agriculture and urban zones
Reservoir water levels	Provide sufficient reserves to guarantee supply	Reservoir water levels are the lowest in recent years
Brackish and sea water desalination	Increase available resources	Installed desalination capacity is increasing
Nitrate pollution of groundwater	Minimise pollution	Status varies between River Basins
Salinisation of groundwater bodies	Reduce salinisation and preserve catchments	Status varies between River Basins
Organic pollution of rivers	Achieve 'good ecological status' in rivers	A clear improvement can been seen in organic pollution
Urban wastewater treatment	Treat entire pollutant load to comply with Directive 271/91/EC	The pollutant load treated continues to increase
Coastal bathing water quality	Maintain 'good health status' of coastal bathing waters to ensure they remain suitable for bathing	Clear trend towards improvement on the Spanish coast

Water consumption

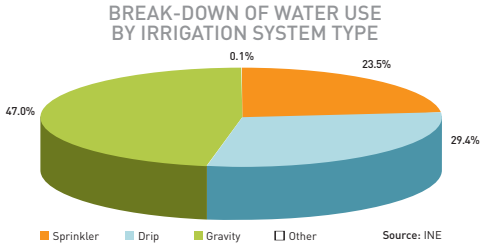
In 2005, the volume of water used for irrigation dropped, as did the amount of municipal consumption

The volume of water distributed by the public urban supply networks grew constantly throughout the 1996-2004 period, reaching 4,973 hm^3. However, a decrease was recorded in 2005, putting the total volume distributed at 4,873 hm^3. Of this amount, 82.1% was consumed by households, companies and municipal use, and the rest was considered to be lost through leakage, break-down, etc. Consumption of drinking water by Spanish households amounted to 2,673 hm^3, which represents a drop in average consumption from 171 litres per inhabitant per day in 2004, to 166 litres per inhabitant per day in 2005, equivalent to 2.9%.

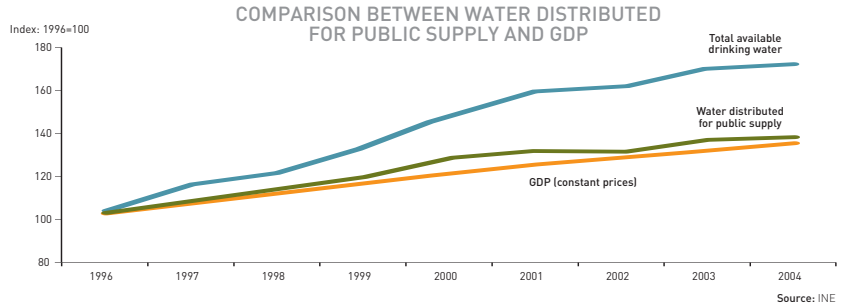


Water consumption by agriculture in 2005 stood at 16,505 hm^3, 7.3% less than in 2004, and the lowest level in the last 10 years. This is due to use of more efficient and effective irrigation techniques, in particular drip irrigation, which has grown from 4.9% in 1999 to 29.4% in 2005 at the expense of gravity-fed irrigation, which decreased from 64.6% to 47%. A contributing factor to this decrease was also lower water availability as a result of the drought.

Water consumption, expressed as "total volume of water treated and distributed for public supply" and also "total available drinking water", increased up to 2004 at rates very similar to GDP (calculated at constant prices). However, in 2004 and 2005, there was a clear change of trend – water consumption indicators stabilised and even fell in the last year of the period analysed, while GDP continued to rise.



Although the growth in the amount of drinking water available continues to be greater than that of GDP, 2005 showed a substantial improvement in environmental efficiency as regards water use, as there is less need for this resource to sustain economic growth.



NOTES

- Water distributed includes all water available in the public distribution network, plus any losses from the network. It is based on total water abstraction by the supply company plus the net balance of water sales and purchases by and from other companies and local authorities.

SOURCES

- Water consumption figures: Spanish National Institute of Statistics (INE). Environmental Statistics *(Estadísticas sobre medio ambiente)*. Environmental Statistics on Water *(Estadísticas medioambientales sobre el agua)*. In INEbase, http://www.ine.es/inebase/cgi
  - Survey on Water Supply and Treatment *(Encuesta sobre el suministro y tratamiento de agua)*, 1996-2005.
  - Survey on Water Use in the Agricultural Sector *(Encuesta sobre el uso del agua en el sector agrario)*, 1999-2005.
- GDP figures: Spanish National Institute of Statistics (INE).

FURTHER INFORMATION

- http://www.ine.es
- http://hispagua.cedex.es
- http://www.mma.es

Reservoir water levels

Autumn and winter of 2007 were the driest in the period analysed in the whole Mediterranean Arc, the headwaters of the Tagus and the Guadalquivir basin

HYDROLOGICAL TREND REPORT. Figures as at 2 January 2008
CAPACITY (hm^3) AND RESERVES (%) IN PENINSULAR RESERVOIRS

RIVER BASIN	Total reservoir capacity	Reserves	Reserves compared to total capacity (%)				
	hm^3	hm^3	2007	2006	2005	5-year average	10-year average
Galicia-Coast	684	225	32.9	71.5	59.9	66.2	65.8
North I	3,030	1,335	44.1	79.2	57.1	68.4	66.6
North II	554	321	57.9	71.7	66.2	76.4	73.2
North III	71	59	83.1	56.3	87.3	74.9	72.8
Basque Country Inland Basins	21	15	71.4	47.6	95.2	81.0	79.5
Douro	7,463	3,751	50.3	77.5	47.6	64.1	63.7
Tagus	11,009	4,489	40.8	58.9	41.2	55.1	56.9
Guadiana	8,292	4,512	54.4	58.8	57.1	65.5	64.5
Andalusian Atlantic Basin	2,216	857	38.7	48.2	46.3	63.4	64.8
Guadalquivir	7,149	2,523	35.3	40.2	39.2	57.9	60.2
Andalusian Mediterranean Basin	1,041	264	25.4	29.6	26.2	37.4	44.2
Segura	1,129	171	15.1	11.8	11.6	13.6	18.6
Júcar	3,346	680	20.3	14.3	19.8	24.7	26.6
Ebro	7,403	3,081	41.6	59.3	57.2	68.2	69.8
Catalonian Inland Basins	740	183	24.7	48.1	45.5	58.8	51.8
Atlantic watershed	40,489	18,087	44.7	60.3	47.5	61.3	61.9
Mediterranean watershed	13,659	4,379	32.1	41.5	40.1	49.2	51.2
Entire Peninsula	54,148	22,466	41.5	55.6	45.8	58.4	59.3

Source: MMA

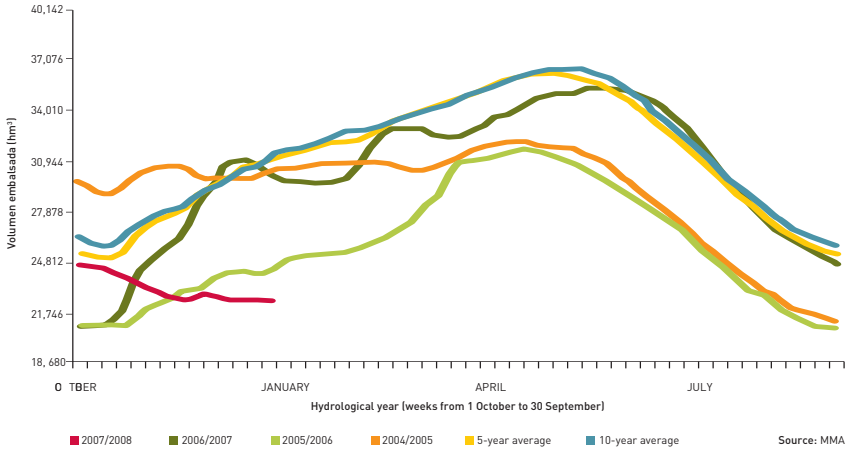
The 2007 water reserve figures (as at 2 January 2008) indicate a drop in reservoir levels in most river basins, with total reservoir water volume lower than the level on the same date in 2005, and much lower than the 10-year average. This difference is more marked in the Mediterranean watershed than in the Atlantic watershed, although in both cases it stands at around 20%.

Both the autumn and winter of 2007 were the driest in the period analysed in the whole Mediterranean Arc, the headwaters of the Tagus and the Guadalquivir basin.

Presently, management measures continue to be applied to encourage water saving among citizens and infrastructures are being built in places where the situation cannot be remedied by management measures alone. A short summary of the hydrological status of the basins most affected by drought is given below:

- Guadalquivir Basin: Reserves are lower than at the same point in the last hydrological year. Nevertheless, municipal supply problems are not expected.
- Segura and Júcar Basins: Inputs are expected to be even lower than in the 2005-2006 hydrological year, which had been the worst year of drought to date. Major restrictions are expected to be applied to irrigation.
- Catalonian Inland Basins: The situation is very delicate for all uses, including supply for Barcelona.
- Andalusian Mediterranean Basin: The drought situation affecting crop irrigation will result in major restrictions. As regards municipal supply, the delicate situation continues in the city of Malaga.

PENINSULAR WATER RESERVES



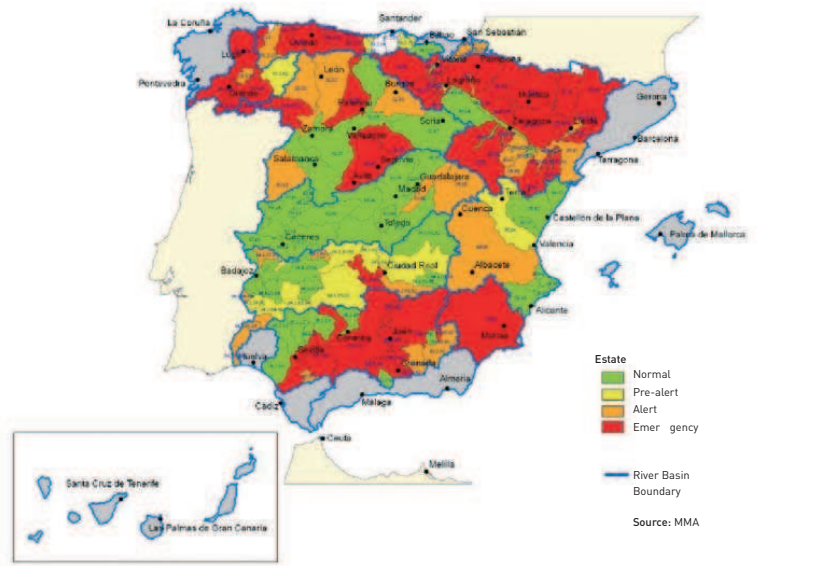
Source: MMA

In March 2007, the Special Action Plans for Alert and Temporary Drought Situations drawn up by the eight inter-community Basin Authorities were approved. The Directorate General for Water *(Dirección General del Agua)* has developed a comprehensive system of hydrological indicators to predict drought situations based on volume stored in reservoirs, aquifers' piezometric levels,natural river

input, and rainfall in representative seasons. This system of indicators provides an objective characterisation of drought in each resource exploitation system and enables timely measures and actions to be applied at the pre-alert, alert or emergency stages.

Under this system of indicators, four categories were established to classify the status of resource exploitation systems. The following drought monitoring map depicts the situation in basins managed by the Public Administration in December 2007.

DROUGHT MONITORING MAP. DECEMBER 2007
RESOURCE EXPLOITATION SYSTEM (RES) STATUS



NOTES
- The Special Action Plans for Alert and Temporary Drought Situations were approved by Order MAM/698/2007 of 21 March.
- The hydrological year runs from 1 October to 30 September of the following year.

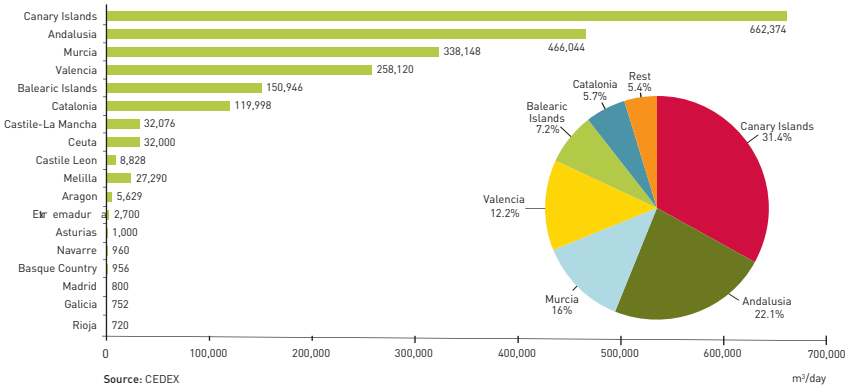
SOURCES
- Figures provided by the Sub-Directorate General for Water Planning and Sustainable Water Use (*Subdirección General de Planificación Hidrológica y Uso Sostenible del Agua*). Directorate General for Water. Spanish Ministry of the Environment (MMA).

FURTHER INFORMATION
- http://www.mma.es

Brackish and sea water desalination

Water desalination is an increasingly applied alternative in coastal areas with supply difficulties

INSTALLED DESALINATION CAPACITY OPERATIONAL IN 2007
(desalinated water in m³/day) TOTAL 2,109,341 m³/day



The goals of the AGUA Programme (*Actuaciones para la Gestión y Utilización del Agua* – Water Management and Use Action Programme) include increasing available water resources and improving their quality. To achieve the first of these, desalination, together with wastewater treatment and reuse, is considered to be a key option.

Water resources suitable for desalination basically come from two sources: sea water or salinated groundwater. In Spain, 70% of desalination plants use sea water, while 30% use brackish water.

Spain currently has an installed desalination capacity of over 2.1 hm³/day, a 5% increase on 2006. The regions that have most increased their installed capacity are Melilla and Murcia, which have registered joint growth of 10,000 m³/day in comparison with 2006. The Canary Islands continue to lead the field as regards installed desalination capacity, followed by Andalusia and Murcia.

DESALINATED WATER OUTPUT (hm³/day)

1990	2000	2004	2007	2009 (Forecast)
0.1	0.7	1.4	1.7	3.4

The main factor limiting use of desalination is almost exclusively economic. Average energy consumption by sea water desalination plants ranges between 3.5 and 3.8 kwh/m^3. Irrespective of the desalination technology used, energy costs always represent between 50% and 75% of real operating costs, so any possible increase in desalination is very directly related to the cost of energy. Nevertheless, it should be noted that technological advances are helping to reduce energy costs at these kinds of facilities. For example, the Atabal desalination plant in Malaga consumes between 0.72 and 1.19 kwh/m^3.

Another negative effect of desalination is discharge of the wastewater produced. This wastewater has a greater salt content than the waters of origin. It also has a different temperature, pH and alkalinity and contains chemical substances used during the treatment process. However, as it is discharged in very low concentrations, its impact is considered to be negligible.

SOURCES
- Centre for Applied Technology Studies (*Centro de Estudios de Técnicas Aplicadas*). Spanish Centre for Public Works Studies and Experimentation (CEDEX – *Centro de Estudios y Experimentación de Obras Públicas*).
- Hispagua
- Acuamed

FURTHER INFORMATION
- http://www.igme.es
- http://www.hispagua.es
- http://www.mma.es

Nitrate pollution of groundwater

Agriculture contributes to nitrate pollution of groundwater

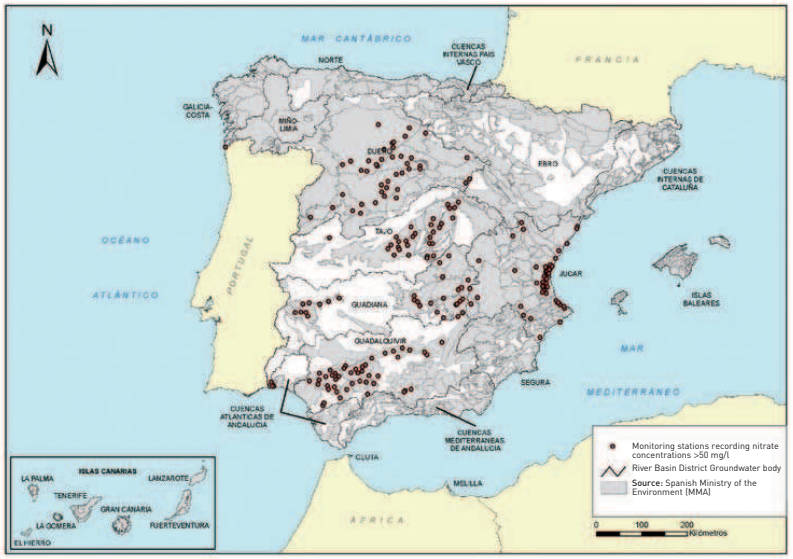
Nitrate concentration is one of the indicators used in assessing the 'good chemical status' of groundwater bodies, a concept established both in the Water Framework Directive 2000/60/EC and Directive 2006/118/EC on the protection of groundwater against pollution and deterioration. In 2007, the percentage of monitoring stations with nitrate concentrations above 50 mg/l varied considerably across the various River Basin Districts.

PERCENTAGE OF MONITORING STATIONS RECORDING NITRATE CONCENTRATIONS ABOVE 50 mg/l

River Basin District	2006	2007	River Basin District	2006	2007
North and Miño-Limia	0 %	1.43 %	Guadalquivir	29.76 %	27.54 %
Douro	12.31 %	10.97 %	Segura	16.90 %	SD
Tagus	22.40 %	23.44 %	Júcar	20.93 %	21.61 %
Guadiana	31.31 %	31.07 %	Ebro	18.65 %	SD

Source: MMA

MONITORING STATIONS RECORDING NITRATE CONCENTRATIONS ABOVE 50 mg/l (2007)



Nitrate pollution of groundwater is mainly caused by improper use of nitrogen fertilisers and inputs from livestock farms. The map below shows monitoring stations in the groundwater quality control network in inter-community River Basin Districts that recorded nitrate concentrations above 50 mg/l in 2007.

In accordance with the obligations set out in Directive 91/676/EEC, vulnerable zones have been designated to apply pollution abatement measures. This designation of vulnerable zones was split into two phases. The first phase ran from 1997 to 1999, whilst the second phase ran from 2000 to 2006.

VULNERABLE ZONES DESIGNATED IN COMPLIANCE WITH DIRECTIVE 91/676/EEC

NOTES

- The definition of vulnerable zones is set out in Directive 91/676/EEC and is established according to nitrate pollution and run-off.
- Directive 2000/60/EC, which establishes the European framework for action in the field of water policy, establishes as one of its objectives the need to prevent groundwater pollution. In order to meet these objectives, rafts of measures should be established that, among other aspects, include those set out in Directive 91/676/EEC. In addition, the vulnerable zones established in accordance with Directive 91/676/EEC are also included in a register of protected areas under Directive 2000/60/EC.
- Directive 91/676/EEC, on the protection of waters against pollution caused by nitrates from agricultural sources, transposed into Spanish law by Royal Decree 261/1996 (*Real Decreto 261/1996*), defines groundwater as being affected by this type of pollution if the nitrate concentration is above 50 mg/l, or could potentially reach this level.

SOURCES

- Data provided by the Sub-Directorate General for Integrated Public Water Resource Management (*Subdirección General de Gestión Integrada del Dominio Público Hidráulico*). Directorate General for Water. Spanish Ministry of the Environment (MMA).

FURTHER INFORMATION

- http://www.mma.es
- http://www.eea.europa.eu

Salinisation of groundwater bodies

High chloride concentrations are deteriorating groundwater quality

The impact of salt intrusion in coastal groundwater can be assessed by examining the percentage of monitoring stations recording chloride concentrations above 1,000 mg/l. The figures for 2007 are as follows:

PERCENTAGE OF COASTAL GROUNDWATER MONITORING STATIONS RECORDING CHLORIDE CONCENTRATIONS ABOVE 1,000 mg/l

River Basin District	2006	2007	River Basin District	2006	2007
North	0 %	0 %	Segura	35.71 %	No data
Guadiana	0 %	0 %	Júcar	4.54 %	4.76 %
Guadalquivir	0%	0 %	Ebro	0 %	No data

Source: MMA

The map below shows groundwater quality control network stations monitoring coastal groundwater bodies in the inter-community river basins in which levels of over 1,000 mg/l of chloride were recorded in 2006.

MONITORING STATIONS RECORDING CHLORIDE CONCENTRATIONS ABOVE 1,000 mg/l (2007) NOTES

NOTES
- Consideration is given only to groundwater bodies in which monitoring network density is above one station per 150 km^2.

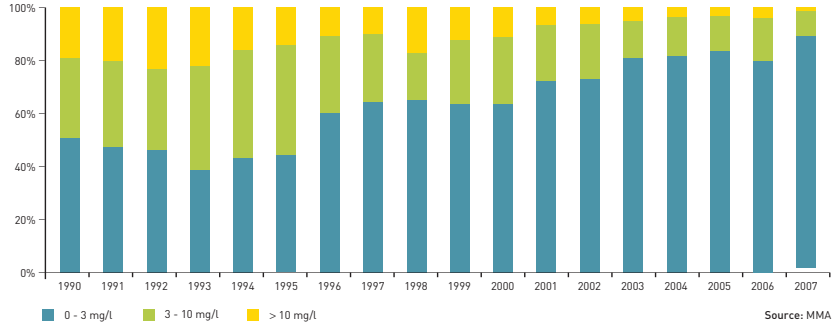
SOURCES
- Data provided by the Sub-Directorate General for Integrated Public Water Resource Management. Directorate General for Water. Spanish Ministry of the Environment (MMA).

FURTHER INFORMATION
- http://www.mma.es
- http://www.eea.europa.eu
- Europe's water: An indicator-based assessment. European Environment Agency, 2003.

Organic pollution of rivers

Organic pollution of rivers due to urban waste discharge has clearly improved since 1995

BOD: PERCENTAGE OF MONITORING STATIONS BY AVERAGE BOD_5 (mg/l)



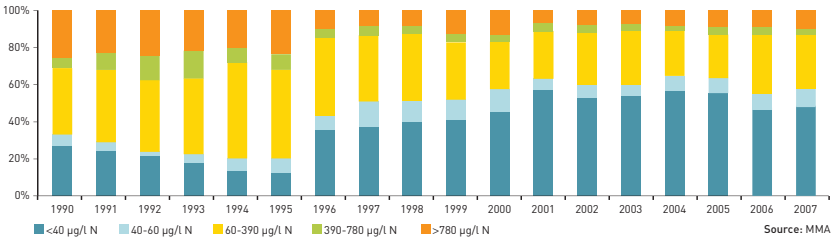
Source: MMA

In order to control surface water quality and monitor its relationship with urban wastewater, Biological Oxygen Demand (BOD5) is measured (i.e. the quantity of oxygen dissolved in water that micro-organisms use to oxidise the organic substances it contains).

This parameter is an indicator of organic pollution of rivers, and is directly related to urban wastewater discharge.

The information shown in the graph indicates a substantial improvement from 1995 onwards, coinciding with application of the first National Sewerage and Wastewater Treatment Plan *(Plan Nacional de Saneamiento y Depuración)*. As may be seen, implementation of the Plan was accompanied by an increase in the number of monitoring stations recording the lowest levels of organic pollution, which rose to as high as 88.8% in the first half of 2007.

AMMONIUM IN RIVERS: PERCENTAGE OF MONITORING STATIONS BY AVERAGE AMMONIUM CONCENTRATION (µg/l N)



Source: MMA

Like BOD_5, ammonium is an indicator of urban wastewater discharge into rivers. Together with nitrates, it contributes to nitrogen being present and, consequently, increases eutrophication in bodies of water.

However, ammonium concentration does not follow a clear trend as in the case of BOD_5. As the graph below shows, up to 2000, there was an increase in the number of monitoring stations recording minimal concentrations and a substantial drop in stations registering high ammonium levels. However, in subsequent years, the situation varies from year to year, with the percentage of stations with the highest ammonium concentration stabilising around 10%. Meanwhile, the lowest recorded pollution levels have ranged between 58% and 47% over the last seven years.

Substantial improvement is expected with application of the National Water Quality, Sewerage and Treatment Plan 2007-2015, which undertakes to provide the new infrastructure necessary to comply with Directive 91/271/EEC on urban wastewater treatment.

NOTES

- The National Water Quality, Sewerage and Treatment Plan 2007-2015 was approved by the Council of Ministers in June 2007.
- Biological oxygen demand, also referred to as biochemical oxygen demand (BOD), is used as a parameter to measure the quantity of matter liable to be consumed or oxidised by biological means within a liquid sample, and is used to establish the degree of pollution. This is normally measured after 5 days (BOD5), and stated in mg O2/litre. It should not be confused with chemical oxygen demand (COD), the parameter used to measure the quantity of organic matter liable to be oxidised by chemical means within a liquid sample.
- Ammonium (NH4+) is the monovalent ion formed from ammonia. It is one of the components of urine, together with urea, sodium and chlorine.
- Ammonia (NH3) is a colourless gas produced naturally by decomposing organic material. It is also generated industrially to make fertilisers, textiles, plastics, explosives, paper, foodstuffs, beverages, cleaning products and coolants, among others.

SOURCES

- Data provided by the Sub-Directorate General for Integrated Public Water Resource Management. Directorate General for Water. Spanish Ministry of the Environment (MMA).

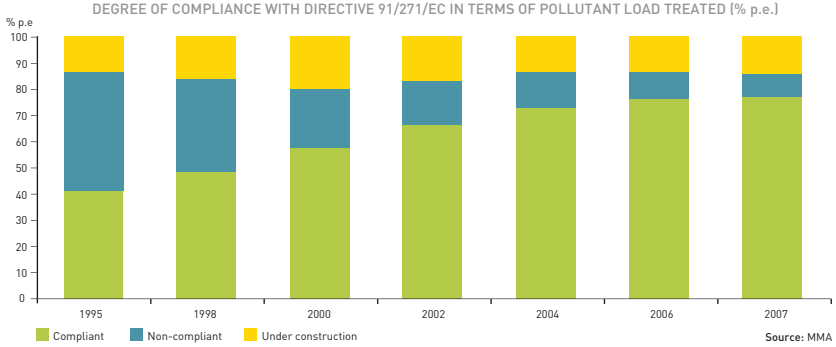
FURTHER INFORMATION

- http://www.mma.es
- http://www.eea.europa.eu

Urban wastewater treatment

A new National Water Quality Plan has been approved to address the targets pending from the previous plan and to incorporate the requirements of the Water Framework Directive

COMPLIANCE WITH NATIONAL SEWERAGE AND WASTEWATER TREATMENT PLAN 1995-2005
DEGREE OF COMPLIANCE WITH DIRECTIVE 91/271/EC IN TERMS OF POLLUTANT LOAD TREATED (% p.e.)



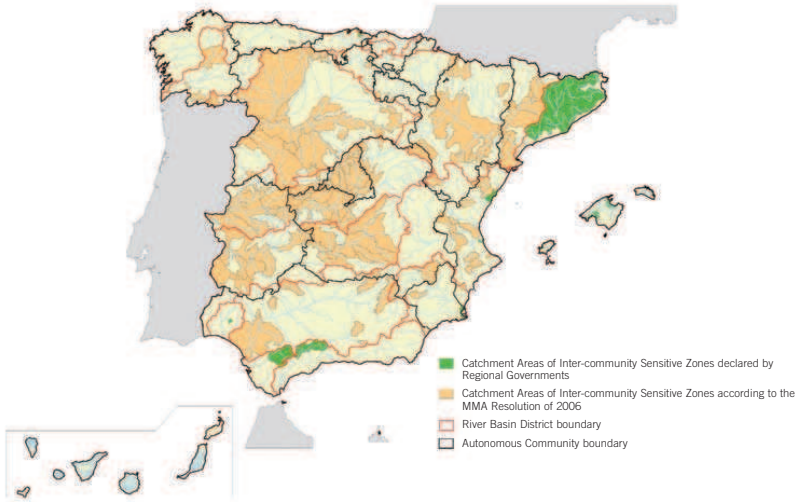
Directive 91/271/EEC of 21 May 1991, on urban wastewater treatment, lays down the obligation to provide suitable sewerage and treatment systems for all agglomerations with a population equivalent (p.e.) of over 2,000 that discharge wastewater into inland waters and estuaries, and for all those with a p.e. of over 10,000 that discharge wastewater into coastal waters.

These provisions were incorporated into the Spanish National Sewerage and Wastewater Treatment Plan 1995-2005 *(Plan Nacional de Saneamiento y Depuración 1995-2005)*, which provided both for construction of new treatment plants and for enlargement and improvement of collector sewers and outfalls, improvements to existing facilities or adaptation to the increase in flow and pollutant load, incorporation of secondary treatment at facilities where only primary treatment existed, and inclusion of more rigorous treatment at plants that discharge into declared sensitive zones.

In 2007, it was estimated that, taking into account both plants that were already in operation and those that were under construction, 91% of this plan had been implemented as regards treating the pollutant load.

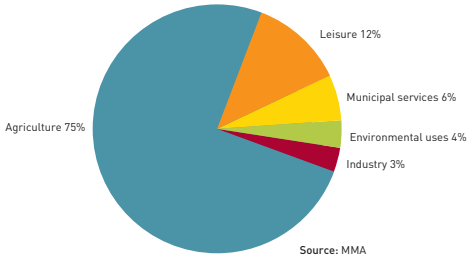
Furthermore, in July 2006, and in accordance with the requirements of Directive 91/271/EEC, a review of sensitive zones within inter-community basins, drawn up by the Ministry of the Environment (MMA) together with Regional Governments and Basin Authorities, was published. Portugal has also reviewed sensitive zones affected by urban agglomerations in the Duero and Guadiana river basins.

CATCHMENT AREAS OF ZONES DECLARED AS SENSITIVE AS AT DECEMBER 2006



One of the AGUA Programme's goals is to increase water resources, to which end it includes reuse of treated water as one of the measures to be applied. At present, only 450 hm^3/year is reused, which represents 13% of the total. The following graph shows the break-down of treated water by sector of use.depurada por sectores donde se utiliza.

BREAK-DOWN OF TREATED WATER BY SECTOR (%)



The new National Water Quality, Sewerage and Treatment Plan 2007-2015, drawn up by the Ministry of the Environment (MMA) in collaboration with Regional Governments, was approved in June 2007. Its objectives include undertaking any work that was not carried out under the previous plan, and implementing new actions arising from the new requirements laid down by the Water Framework Directive and by the AGUA Programme.

This new Plan is designed to achieve the 'good ecological status' that the Water Framework

Directive requires by 2015, complementing the Spanish National River Restoration Strategy (*Estrategia Nacional de Restauración de Ríos*) and the Discharge Monitoring Strategy (*Estrategia de Control de Vertidos*).

The Plan also includes the requirements arising from the review of sensitive zones, under which treatment plants discharging into these areas must be equipped with tertiary treatment systems.

NOTES

Directive 91/271/EEC, of the Council of 21 May 1991, on urban wastewater treatment, modified by Directive 95/15/EC of the Commission of 27 February 1998, is intended to protect the environment against deterioration caused by urban wastewater discharge from urban agglomerations and biodegradable wastewater from the agri-food industry. In addition to being transposed into each Member State's legal framework, the Directive also imposed an obligation for wastewater to be collected using a sewerage system, for zones to be defined as sensitive and less sensitive, and for an implementation programme to be produced. In Spain, this programme took the form of the National Sewerage and Wastewater Plan 1995-2005, approved in a Resolution of 28 April 1995.

The key definitions include the following:

- Population equivalent (p.e.): biodegradable organic load with a 5-day biochemical oxygen demand (BOD5) of 60 g of oxygen per day.
- Urban agglomeration: area with a population and/or economic activities of sufficient concentration to justify collection of urban wastewater and transport of the same to a treatment facility or final discharge point.
- Urban wastewater: domestic wastewater or a mixture thereof with industrial wastewater and/or rain run-off.
- The pollutant load, or population equivalent, to be treated in urban agglomerations is established by: actual population, seasonal population (which increases demand and pollutant load to be treated in areas, mainly on the coast, with a major tourist industry) and pollution from industry and agriculture connected to the urban sewerage system.
- Sensitive zone: established in accordance with the criteria set out in Annex II of Directive 271/91/EC (Article 5) for lakes, lagoons, reservoirs and eutrophic estuaries, or those which could become so, for inland surface water used for drinking water, and for those water bodies requiring treatment in addition to secondary treatment in order to meet the Directive's targets.

The review of sensitive zones within inter-community river basins was approved by the Resolution of 10 July 2006 of the Secretariat General for Spatial Development and Biodiversity *(Secretaría General para el Territorio y la Biodiversidad)* (Official State Gazette No. 179 of 28/07/06).

The Water Quality Plan 2007-2015 *(Plan de Calidad de las Aguas 2007-2015)* was approved by the Council of Ministers in June 2007.

SOURCES

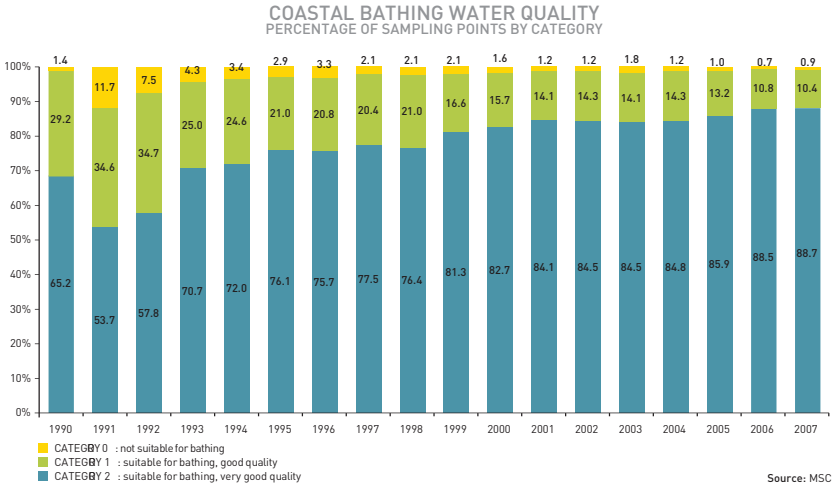
- Figures provided by the Sub-Directorate General for Infrastructure and Technology *(Subdirección General de Infraestructuras y Tecnología)*. Directorate General for Water. Spanish Ministry of the Environment (MMA).

FURTHER INFORMATION

- http://www.mma.es

Coastal bathing water quality

Bathing water quality continues to improve, with over 99% rated as being of good or very good quality



Source: MSC

The regulations governing bathing water quality are laid down by Royal Decree 734/88 of 1 July 1988 *(Real Decreto 734/88)*, which establishes their classification into 3 categories: "Not suitable", "good quality" and "very good quality". The parameters used are both microbiological (total coliforms and faecal coliforms) and physical and chemical (colour, mineral oils, surface-active substances, phenols, transparency and floating matter).

The trend on Spain's coasts is clearly towards improvement, although last year (2007) witnessed a slight increase (0.2%) in the percentage of bathing waters of unacceptable quality, which occurred at the expense of good quality waters. Nevertheless, it should be noted that waters with the worst quality rating account for less than 1%, while the percentage of very good quality waters continues to increase.

In March 2006, a new European regulation on bathing water quality was approved (Directive 2006/7/EC of 15 February) to bring the foregoing Directive into line with scientific and technical advances. It provides a new bathing waters classification divided into four categories: "Poor", "Sufficient", "Good" and "Excellent".

While the previous Directive required regular monitoring of 19 pollutants and a number of other parameters, the new one reduces the list to just two microbiological indicators: Escherichia coli and intestinal enterococci. This simplification is due to the fact that faecal matter originating from inadequate treatment of wastewater and from pollution of animal origin is the main health hazard for bathers.

NOTES

- Classification of the quality of these waters is based on microbiological criteria: presence/absence of faecal coliforms and total coliforms. Category 2 is allocated to the best quality water, whilst at the other end of the scale the water is classified as category 0.
- The most frequent sources of pollution are direct discharge of untreated wastewater and temporary break-down in wastewater treatment infrastructure.
- The Hygiene Classification of Bathing Water at Sampling Point follows the criteria below:

  CATEGORY 2: Water suitable for bathing, very good quality. Such water simultaneously meets the following conditions:

  1) At least 95% of samples must not exceed the required values for: Total Coliforms, Faecal Coliforms, Salmonella, Enteroviruses, pH, Colour, Mineral Oils, Surface-active Substances, Phenols and Transparency.
  2) At least 80% of samples must not exceed the guideline values for: Total Coliforms and Faecal Coliforms.
  3) At least 90% of samples must not exceed the guideline values for: Faecal Streptococci, Transparency, Dissolved Oxygen and Floating Materials.

  CATEGORY 1: Water suitable for bathing, good quality. Such water complies with condition 1) of Category 2, but not conditions 2) and/or 3).

  CATEGORY 0: Water not suitable for bathing. This is water which does not meet condition 1) of Category 2.
- In accordance with the terms of Directive 76/160/EEC, on the Quality of Bathing Water, the Spanish Ministry of Health and Consumer Affairs *(Ministerio de Sanidad y Consumo)* sends the European Commission an Annual Summary Report on Bathing Water Quality in Spain, setting out the key aspects of hygiene monitoring of such water by the various Regional Governments and the Autonomous Cities of Ceuta and Melilla, in accordance with Royal Decree 734/88 (Real Decreto 734/88), of 1 July.
- On 15 February 2006, the new Bathing Water Quality Directive (2006/7/EC) was approved. Among other aspects, this Directive modifies the current bathing water classification system, establishing four assessment categories (Excellent, Good, Sufficient and Poor), reducing the number of parameters considered and defining water quality at each point using a three-year average.

SOURCES

- Data provided by the Sub-Directorate General for Environmental Health and Health and Safety at Work *(Subdirección General de Sanidad Ambiental y Salud Laboral)*. Spanish Ministry of Health and Consumer Affairs.

FURTHER INFORMATION

- **http://www.msc.es**
- **http://ec.europa.eu**