# Introduction and summary

# INTRODUCTION

## OBJECTIVES

As in the three previous editions, the main aim in producing the Environmental Profile of Spain 2007 – Indicator-based Report, has been to disseminate information about the current state of the environment in this country and the main factors that condition it. It is the first national indicator-based environmental report.

The three main objectives can be summarised as follows:

- Present an overview of the environmental situation in Spain, provide a break-down by Autonomous Community, and compare the data with the rest of the European Union (EU);
- Contribute towards monitoring of sectoral and integration policies, and;
- Monitor changes in the environment through a series of indicators.

This edition essentially employs the same structure and set of indicators as previous reports, although some modifications have been made as a result of the experience gained so far, changes in the environmental circumstances in this country, the emergence of new trends in information dissemination, and the obligation to comply with certain information requirements.

Among the new content, it is worth highlighting the incorporation of a new section that complements the existing material and provides environmental information on each of Spain's Autonomous Communities and data on their territorial, social and economic features. This information is provided in the form of data sheets intended to facilitate interpretation. This new section has been created because it is not possible to present a break-down by Autonomous Community for every indicator. This is a restriction that has existed since the Report was first created and that we are now endeavouring to remedy. This additional data on each Autonomous Community helps define a much broader environmental profile of Spain as it enables us to focus on each individual Autonomous Community's particular features and territorial, administrative and organisational situation. This Report plays a significant role in fulfilling a social and educational need to make environmental information that is both easy to access and interpret available to the public and politicians by presenting it in the form of indicators. At the same time, it also contributes towards fulfilling the obligation to disseminate information established under a large proportion of EU directives, as well as contributing to compliance with the regulatory obligations that these impose on a national scale.

On 25 June 1998, the United Nations Economic Commission for Europe approved the Aarhus Convention on access to environmental information, public participation in environmental decision-making and access to justice in environmental matters. The basic premise is clear: in order for citizens to enjoy the right to a healthy environment and fulfil their duty to respect and protect it, they must have access to relevant environmental information and be entitled to participate in environmental decision-making. Furthermore, they must have access to justice when these rights are denied them. The Convention was ratified by Spain in December 2004 and came into effect on 31 March 2005.

Directive 2003/4/EC, of 28 of January 2003, on public access to environmental information, and Directive 2003/35/EC, of 26 May, providing for public participation in respect of the drawing up of certain plans and programmes relating to the environment, constitute the EU's legislative cornerstones in this field. These two Directives were transposed into Spanish law by Act 27/2006 *(Ley 27/2006)*, of 18 July 2006, on right of access to information, public participation and access to justice in environmental matters. This Act establishes that the Public Administration should produce and publish no less than one annual summary report on the state of the environment and, every four years, produce and publish a comprehensive report. This report should address the issue from a national, regional and local (when applicable) perspective and its content must include data on the quality of the environment, the pressure exerted upon it and a non-technical summary that is easily comprehensible to the general public.

Taking into account that the Environmental Profile of Spain provides a yearly snap-shot of the environmental situation in this country, analyses the greatest pressures on the environment, and facilitates monitoring of the effectiveness of the policies implemented by analysing trends (particularly since it interprets data covering extensive time periods), it is clear that this Report complies with the requirements of

the above-mentioned Act and complements the publications that both the National and Regional Governments produce under their various areas of responsibility. In addition, it makes it easier for decision- makers to perform their task and develop and propose measures designed to improve the environment and prevent deterioration of its quality.

In Spain, the Council of Ministers of 23 November 2007, approved the Spanish Sustainable Development Strategy (EEDS – *Estrategia Española de Desarrollo Sostenible)* developed within the framework created by its EU counterpart approved by the Council of Brussels of 2001 and renewed by the Council of Brussels of 2006. The EEDS has been closely aligned with the European strategy and, like it, promotes sustainable development by integrating the economic, social, environmental and global perspectives. Its objectives include: guaranteeing economic prosperity, ensuring protection of the environment and preventing degradation of natural capital, promoting social cohesion, and contributing to the development of less advantaged countries in the quest to achieve global sustainability. The economic aspect of sustainable development is addressed under the National Reform Plan (PNR – *Plan Nacional de Reformas)* with which Spain has ratified the Lisbon commitment. The EEDS assumes that the economic aspect is taken care of under the PNR and solely addresses the environmental, social and global aspects of sustainability.

In its final chapter, the EEDS proposes creation of a monitoring mechanism implemented through production of specific reports drawn up not only by the Interministerial Group that drafted the Strategy, but also by the National Agency for the Evaluation of Public Policy *(Agencia Estatal de Evaluación de las Políticas Públicas)* and the Spanish Sustainability Monitoring Centre *(Observatorio de la Sostenibilidad de España)*. The Strategy defines a set of indicators used to perform monitoring, many of which coincide with those developed for the Environmental Profile of Spain.

We need to be aware that Spain's enormous natural wealth and biodiversity may be threatened by the loss or alteration of its natural resources. The economic development that contributes so much to growth and social prosperity is one of the main causes of environmental degradation and the loss of natural heritage. Awareness of the links between economic performance and the environment needs to drive the move towards greater eco-efficiency in Spain's energy and resource consumption. Decoupling economic growth from consumption of the resources that fuel it will be achieved by reversing current trends, diminishing resource consumption and the environmental pressure derived from it to create a scenario characterised by eco-efficiency. Therefore, we need to focus on optimising consumption of natural resources and showing greater respect for the environment whilst ensuring that these are compatible with increasing the competitiveness of the Spanish economy.

The Environmental Profile of Spain has been produced from the best available information provided by the Spanish Ministry of the Environment, other ministerial departments, institutions, State agencies and Regional Governments. It features contributions from a wide selection of people, among whom the Spanish EIONET network has once again played a leading role. As has been the case since the first Report, the National Reference Centres and Regional Focal Points have provided the technical advice and data, as well as reviewing the proposed content, that have been necessary to produce this document and that form the foundations of the Environmental Profile of Spain. Part of this advice takes the form of suggestions on how to enhance the content, and these will be taken into consideration in future editions. We would also like to make special mention of the work done by the representatives of the various Regional Focal Points and the contribution made by their own information network. This input has been crucial in producing this edition, particularly in the section providing environmental information on each of Spain's Autonomous Communities.

As has already been mentioned, this year's edition continues the series launched in 2004. Comparison with the previous publications makes it possible to analyse trends in the state of the environment and in the influence exerted by the various factors that condition it. Like any document that draws on information from a wide range of organisations and institutions, the Environmental Profile of Spain depends on the data available. This has given rise to variations in some chapters. As a result, the information offered by several indicators has been summarised when trend analysis reveals, for example, that the issue being measured no longer constitutes an environmental problem.

Some indicators have been removed due to a lack of up-to-date information and to the fact that it has not been possible to contribute new data to the existing series and, therefore, advance or extend the analysis performed last year. This is the case, for example, of the indicator measuring Ramsar wetlands. Here, the decision was taken not to reproduce the indicator with the same information as in the previous edition and to mention the reasons behind it in the introduction to the chapter.

However, when the availability of relevant new information makes it possible to create new indicators (e.g. bio-fuel consumption), the decision has been taken to produce them and include them in the Report. On occasion, the reason for incorporating them is provided by the significance of the phenomenon that they analyse. This is the case, for example, with the air transport indicator, which has been included again in this edition because of the boom in air travel in recent years and its impact on the environment.

Another common problem in this type of report, and that has been encountered in this one, is the inevitable time that it takes for sources to publish their information. This means that many indicators have only been updated to 2006, or even 2005, even though the Report is published in 2008. In addition, the requirements of the document design and printing process set a deadline for data inclusion. If the time-frame in which to produce the report had been longer, it is likely that many of the indicators would have included more recent data. Unfortunately, extending the deadline was not compatible with the commitment to publish the Report within the established dates.

The table below shows the total number of indicators by year for which data is available.

NUMBER OF INDICATORS BY DATE OF UPDATE

| 2000 | 2004 | 2005 | 2006 | 2007 | Total no. of indicators |
|---|---|---|---|---|---|
| 2 | 1 | 12 | 41 | 20 | 76 |

This edition also seeks to establish a balance between the number and extent of the indicators, bearing in mind that an excessive number may hinder and delay production of the Report. Thus, one of the guidelines has been to restrict the number of indicators and, therefore, the length of the publication, to a manageable size.

Finally, another circumstance worth mentioning occurs when the source of information modifies the methodology employed to calculate the base data, which naturally produces variations in the indicator's result and in the series of which it forms part. Sometimes, these changes in methodology give rise to complete review of the data series, and these reviews do not always take historical data into account, which means that the available series are shorter. The emphasis on maintaining methodologically coherent series means that the indicators' reference period may sometimes be shorter than that





included in previous editions and is conditioned by the availability of certain variables. This is the case, for example, of indicators that include information on the Gross Domestic Product (GDP) or Gross Value Added (GVA) of a sector or economic activity.

## STRUCTURE

This new edition of the Environmental Profile of Spain incorporates a new feature into its structure that differentiates it from previous editions. In addition to the three main blocks produced so far (Background, Environmental Areas and Sectors, and Appendices) a new one, Autonomous Communities: basic data, has been created. This now appears third in the Report, making the Appendices the fourth and final block.

This innovation constitutes a major advance in reports of this type as the Environmental Profile of Spain is the first indicator-based publication to compile detailed information on each of Spain's Autonomous Communities and Autonomous Cities and present it in a format that complements and contributes to the environmental analysis performed on the country as a whole.

Its inclusion has been made possible by the contribution made by each of Spain's Autonomous Communities which, through their Spanish EIONET representatives, have helped to define the content, verify the territorial and socio-economic data initially proposed, and have supplied practically all the environmental information and perspectives that they have considered it relevant to highlight.

The aim is to present basic data on the environmental situation encountered in each Autonomous Community, enriching this information with insights into territorial and socio-economic issues. The section's content is divided up under the following five headings:

- Territorial and administrative data
- Social and economic data
- Environmental data and information on key environmental issues
- Other noteworthy features of the Autonomous Community
- Recommended websites and publications

In order to prevent the Environmental Profile of Spain becoming unwieldy, the information included on each Autonomous Community was restricted to two pages, a decision that has enormously conditioned the content. The reception that this initiative receives among users and within the Autonomous Communities themselves will determine how the chapter is developed in future editions.

The other chapters' content and format are similar to that of previous years. The Background presents a summary of Spain's main territorial features and addresses some social and economic aspects. Furthermore, this edition examines the basic characteristics of the country's river network in detail.

The second section constitutes the bulk of the publication and is divided up into environmental and sectoral indicators grouped into the habitual 14 chapters.

These are as follows:

1. Air
2. Water
3. Land
4. Nature & biodiversity
5. Waste
6. Agriculture
7. Energy
8. Industry
9. Fishing
10. Tourism
11. Transport
12. Households
13. Urban environment
14. Natural and technological disasters

Each chapter begins with an introduction that summarises the area's key traits and highlights the most relevant characteristics of recent years, as well as describing the relevant circumstances surrounding the information in the chapter and indicators. It includes a chart of the indicators included in the chapter and states the goals established for them and the trends observed. Each of the indicators is introduced under the relevant title, which is followed by a key statement that highlights the main trend or circumstances.

Where necessary, the text begins with a definition of the indicator and is followed by a graphical representation, either in the form of a graph or table, then by analysis and assessment of the overall trend. When suitable data are available, it also includes a break-down by Autonomous Community and corresponding graphs and maps, as well as references to the European Union that enable the reader to compare the situation in Spain with that of other EU countries and the EU as a whole. Whenever possible, analysis is complemented with assessment of the extent to which targets established either by legislation or the corresponding plans and programmes have been met.

Finally, each chapter includes a notes section that explains the methodology employed, how the information is interpreted, relevant legislation, etc. It also includes the information sources used to compile and calculate the indicator and websites or publications where it is possible to find further information related to the indicator.

## HISTORY

The origins of this publication lie in the preliminary studies carried out by the Spanish Ministry of the Environment when creating the Spanish System of Environmental Indicators, ongoing development of which has resulted in a series of publications. Beginning with the initial proposal, "Environmental Indicators. A proposal for Spain" ("Indicadores ambientales. *Una propuesta para España*") published in 1996, several subsequent documents have been published, among them: "Biodiversity and Forests" (*"Biodiversidad y bosques"*), 1996; "Water and Soil" (*"Agua y suelo"*), 1998; "Atmosphere and Waste" (*"Atmósfera y residuos"*), 1999; "Urban Environment" (*"Medio urbano"*), 2000; "Coasts and Marine Environment" (*"Costas y medio marino"*), 2001; "Spanish System of Environmental Indicators for Tourism" (*"Sistema español de indicadores ambientales de turismo"*), 2003; "Trama 2005: Report on Transport and the Environment" (*"Trama 2005. Informe sobre transporte y medio ambiente"*), 2006; and "Trama 2006: System of Indicators for Monitoring Integration between Transport and the Environment" (*"Trama 2006. Sistema de indicadores para el seguimiento de la integración del transporte y medio ambiente"*), 2007.

In 2000, and with input from the Spanish EIONET User Group, work began to select a set of indicators that would address Spain's main environmental issues and problems in sufficient depth and serve as the basis for a report on the state of the country's environment. This selection process resulted in an internal working document known as the Core Environmental Indicators *(Tronco Común de Indicadores)*, which were agreed on within the Spanish EIONET User Group.

Next, taking the Core Environmental Indicators as the starting point, the task of defining the content of the first report began. After selecting the indicators and deciding on a coherent structure, the first edition was produced.

In 2006, the Spanish Ministry of the Environment published the Public Bank of Environmental Indicators (*Banco Público de Indicadores Ambientales*) and made it available via its website, updating the data used for the indicators in each edition of the Environmental Profile of Spain. This initiative complements the Spanish System of Environmental Indicators and its goal is to present and disseminate the information compiled in the indicators via the MMA website and contribute towards raising awareness about the key environmental issues affecting Spain nationally, regionally and locally. It is a markedly public venture and has been created with the intention of providing a useful resource to all members of the public, groups and organisations that require access to the best environmental information available.

The methodology employed to produce the Environmental Profile of Spain is similar to that used in reports published by the European Environment Agency (EEA) and other international organisations (European Commission, OECD, United Nations, etc.). In this respect, some of the indicators coincide with those established by the European Union to monitor its Sustainable Development Strategy, those used by the Commission to draw up its Synthesis or Spring Reports, and those defined by the EEA in its Core Set of Indicators. Design and production of the Environmental Profile of Spain has closely followed the criteria and methodology employed by the European Environment Agency in preparing its environmental assessment reports.





The European Environment Agency defines an indicator as an "observed value representative of a phenomenon to study. In general, indicators quantify information by aggregating different and multiple data. The resulting information is therefore synthesized. In short, indicators simplify information that can help to reveal complex phenomena".
Indicators are used to simplify, quantify, homogenise or standardise and communicate, making information more comprehensible by summarising complex data series. They are different to data flows and statistics in that they relate the past, present and future to reference values, such as thresholds, baseline years and specific targets.

The EEA defines four types of indicator used to disseminate information on the environment:

- **Descriptive indicators:** these analyse what is happening to the environment and society.
- **Performance indicators:** these compare the actual state of the environment with a specific set of reference conditions and therefore measure the distance between the current environmental situation and the desired one.
- **Efficiency indicators:** these relate environmental pressures to human activities. They provide insight into the efficiency of products and processes (efficiency in terms of the resources used and the atmospheric emissions and waste generated per unit of desired output).
- **Total welfare indicators:** these analyse aspects of sustainable development.

# SUMMARY

## AIR

Between 2005 and 2006, atmospheric emissions of polluting gases fell by 1.7%, the first time that the figure has decreased in Spain since the Kyoto Protocol was signed, indicating a new trend. Emissions in 2006 stood at 433,339 kilotonnes of $CO_2$ equivalent, 49.5% above the amount assigned to Spain for the Kyoto Protocol's baseline year (289,773 kilotonnes of $CO_2$-eq). In 2006, energy processing (including transport) was responsible for 78.1% of emissions. $CO_2$ was the only gas for which emissions were reduced in 2006 compared with 2005 (2.3%), although it still accounts for 83% of total emissions. The other pollutants increased slightly on 2005, except for $SF_6$ and HFCs, which increased by a much larger margin (19.1% and 10.9%, respectively). Over the period 1990-2006, $CO_2$ increased by 57.4%, $CH_4$ by 33.8% and $N_2O$ by 8.2%.

Emissions of acidifying substances and eutrophying gases show an imbalance: in the period 1990-2006, there was a 45.9% fall in sulphur oxide emissions, a 24.8% rise in ammonia emissions, and a 19.1% increase in nitrogen oxide emissions. The main contribution to overall $SO_2$ emissions in 2006 was by combustion in energy production and transformation (77.9% of the total), followed by combustion in manufacturing industry (10.1% of total emissions). The same year, transport produced 50.4% of the $NO_X$ emitted into the atmosphere. The second-largest source was combustion in energy production and transformation (21.5%). Agriculture emits the highest volume of $NH_3$ (almost 393,599 tonnes), accounting for 91.2% of the total.

Over the period 1990-2006, tropospheric ozone precursor gas emissions decreased, registering falls of 26.4% in total CO emissions and of 15.4% in those of NMVOCs. At the same tine, CH4 and $NO_X$ emissions rose by 33.8% and 19.1%, respectively. Transport was the sector that emitted most CO into the atmosphere in 2006, being responsible for 33.1%. The majority of methane emitted into the atmosphere in 2006 was produced by agriculture (59.6% of the total) and waste treatment and disposal (27.7%).

In terms of the national emission ceilings established for 2010 (Directive 2001/81/EC of the European Parliament and of the Council, of 23 October), a downward trend is observed throughout the 1990-2006 period in $SO_2$ emissions, while there was a slight increase in $NH_3$ and $NO_X$ emissions. To meet the 2010 targets, $NO_X$ emissions should be reduced by 38% (with regard to 2006), whilst those of NMVOCs should be reduced by 28.7%, figures which, according to the current trend, will require enormous efforts to be made.

As regards regional background air quality, the only problems recorded have been related to ozone (the target value was exceeded at all the stations except for Niembro, in Asturias). Currently, neither particulate matter nor the remaining pollutants are a problem in these non-urban areas.

Apparent consumption of ozone-depleting substances in Spain is steadily falling and is relegated to use in activities in which they are permitted. Approval in 2006 of European Regulation 842/2006 regarding certain fluorinated greenhouse gases is also worth mentioning. This is an initiative that contributes to limiting the use of alternative coolants that have a high global warming potential.

Act 34/2007 (*Ley 34/2007*), of November 2007, on air quality and protection of the atmosphere, is conceived as a new way of managing air quality. It replaces Act 38/1972 (*Ley 38/1972*), of 22 December, on protection of the atmospheric environment, and its enabling regulation, Royal Decree 833/1975 (*Real Decreto 833/1975*), of 6 February. The new Act has been created to monitor, reduce and prevent atmospheric pollution in order to avoid or decrease the damage that it could cause to people, the environment and other assets. The details of the full implications and obligations that it involves will not be known until the pertinent enabling regulation is passed. Nevertheless, it is worth highlighting the considerations it raises as regards protection of the atmosphere when planning sectoral policy and the creation of indicators to enhance the information available on the state of pollution and the effectiveness of the measures adopted.

## WATER

Among the European regulations that came into effect in 2006, it is particularly worth highlighting Directive 2006/7/EC of the European Parliament and of the Council, of 15 February, on management of bathing water quality, which replaces Directive 76/160/EEC. In addition, in March 2007, the Water Information System for Europe (WISE) was set up as a joint project between the European Commission and the European Environment Agency.

In order to address the problems arising from Spain's traditional water scarcity, the Government approved the Special Action Plans for Alert and Temporary Drought Situations (*Planes Especiales de Actuación en Situaciones de Alerta y Eventual Sequía*), the National Water Quality, Sewerage and Treatment Plan 2007-2015 (*Plan Nacional de Calidad de las Aguas: saneamiento y depuración* 2007-2015), and the Spanish Plan for the Conservation and Rational Use of Wetlands (*Plan Español para la Conservación y el Uso Racional de los Humedales*), among others. It also created the Water Information System (SIA – *Sistema de Información de Agua*) to integrate all of the sector's information sources. This centralised system is accessible from the Spanish Ministry of the Environment website.

The chapter presents a series of indicators that provide information both on available resources and on water quality. The results indicate a substantial improvement in quality, though not in quantity, as Spain has entered a new drought period. Improvements in waste-water treatment and a decrease in consumption seem to be the driving forces behind the rise in water quality.

As regards water consumption, the volume distributed for both municipal supply and agricultural use has fallen, with the former showing a 2% drop between 2004 and 2005. In 2005, average water consumption per inhabitant per day stood at 166 litres, compared with 171 litres in 2004. In agriculture, improvements to irrigation technology and techniques have produced a 7.3% reduction in water use and consumption, resulting in the lowest consumption level of the last 10 years. In 2005, drip irrigation increased to account for 29.4% of the sector, expanding at the expense of gravity-fed irrigation, which stood at 47% that year. Meanwhile, comparison between the indices for water consumption and the sector's GDP indicate that it is progressing towards greater eco- efficient water use.

Data for the 2006-2007 hydrological year show higher reservoir water levels than either of the two previous years. However, it should also be pointed out that the first half of the 2007-2008 hydrological year was the driest in the last 60 years. Data as at 2 January 2008 reveal that reservoir water levels have since fallen in most river basins. This decrease has been particularly dramatic in the Mediterranean watershed and the water level nationally is below the 10-year average.

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. To achieve this, desalination of marine or brackish water is one of the alternatives chosen. In 2007, Spain's desalination capacity stood at 2.1 $hm^3$/day, a 5% increase on 2006. The Canary Islands, Andalusia and Murcia have the greatest installed capacity, while Melilla and Murcia were the two Autonomous Communities that most increased their desalination capacity in 2006. The main factor limiting use of desalination is almost exclusively economic and derives from the energy consumption involved, which ranges between 3.5 and 3.8 kw/$m^3$.

Nitrate concentration is one of the key parameters used to assess the state of groundwater bodies. In 2006, the percentage of monitoring stations recording nitrate concentrations above 50 mg/l varied considerably across the various River Basin Districts. In comparison with 2005, the situation in the Douro and Guadiana River Basin Districts improved substantially. On the other hand, the situation in the Tagus River Basin District worsened and the percentage of stations recording exceedance levels above 50 mg/l doubled. Pollution levels in all of the other River Basin Districts remained similar to the previous year.

Biological Oxygen Demand (BOD5) is an indicator of organic pollution of rivers, and is directly related to urban waste-water discharge. The available data indicate an improvement from 1995 onwards, which coincides with the launch of the first National Sewerage and Waste- Water Treatment Plan 1995-2005 (Plan de Saneamiento y Depuración 1995-2005). 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. However, ammonia concentration does not show such a clear trend: since 2000, the situation has varied from year to year, with the percentage of stations registering the highest concentration stabilising at around 10%, while those recording the lowest concentration levels have ranged between 58% and 47%.

Directive 91/271/EEC, of 21 May, on waste-water treatment, was implemented through the aforementioned National Sewerage and Waste-Water Treatment Plan 1995-2005. 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. In terms of reuse of treated water, only 450 $hm^3$/year (14% of the total) is reused. The break-down by sector reveals that agriculture receives 75% and leisure use receives 12%. The remainder is consumed by industrial or environmental uses and municipal services. It is to be expected that application of the National Sewerage and Waste-Water Treatment Plan 2007-2015, drawn up by the Spanish Ministry of the Environment and the various Regional Governments, will bring a substantial improvement in water quality. The Plan's objectives include undertaking any work that was not carried out under the previous plan, and implementing new actions.

Finally, and as regards coastal bathing water quality, it can be affirmed that the trend around Spain's coastline is towards clear improvement. This is revealed by the fact

that in 2007, 88.7% of coastal bathing waters were rated as being of 'very good quality' and 10.4% as being of 'good quality'. Nevertheless, in the final year of the period studied, there was also a slight increase in the percentage of bathing waters classified as being of 'unacceptable quality'. These rose from 0.7% of the total in 2006 to 0.9% in 2007. Aforementioned Directive 2006/7/EC proposes a new four-category bathing water classification (poor, sufficient, good, excellent) and reduces the previous list of 19 criteria to just 2 microbiological indicators – Escherichia coli and intestinal enterococci.

## LAND

The indicators in this chapter analyse the changes produced in land cover, the typology of developed land on the coast, the area affected by erosion and the area at risk from desertification. The first indicator examines the changes produced in the period between the two Corine Land Cover projects (1990 and 2000) and refers to artificial surfaces in cities with over 100,000 inhabitants. It reveals growth, above all, in "industrial and commercial units", followed by an increase in "garden and/or open housing areas", i.e., residential areas outside urban centres. The break-down of artificial surfaces by type varies from one Autonomous Community to another. For example, Andalusia stands out particularly for the amount of area covered by "road networks and associated land". The next indicator reveals the changes that have occurred in the 10-km-wide strip along Spain's coastline. This zone shows much greater growth in artificial surfaces created by "garden and/or open housing areas" and "sports and leisure facilities".

This chapter also provides updated information from the National Soil Erosion Inventory (*Inventario Nacional de Erosión de Suelos*) drawn up by the Spanish Ministry of the Environment, which completes the existing data on 11 Autonomous Communities. The final indicator reflects the area at risk from desertification diagnosed under the Spanish National Action Programme to Combat Desertification (PAND – *Programa de Acción Nacional contra la Desertificación*). The area at very high risk (1,029,517 ha) represents 2.03% of national territory, whilst the area at high and medium risk (8,007,906 and 9,718,040 ha, respectively) represent 15.82% and 19.20% of the total.

## NATURE & BIODIVERSITY

In 2007, conservation policy in Spain was boosted by approval of Act 42/2007 (*Ley 42/2007*), of 13 December, on Natural Heritage and Biodiversity (*Patrimonio Natural y de la Biodiversidad*), which defines a series of planning, protection, conservation and restoration processes designed to maintain Spain's natural heritage and biodiversity throughout its national territory. Under this Act, the Government intends to draw up a Strategic Plan for Natural Heritage and Biodiversity (*Plan Estratégico Estatal de Patrimonio Natural y de la Biodiversidad*) to protect Spain's most important habitats and species.

In 2007, protected areas in Spain accounted for 9.22% of the country's total surface area. Meanwhile, the Natura 2000 network now covers 26.43%. In absolute terms, total protected terrestrial area currently stands at 13,576,855 ha which, when added to the 799,075 ha of protected marine area, produces a total protected area of 14,375,930 ha. In Catalonia, between 2005 and 2007, the terrestrial area covered by the Natura 2000 network increased by 56%, whilst protected marine area grew by 63%. The other Autonomous Communities did not register any changes.

According to the National Biodiversity Inventory (INB – *Inventario Nacional de Biodiversidad*), 32% of Spain's vertebrates have not yet been assessed and for 6% of them the data available are still insufficient. As regards threatened vertebrate taxa, birds account for 52%, fish for 19%, reptiles for 12%, mammals for 11% and amphibians for 6%. The state of conservation of terrestrial vertebrates as a whole appears to have worsened between 1992 and 2007 according to the baseline established by the Red Book of Vertebrates (*Libro Rojo de los Vertebrados*) published in 1992.

As regards invertebrates, the INB has only considered 300 of the 60,000 that are estimated to exist in Spanish habitats. As a result, the data is considered insufficient. In terms of flora (considering only vascular flora), of some 8,000 species, 1,500 are considered to be threatened and are included in the Red List of Vascular Flora (Lista Roja de la Flora Vascular) published in 2007. Of this number, 17% are considered to belong to one of the threatened categories. According to Act 42/2007 (*Ley 42/2007*), conservation strategies should be drawn up for all endangered species by 2010. In addition, a Spanish Catalogue of Threatened Species (*Catálogo Español de Especies Amenazadas*) and a Spanish Strategy for Invasive Alien Species (*Estrategia Española de Especies Exóticas Invasoras*) should be developed.

As far as forest ecosystems are concerned, the Third Spanish National Forest Inventory (IFN3 – *Tercer Inventario Forestal Nacional*), which has yet to be completed, estimated a total of 27,459,478 ha for 2006. This would represent an increase of 5.68% on the area recorded by the Second Spanish National Forest Inventory (IFN2) in 1996. This rise becomes even greater if only wooded forest area, which grew by 27% in the period 1996-2006, is analysed. Meanwhile, the non-wooded area has shown the opposite trend, decreasing by 19%. In 2006, the IFN3 for the Basque Country and Navarre was completed, showing an increase in wooded area of 2% and 20%, respectively.

Monitoring of forest health is performed by the Service for Protection against Harmful Agents Data Centre (CENDANA – *Centro de Datos del Servicio de Protección contra*

*Agentes Nocivos*), which reports to the Spanish Ministry of the Environment. CENDANA indicates that in 2007, an improvement in the state of forest defoliation was observed in comparison with the previous year. Moreover, this improvement was produced in both coniferous and broad-leafed trees and helped to palliate the poor results recorded in 2005. In terms of causes of forest damage, 36% was caused by insects, 30% was due to abiotic damage and 12% was caused by fungi.

## WASTE

Waste constitutes one of current society's most serious problems due to its rate of growth and the hazardous nature of many substances. Waste generation is closely related to the life-cycle of materials, which runs from their extraction to the moment of their disposal. Waste management is, and must be, one of the priorities of environmental policy and needs to be complemented by measures adopted within the various production sectors.

This chapter presents a series of indicators that reveal the current situation in the sector. According to the European Environment Agency, in 2005 a total of 592 kg of urban waste were collected per inhabitant, placing Spain in seventh position in the EU-15 in terms of waste generation. In the period 1995-2005, urban waste generation in Spain grew by 15.6%, ranking the country ninth within the EU-15.

An effort is being made in Spain to unify estimation methodologies and bring about convergence towards agreed urban waste collection data as both the Spanish Ministry of the Environment and the Spanish National Institute of Statistics (INE – *Instituto Nacional de Estadística*) produce figures that are substantially different to those provided by the EEA. The MMA estimates that in 2006, 523.2 kg/inhab were collected, 4.6% more than in 2005.

In terms of waste management, Spain incinerates less than 25% of its waste and recovers over 25%. The break-down of quantity of waste treated by facility type shows that landfill has increased, rising by 9% between 2005 and 2006.

Between the same years, waste incineration with energy-value recovery grew by 5.7%, while the amount of waste managed at sorting and composting facilities increased by 8.3%; and the volume handled at sorting, biomethanisation and composting facilities rose by 4.0%. The 83.3% increase in waste treated at packaging sorting plants was also significant.

As regards the paper-cardboard recycling rate, in 2006 this stood at 68.3%, a figure above the EU average and a volume that exceeded 5 million tonnes for the first time. In the break-down by Autonomous Community, the Basque Country and Navarre recorded the highest rates, well above the national average (17.9 kg/inhabitant/year). Likewise, the glass recycling rate also developed positively: in the period 1990-2007, the glass recycling rate increased by 30 percentage points to stand at 56%. This represents a total of 936,337 tonnes of recycled glass in 2007, a 10.2% rise on the previous year. In 2006, Spain recycled 51% of its glass. However, when compared with other European countries, it is still a long way behind the likes of Switzerland, Sweden and Belgium, where the recycling rate is over 90%.

Packaging waste recycling and recovery showed an upward trend between 1997 and 2005. The data reveal that the majority of municipalities with more than 5,000 inhabitants (94%) operate a separate collection system. In 2005, Spain moved closer to the 2009 targets established by Royal Decree 252/2006 (Real Decreto 252/2006), of 3 March, achieving a recycling rate of 50.4% and a recovery rate of 56.1%. In absolute terms, in 2006, Ecoembes' Integrated Management System handled 1,267 thousand million tonnes of packaging waste, of which 53% was recycled and 200,686 tonnes were recovered for their energy value.

Finally, as regards sewage sludge production and use, the indicator shows that over 1 million tonnes of dry matter were produced in 2006, maintaining the upward trend seen since 1997 (689,000 tonnes). Agriculture continues to be the main use for this kind of waste (64.5%), which also produces bio-gas as a by-product. Finally, approximately 16% of this waste is disposed of in landfill.

## AGRICULTURE

Agriculture now operates within the new framework created by the latest CAP reform, which ties subsidies to environmental protection, food security and animal welfare standards. This approach is designed to contribute to socio-economic development and preservation of the rural landscape.

Support for rural development in Spain is reflected in approval of Act 45/2007 (*Ley 45/2007*), of 13 December, on sustainable development of the rural environment. This aims to achieve better spatial integration of rural areas, enabling a complementary relationship to develop between rural and urban environments. Within this context, this chapter analyses a series of indicators that monitor aspects of agriculture related to the environment.

With regard to fertiliser consumption, the figures for 2006 were similar to those for 2005 (estimated at almost 5 million tonnes). However, there was an increase in the quantity of nitrogen products used. The indicator 'fertiliser consumption per hectare' reflects this situation, showing 115.1 kg/ha in 2006 compared with 117.8 kg/ha in

2005. In both cases, nitrogen fertilisers account for over 50%. Meanwhile, phytosanitary product consumption remained at a similar level to 2005.

In 2006, the amount of organic farmland increased by 14.7% on 2005 and followed the upward trend seen in the period measured. As regards total utilised agricultural area (UAA), organic farmland accounts for 3.7%, now representing almost 1 million ha. In terms of both absolute figures and proportion of total UAA, Andalusia takes first place in the ranking of Autonomous Communities by contribution to organic farming. By crop type, the greatest area is devoted to pasture, grassland and forage, a category that recorded a significant 41% rise between 2005 and 2006. Meanwhile, the seed production and nursery sector was the one that registered greatest growth.

Irrigated area remained stable at around 13% of total agricultural area, although it is worth highlighting that in 2006 this shrank slightly in comparison with 2005 to stand at 12.5%. The break-down by irrigation system type reveals that for the first time the area irrigated by localised systems exceeds the gravity-fed area. This is a significant piece of data as regards increasing water usage efficiency.

While irrigated area and fertiliser consumption appear to be stabilising, it is less encouraging to see that an overall assessment of agriculture (eco-efficiency) reveals that GVA (which also includes livestock and fish farming) fell in 2005 and 2006.

## ENERGY

The primary energy intensity indicator shows changes in the ratio between energy consumption and GDP from year to year. In 2005, this fell, correcting the previous upward trend and bringing Spain into line with overall European performance. In 2006, there was a reduction in energy-related $CO_2$ emissions intensity, i.e. energy emissions per unit of GDP. This indicator continues to show major fluctuations that are strongly influenced by variations in climate and meteorology.

In 2006, annual primary energy consumption decreased for the first time since 1990. The proportion attributable to coal fell; oil remained the same; and that attributable to gas increased. At the same time, the proportion provided by renewable energies increased from 5.88% in 2005 to 6.60% in 2006. As regards the country's electricity generation structure, the share of electricity output produced by renewable sources increased. Finally, when examining the energy sector's eco-efficiency, it is worth highlighting that while GDP growth continued, its greenhouse gas emissions and primary energy consumption both fell.





## INDUSTRY

In 2005 and 2006, there was a 3.3% increase in industrial productivity. This rise occurred alongside a general reduction in pollutant emissions by industry. For the first time since 1996, in 2006, the previous upward trend in energy consumption by industry was reversed and a notable fall of 5.21% as compared with consumption in 2005 was produced. $CO_2$ emissions by industry dropped by 0.73% between 2005 and 2006, decreasing from 97,090 kt to 96,379 kt. The 8.83% reduction in $N_2$ emissions was particularly significant.

Figures on production of waste and investment in environmental protection by industrial enterprises have been provided as a new indicator. In 2006, production of non-hazardous waste by the energy and mining and quarrying industries increased, while that generated by manufacturing industry fell. In contrast, production of hazardous waste by the manufacturing and energy industries increased while that generated by quarrying and mining fell. Once again, the amount spent on environmental protection by companies in terms of both investment and operating expenditure increased.

Total Material Requirement also rose. This indicator measures the physical input of material entering the national economic system. The number of industrial enterprises in Spain registered with the European EMAS Environmental Management System grew once more. This increase was mainly produced once again in the Autonomous Communities of Catalonia, Madrid and the Basque Country.

## FISHING

European fisheries policy, which is common to all Member States, continues to seek the sector's long-term viability by applying an ecosystem-friendly fisheries management regime whilst taking into account the people whose livelihood depends on fishing, as well as considering consumer interests. The EU-25 fishing fleet decreased from 88,467 vessels in 2005 to 87,004 in 2006, with 21.12% of this fall resulting from reductions in the Spanish fleet. The number of vessels in the Spanish fishing fleet operating in all fishing grounds fell from 13,694 in December 2005 to 13,398 in December 2006.

The Spanish fleet's total catch has returned to a level similar to that recorded almost 50 years ago. At the same time, there has been a slight increase in catches in adjacent waters, particularly in the Bay of Biscay and the Mediterranean.

In 2006, Spanish aquaculture set a new record in terms of both production and economic value. Almost 80% of total production and 30% of economic value was

attributable to mussel farming, an activity that shows sharp annual fluctuations. Marine fish production continued to increase in 2006, with gilt-head sea-bream (17,836 tonnes), European sea-bass (9,438 tonnes), turbot (6,214 tonnes) and tuna (2,938 tonnes) reaching particularly significant volumes. In 2006, there were 5,206 marine aquaculture establishments, including mussel platforms, fish farms and marine facilities.

The eco-efficiency graph for fishing shows how the Spanish fishing fleet's number of vessels and power continue to fall in line with the general trend seen in other European countries. There has been an even greater decrease in total catch, although this varied depending on fishing ground. Gross Value Added also shows fluctuations, in part due to greater efficiency and modernisation in the sector, but also due to variations in mussel production from one year to the next. However, this trend is not applicable to fish production in aquaculture facilities, in which output continues to rise each year.

## TOURISM

In 2007, the tourism sector recorded a positive end-of-year result in terms of both number of tourists visiting Spain (58.5 million) and its contribution to the balance of payments, producing a surplus of 22,370.8 million. All of this occurred in a global context favourable to travel. The sector's social return, measured in terms of number of people making social security contributions, grew by 4% to reach almost 2 million jobs.

From an environmental standpoint, tourism exerts significant pressure because of the increase in transport (mainly by air and road), tourist and facility concentration on the coast, and the seasonal nature of holiday periods. In addition, it also brings extra resource consumption, particularly of water, additional waste generation and an increase in pollutant emissions, among other impacts.

In order to make tourism a sustainable activity and respond to the challenges that it raises, the European Commission has drawn up an Agenda for a Sustainable and Competitive European Tourism. In Spain, following the end of the Integral Quality Plan for Spanish Tourism 2000-2006 (PICTE – *Plan Integral de Calidad del Turismo Español 2000-2006*), the Government approved the Spanish Tourism Plan – Horizon 2020 (*Plan del Turismo Español, Horizonte 2020*), which involves a strategic short- and medium-term review of the Spanish tourism sector. The Plan has been designed around five broad strategic themes, one of which is sustainability.

This chapter presents indicators that show the number of foreign tourists per resident (1.31 tourists/inhab in 2006); the number of foreign tourists per kilometre of coast (average 6,632 tourists/km), which reveals major differences between Autonomous Communities; the Tourist Population Equivalent, which measures pressure from the perspective of number of overnight stays in relation to resident population; the number of visitors to National Parks; and, as a new feature in this edition, key figures for rural tourism (accommodation, capacity, tourists and overnight stays). It is worth underlining that rural tourism provides an alternative means of income in areas traditionally dependent on farming and fishing. The indicator shows that it is a growing sector and that, in environmental terms, it offers a viable alternative to the mass tourism found along Spain's coastline.

## TRANSPORT

Transport is one of the main economic sectors and, moreover, it has an influence on nearly all other economic activities. It is characterised by high growth: in the period 1990-2006 passenger transport expanded by 90% and goods transport by 115%.

Modal distribution in Spain is dominated by road transport, which continues to generate greatest demand for both passengers and goods. Between 1990 and 2006, air passenger transport grew by 266.8% and road passenger transport rose by 88.9%. Meanwhile, maritime passenger transport increased by 47.4% and rail transport expanded by 32.1%. The road passenger transport segment witnessed notable growth in motorcycle use, which grew at a greater rate than passenger car use in the period 2000-2006. As regards goods transport, in the period 1990-2006, a 0.2% drop was seen in rail while the other modes all increased, ranging from 28.6% in maritime transport to 100.7% in pipeline transport and 143.9% in road transport.

Transport is one of the sectors with the biggest negative impact on air quality. Atmospheric emissions of pollutants by transport showed an increase in GHGs (88.8% between 1990 and 2006, according to IPCC criteria) and a drop in ozone precursors (28.7%) and acidifying substances (5.4%) in the same period. In terms of energy consumption, transport is the largest consumer: it accounts for 39.2% of the total, surpassing industry's consumption since 2000.

Air transport exerts increasingly significant pressure on the environment. The rise in air traffic seen in recent years counteracts the technological improvements made and corrective measures implemented in the sector. In 2007, total air passenger traffic in Spain exceeded 210 million passengers, 8.7% more than the 2006 figure. If passengers in transit are excluded, the total number of passengers amounts to 208,546,308. Over the period 1990-2007, air transport grew by 184.2%. In 2006, air

transport had the third highest level of energy consumption (12.13%) among the various modes, coming behind road and maritime transport.

In addition to its polluting gas emissions, land cover due to the infrastructure required, and the noise and vibration generated, transport also produces an enormous quantity of waste, much of which is hazardous, which requires specific management models (mainly reuse and energy-value recovery). End-of-life tyres, re-use of which is increasing, are particularly significant among the waste generated. In the period 2000-2005, there was a 20.6% reduction in landfill and a rise in the other management options: use as recycled material (925% increase) and energy-value recovery (151.2% increase).

Bio-fuels are gradually developing as an alternative to fossil fuels. However, their use has recently generated controversy, in response to which the EU is drawing up some basic sustainability criteria for their development and usage, which will be incorporated into the legislation governing the quality of fuels and promotion of renewable energies. In 2005, bio-fuel consumption in the EU-25 represented 1.0% of the total, while in Spain it accounted for 0.44%.

Traffic accidents represent another of the major social problems associated with transport. In the 1990-2006 period, in which the vehicle fleet expanded by 84%, the number of fatalities dropped by 40.9%, while the total number of victims (including deaths and injuries) only fell by 9.2% and the number of accidents with victims only shrank by 1.7%. The accident rate (ratio between the number of accidents with victims and vehicle fleet size), decreased over the 1990-2006 period by 46.7%.

Finally, the eco-efficiency analysis shows that since 2002, transport's GVA has grown at a higher rate than its atmospheric emissions. Specifically, in the 1995-2006 period, the sector recorded economic growth of 74.3%. GHG emissions and demand for passenger and goods transport also grew, but to a lesser extent. Therefore, from an economic point of view, growth in the sector in recent years has taken place alongside lower growth in the environmental pressure that it creates.

## HOUSEHOLDS

The residential sector is made up of all permanently inhabited households. The sector grew by approximately 20% over the 2000-2006 period, reaching the figure of 15.6 million households in the latter year. This increase was due both to the rise in population and to the trend towards fewer members per household (in 2006, 44.5% of households contained only one or two members).





Households play a significant role in energy consumption, waste production, water consumption and $CO_2$ emissions. This consumption is financed through households' participation in distribution of income. One of the trends revealed in this chapter is the link between the increase in income and, in general, the increase in consumption, except for water consumption. There is therefore a visible parallel between growth in gross disposable income per household (2000=100), which in 2005 stood at 122.95, and energy consumption per household, which in 2005 reached 121.74. In absolute figures, gross disposable income per household in Spain climbed from 31,780 in 2000 to 39,074 in 2005. Nevertheless, there are still major differences between Autonomous Communities.

The most recent National Greenhouse Gas Emissions Inventory (*Inventario de Gases de Efecto Invernadero de España*) shows there was also an important reverse in the trend in CO2 emissions in 2006. It is estimated that these fell by 8% on the 2005 level, a drop that may be attributable to implementation of a series of preventive measures and milder winter temperatures.

However, in the period 2000-2006, there was a 12.9% rise in energy consumption for electrical usage and a 12.9% increase for heating/air conditioning (2.4% year-on- year rise per household). In comparison with the previous year, 2006 shows an increase in electrical usage, but a decrease in use for heating/air conditioning, which, overall, produced a fall of 3.9% in energy consumption per household.

As regards water consumption per household, there has been a clearly favourable downward trend (with some fluctuations) since 2000. The awareness-raising campaigns and restrictions imposed in the context of generally low rainfall are very likely to have contributed to this result. The INE calculates that water consumption per household per year in 2005 stood at 180 m3, whilst in 2000 the figure was 190 $m^3$ per household per year. Meanwhile, the indicator that measures waste production per household shows a certain slow-down, although the trend remains upward. Thus, waste generation climbed from 1.44 tonnes per household per year in 2000 to 1.58 tonnes in 2005.

The number of passenger cars per household also remained stable and even showed a slight down-turn in 2006 (1.32 passenger cars per household) in comparison with 2005 (1.36 passenger cars per household), producing similar figures to 2000 and even 1998. In absolute terms, the number of passenger cars in the national vehicle fleet in 2006 stood at 20.6 million, representing a 17% increase since 2000, a figure fairly similar to the rise in the number of households.

## URBAN ENVIRONMENT

In a context characterised by economic growth, the indicator that measures urban pressure on land shows the relationship between urban population living in towns and cities with more than 10,000 inhabitants and each Autonomous Community's total land area. It also shows the rate of growth since 2001, which stands at almost 12% across Spain as a whole. The trend towards urban concentration affects all of Europe and is most evident in areas that offer employment and housing options for immigrant populations.

In this urban context, transport constitutes an essential means of communication. Moreover, its importance is increased by the existence of urban sprawl. Use of private transport continues to grow, although public transport is providing a positive response to mobility challenges through a wider and higher quality offering in metropolitan areas. In relation to the efforts to achieve sustainable mobility, this chapter presents a set of indicators based on data provided by the Urban Mobility Monitoring Centre (*Observatorio de la Movilidad Urbana*).

Air quality in the urban environment is closely linked to this increase in transport. As regards $NO_2$, the downward trend of previous years ended in 2003 and was replaced by a slight rise in exceedance of the limits for average hourly concentrations. In 2006, only towns and cities with over 500,000 inhabitants recorded average exceedance values above the limit set for 2010, while among other municipalities average values remained below the limit. This upward trend in the number of days in which excess values were recorded is related to the increase in the number of diesel-powered vehicles. For particulate matter ($PM_{10}$), there has been a downward trend in the number of days above the established limit (35 days per year since 2005), although this limit is still exceeded for the average of the three municipality size ranges. In terms of ozone pollution, a feature of areas far from the source of precursor production and, therefore, far from cities, there was a significant increase between 2003 and 2005 that was strongly conditioned by the period's adverse weather.

In order to improve quality of life in cities, a wide range of initiatives have been launched, among which it is worth mentioning the Network of Networks for Sustainable Local Development (*Red de Redes de Desarrollo Local Sostenible*). This is promoted by the Spanish Ministry of the Environment and covers 20 million people in around 2,000 municipalities that signed up to the scheme (a group that increased in 2007 with the incorporation of Cantabria's municipalities). Within this context, local authorities are carrying out a series of initiatives designed to implement measures related to Local Agenda 21.





One aspect worth highlighting among the responses designed to increase quality of life is the fight against noise pollution. The indicator presents a selection of data gathered from strategic noise maps drawn up under the Noise Act 37/2003 (*Ley 37/2003*) for state-managed highways and railways, as well as for Spain's large urban agglomerations. In the three Autonomous Communities selected (Asturias, Cantabria and Murcia), a total of 212,000 people are exposed to noise levels of >55 Lden (dB).

The chapter also presents an indicator that monitors the number of Sites of Cultural Interest (immovable property category) that receive special protection under Spanish legislation. There are now 15,479 of these sites across Spain.

## NATURAL AND TECHNOLOGICAL DISASTERS

Neither the number nor magnitude of the natural disasters that occur in Spain are comparable to those suffered in other parts of the world. Even so, every year a series of phenomena and natural processes occur that affect a varying number of people. These events may often result in major economic loss and fatalities. In this case, they are considered natural disasters. In the period 1995-2007, there were a total of 676 deaths in Spain due to natural disasters. Of this number, 38% were caused by floods, just over 23% were due to storms (strong winds and lightning) and almost 12% were produced by forest fires. Since 2005, information on the number of victims of maritime storms, a phenomenon that between 1995 and 2005 was the second greatest cause of death in this category, is no longer available.

Drought is an extreme phenomenon characterised by a shortage of precipitation over a certain period of time in comparison to an area's normal rainfall. Reductions in water resources cause serious social, economic and environmental problems. They may also condition another of the major environmental hazards – forest fires. Looking at the Percentage of Normal Rainfall over the period 1941-2007, only 44.8% of the years (30 out of 67) recorded rainfall above the average figure for the period, which constitutes an overall water deficit. In 2005, rainfall was the lowest it has been since 1941. Moreover, precipitation was also scarce the year before. 2008 looks likely to produce a similar result, which will be further exacerbated by the preceding years' unfavourable circumstances.

Forest fires constitute one of the most serious natural disasters produced in Spain. Not only do they generate undeniable environmental consequences, they also claim the lives of fire-fighters. Although fire is a natural process (lightning is one of the typified causes) considering forest fires as natural disasters may be seen as controversial as around 80% are of anthropic origin (deliberate or due to negligence).

SUMMARY

However, 2007 was one of the lowest years in terms of number of forest fires and area affected. Looking at the figures for recent years, it is possible to highlight two key aspects: less wooded area has been affected than non-wooded area, and average area affected per fire once again fell in 2007 after a slight increase in 2006.

Industrial development does not come without an element of technological hazard. Road and rail accidents causing possible environmental damage, maritime accidents causing oil spills, and accidents in industrial facilities are a cause for concern and are governed by specific regulations. Between 1997 and 2006, there were over 500 road and rail accidents causing possible environmental damage during the transport of hazardous goods. The majority of these occurred during road transport. However, in recent years, this number has decreased. In fact, comparing 2006 with 2005, the number of accidents fell by 24.4% and, as compared with 2004, the drop was even greater (30.9%).

Over the period 1991-2006, there were 129 oil tanker accidents off Spanish coasts resulting in spills of over 7 tonnes. In 2006, four accidents involving oil tankers occurred off Spanish coasts, compared to two in 2005. The coasts of Andalusia, Galicia, the Canary Islands and Catalonia registered the highest number of accidents of this kind.

In the 1987-2007 period, there were 34 industrial accidents covered by the Seveso Directive resulting in discharges of dangerous chemical substances. Those occurring in 2006 and 2007 account for 26.5% of the total. In addition to polluting the environment, these accidents can also cause poisoning and death among humans.