

2.14 NATURAL AND TECHNOLOGICAL DISASTERS



Between 1950 and 2007 there were 283 major natural disasters throughout the world, 28% of which were earthquakes, tsunamis or volcanic eruptions, 41% storms, 25% floods and 6% heat waves that led to extreme temperatures. These disasters resulted in around 1.8 million deaths (55% due to earthquakes, tsunamis or volcanic eruptions, 36% storms, 7% floods and 2% extreme temperatures).

This year (2008) has been one of the worst in terms of natural disasters in recent years, with more than 220,000 deaths. Furthermore, this large number of deaths was the result of a lower number of disasters than in 2006 and 2007, when there were many fewer victims. The United Nations International Strategy for Disaster Reduction (UNISDR) provides even more shocking figures, with more than 235,000 deaths and damage totalling some 181,000 million dollars (around 139,281 million euros).

Close to 158,000 people were killed in the 10 worst natural disasters in 2008 and more than 168,000 disappeared. Two of these disasters, namely Cyclone Nargis in Myanmar (formerly Burma) and an earthquake in China, resulted in at least 84,500 deaths and 50,000 disappeared and 70,000 deaths and



18,000 disappeared, respectively. Both events occurred in May. The cold wave that affected parts of Afghanistan, Kyrgyzstan and Tajikistan in January led to around 1000 deaths.

INDICATOR	GOAL	TREND
Deaths due to natural disasters	Prevent disasters and industrial accidents, with the aim of reducing the number of deaths and environmental impacts arising from natural phenomena and technological processes by taking appropriate preventative, interventionist and informational measures	As was also the case in 2007, 2008 saw a very low number of deaths due to natural disasters
Droughts		Between 1941 and 2008, 34% of years were drier than normal whereas 66% were normal or wetter than normal
Forest fires		2008 saw the lowest area hit by forest fires since 1973
Road and rail accidents causing possible environmental damage		Accidents which could lead to environmental damage continue to occur during transport of hazardous materials
Oil spills due to maritime accidents		Five accidents involving oil tankers occurred off the Spanish coast in 2007 (two in 2005 and four in 2006)
Industrial accidents involving hazardous substances		Only one accident covered by the Seveso Directive occurred in 2008

NO. OF CATASTROPHES AND DEATHS DUE TO NATURAL DISASTERS WORLDWIDE

	2000	2001	2002	2003	2004	2005	2006	2007	2008
Events	890	701	698	699	641	648	850	960	750
Deaths	10,300	25,063	10,576	77,886	183,000	100,995	20,000	16,000	220,000

Source: Munich Reinsurance Company (various years); "Topics Geo Annual review: Natural catastrophes 2005"; "Topics Geo. Natural catastrophes 2006 and 2007" and Press release - Munich 29 December 2008". Available at: www.munichre.com.

In Europe, two major low-pressure systems (in March and May) led to a large number of phenomena (major storms with heavy rain, tornados and wind and hail storms, etc.), which resulted in significant economic losses, although no direct fatalities, particularly in Central Europe. This situation was in contrast to that seen in 2007, when the winter storm "Krill" and floods in the UK in June and July caused 49 and 5 deaths, respectively, and significant economic losses.

Disaster Risk Reduction (DRR) is the principal axis for action in the UNISDR. The "Hyogo Framework", adopted in 2005, is the plan which defines the lines of action to achieve a safer world in the face of natural threats. Its main goal is to reduce loss of human life and social, economic and environmental assets due to disasters over the next 10 years.

This Strategy defines the concept of "disaster" on the basis of its consequences (which themselves depend on the threat or danger in question and the vulnerability of the community affected) and the ability of the population affected to confront them.

Every year the UN undertakes specific campaigns to reduce disasters and their effects. The World Campaign 2008-2009 is based around: "Safe hospitals against disasters: reduce risk, protect health installations, save lives", a topic which reflects one of the five key priorities of the Hyogo Framework for Action 2005-2015. Coordinated by the UNISDR's Secretariat and the World Health Organisation (WHO), its aim is to raise consciousness concerning the need to protect health installations and ensure their functioning during and after disasters and emergency situations. The importance of hospitals and health installations goes well beyond their direct role as they are also symbols of social progress and contribute to a country's stability and economic development. Their functioning after a disaster is therefore vital.

The EU is continuing with its *Global Monitoring for Environment and Security* (GMES), which will provide reliable and independent data (for public authorities, scientists, businesses and the general public) to allow the environment to be managed appropriately, mitigate the effects of climate change and guarantee the safety of the population. According to the Commission, this project will lead to an improvement in natural resources management, allow water and air quality to be monitored, cities to be planned, thereby avoiding urban sprawl, facilitate transport flows, optimise

agricultural activities and promote renewable energies. Its role in improving the safety of the population by providing information on natural disasters such as floods and forest fires, for example, should be highlighted.

The economic growth of the past few years has contributed to an increase in industrial activity and the transport of hazardous materials. Likewise, increased oil consumption means that its transport from oil-producing countries is unavoidable and continues to grow, especially for highly energy dependent countries such as Spain, hence the need to monitor those aspects linked to these activities which could generate environmental and health risks for the population.

As for nuclear energy, the International Nuclear Events Scale (INES) allows incidents and accidents at nuclear installations to be catalogued in a homogeneous manner according to their seriousness on a scale from 0 (no safety significance) to 7 (major accident). According to the Spanish Nuclear Safety Council (NSC), no “accident” (level 4 or higher) has ever occurred at a Spanish nuclear installation, although several “incidents” (levels 1 to 3) have been reported. Two of the events above level 0 were classified as “incidents” (level 2; Trillo in 1992 and Vandellós II in 2004) and one as a “serious incident” (level 3; Vandellós I in 1989), whereas the remaining events were classified as “anomalies” (level 1). A fire that lasted for less than two hours broke out at Vandellós II in August 2008; this event was classified as level 0 and had no radiological consequences.

Natural phenomena of various types and industrial accidents with social and environmental consequences also occur in Spain. None of these can be compared with events in other parts of the world, although they are still serious. The most important are analysed herein.

Deaths due to natural disasters

The natural phenomena which cause most deaths are floods, maritime storms and thunderstorms

NUMBER OF DEATHS IN SPAIN DUE TO NATURAL DISASTERS 1995-2007

Type of natural disaster	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	Total
Floods	22	110	40	0	5	14	9	13	9	7	8	9	11	6	263
Storms	19	13	14	2	20	28	17	12	8	6	8	9	4	3	163
Forest fires	8	1	4	4	8	6	1	6	11	4	19	8	1	1	82
Landslides	7	8	2	0	0	0	1	1	2	0	0	5	2	1	29
Heat waves	0	0	0	0	1	0	0	0	60	23	4	14	0	0	102
Avalanches	7	1	0	0	0	4	2	4	4	5	1	0	0	4	32
Cold waves	0	2	5	1	0	2	4	0	0	3	3	0	0	0	20
Deaths on land due to maritime storms	19	13	13	36	17	37	27	15	5	20	ND	ND	ND	4	206
TOTAL FOR YEAR	82	148	78	43	51	91	61	51	99	68	43	45	18	19	897

Source: Directorate General of Civil Protection and Emergencies (Ministry of the Interior)

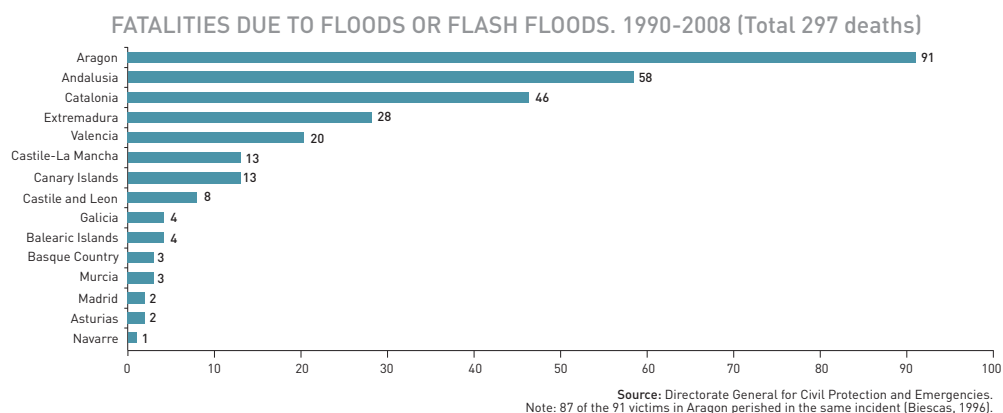
Between 1995 and 2008 897 people died in natural disasters in Spain, with floods (29.3%), maritime storms (23.0%) and thunderstorms, including lightning and strong winds (18.2%), being the most serious and responsible for the most deaths.

The importance of maritime storms, which kill a large number of people close to the coast, should be noted. No data are available for 2005-2007, although data collection was restarted in 2008. The total number of deaths caused by maritime storms at sea is difficult to determine. Despite this difficulty, however, the Directorate General for the Merchant Navy recorded a total of 90 people affected by maritime accidents in 2007 (38 deaths, 12 disappeared and 40 injured). According to this same source, the six vessels that sunk that year (for various reasons, not just storms) led to 16 victims (deaths, disappeared and injured), 11 of which were on fishing vessels and four on recreational vessels.

Heat waves are another phenomenon that has had serious consequences in the past few years. The Ministry of Health and Consumer Affairs has for some years undertaken a series of measures to prevent problems and illnesses arising from exposure to excessive heat. Thus, the main aim of the *National Action Plan to Prevent the Health Effects of Excessive Heat*, which was launched in 2008, was to raise awareness of the negative effects of excessive heat on public health, especially the most vulnerable groups.

Forest fires are also a major cause of worry in those groups affected, including the general population and those who work to extinguish them.

An analysis of the floods which occurred in the period 1990-2008 shows that 297 people died, with Aragon, Andalusia and Catalonia being the Autonomous Regions with most victims. Six people died in 2008 (three of them in Valencia), versus 11 in 2007 and nine on 2006.



NOTES

- The fatal landslides in Spain are all closely linked to heavy rains, which provoked flooding or flash floods. The vast majority of these landslides occurred during the rains or shortly afterwards as a direct result of them.
- Fatalities due to maritime storms refer only to those people killed onshore due to falls, sea surges, etc. Deaths at sea (sinkings, falls, etc.) due to this type of phenomenon are not included.
- Volcanic eruptions, droughts and earthquakes have been excluded from the analysis as, although they can occur in Spain (droughts relatively frequently and low-magnitude earthquakes as well in some regions), they have not caused any deaths in the period under consideration. The Canary Islands are the only volcanically active region in Spain at risk from this type of event. The last eruptions were at Chinyero (a lateral volcano on the Teide volcano) in Tenerife (1909), and at Nambroque (1949) and Teneguía (1971), both on the island of La Palma.
- The Maritime Safety and Rescue Society, from the Ministry of Public Works, responds to all emergencies at sea (rescues, searches, medical evacuations, towing, combating pollution, publishing navigational alerts and promoting sea traffic safety) and receives and responds to all mayday calls.

SOURCES

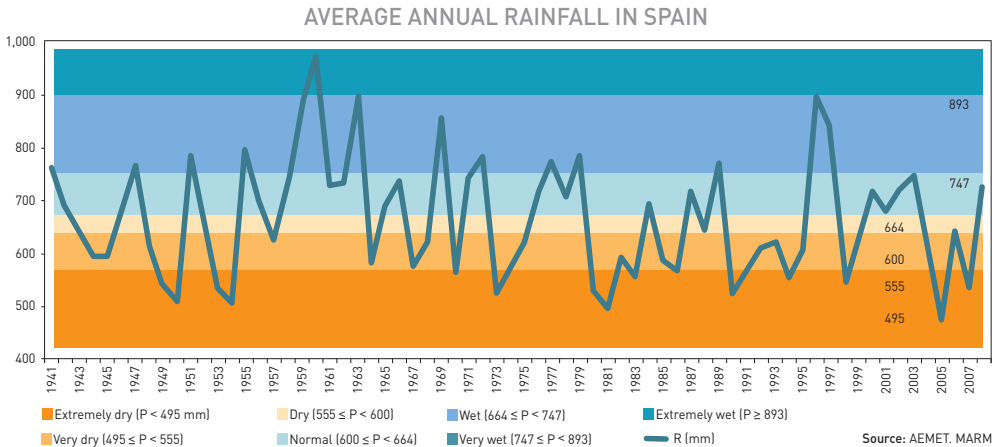
- Subdirectorato General for Planning, Operations and Emergencies. Directorate General of Civil Protection and Emergencies. Ministry of the Interior.
- Maritime Safety and Rescue Society, 2009. Press release of 05/02/2009. Ministry of Public Works.
- Ministry of Public Works, 2008. *Transport and Postal Services*. Annual Report 2007.

MORE INFORMATION

- <http://www.eea.europa.eu>
- www.proteccioncivil.org/
- <http://natural-hazards.jrc.it>
- Natural and Environmental Disasters Information Exchange System (NEDIES) <http://nedies.jrc.it/>
- European Flood Alert System (EFAS) EC initiative aimed at preparing riparian environments against floods.
- Emergency Events Database EM-DAT. Centre for Research on the Epidemiology of Disasters (CRED).
- <http://www.emdat.be/>
- <http://www.salvamentomaritimo.es>

Droughts

After a very dry year in 2007, 2008 was much wetter, with precipitation reaching similar levels to those seen in 2006



On the basis of the mean annual precipitation recorded, 33.8% of the years between 1941 and 2008 were drier than average, whereas 66.2% were normal or wetter than average. More specifically, as can be seen from the following table, where years are grouped by precipitation level, 30.7% of years were dry or very dry, 20.6% were normal and 42.6% were wet or very wet. Furthermore, the proportion of extremely dry or extremely wet years is very similar, at about 3%.

PROPORTION OF YEARS CLASSIFIED ACCORDING TO MEAN PRECIPITATION (1941-2008)

Extremely dry $P < 495$ (mm)	Very dry $(495 < P < 555)$ (mm)	Dry $(555 < P < 600)$ (mm)	Normal $(600 < P < 664)$ (mm)	Wet $(664 < P < 747)$ (mm)	Very wet $(747 < P < 893)$ (mm)	Extremely wet $P > 893$ (mm)
2,9	16,2	14,7	20,6	25,0	17,6	2,9

Source: Compiled in-house from AEMET data

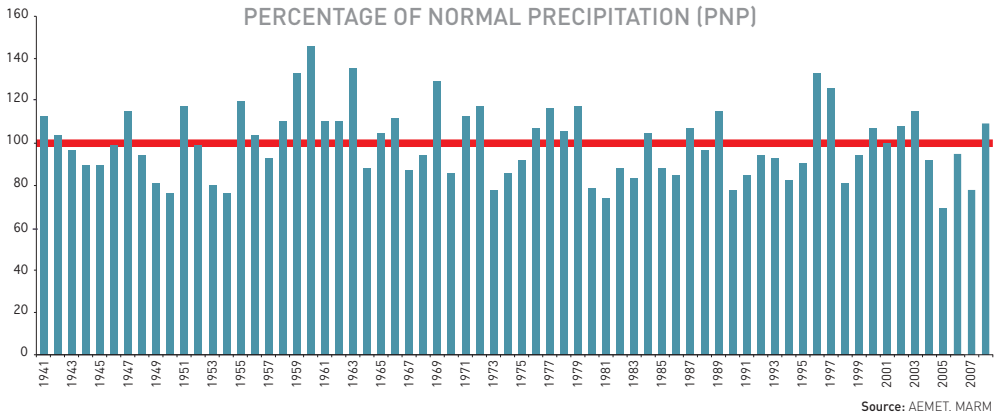
Analysis of the percentage of normal precipitation for the same period shows that annual precipitation was lower than the average for the period in 54.4% of years, whereas it was higher than the average in the remaining 45.6%.

Precipitation in 2008 was distributed very unevenly throughout the year. The significant lack of precipitation in the first three months of the hydrological year (October to September), particularly in the northern half of the peninsula, was compensated by spring and autumn rainfall, with the year as a whole being classified as wet.

2.14 NATURAL AND TECHNOLOGICAL DISASTERS

The breakdown by Autonomous Region shows that Cantabria, the Basque Country, the northern part of Castile and Leon, the central region and the Balearic Islands had a very wet year, whereas the south of Galicia, NE Castile and Leon, the north of Extremadura, the south of Valencia and the Canary Islands has a dry or very dry year.

A series of very intense precipitation episodes towards the end of September in the region of the Straits of Gibraltar, Murcia, central Valencia and some regions of Madrid and Castile-La Mancha should be noted.



NOTES

- According to the Spanish Water Information System (Hispagua), the percentage of normal precipitation (PNP) is one of the indicators used to study droughts. It is calculated as the ratio between annual cumulative precipitation and average annual precipitation for a given region and timeframe, and is expressed as a percentage. Average annual precipitation is also known as normal precipitation and is obtained from the average annual precipitation for a time period of no less than 30 years.
- The reference intervals for AEMET (1971-2000; 30 years) is representative of the precipitation regime and allows the following intervals to be established and a generic classification in which each year can be fitted according to its average precipitation to be determined:
 - Extremely Dry: precipitation does not exceed the minimum value in the series (495 mm).
 - Very dry: precipitation is less than or equal to the 20th percentile of the series and greater than the minimum value registered in the reference period ($495 < P \leq 555$ mm)
 - Dry: precipitation is greater than the 20th percentile and less than or equal to the 40th percentile ($555 < P \leq 600$ mm).
 - Normal: precipitation is greater than the 40th percentile and less than or equal to the 60th percentile ($600 < P \leq 664$ mm), in other words close to the average..
 - Wet: precipitation is greater than the 60th percentile and less than or equal to the 80th percentile ($664 < P \leq 747$ mm).
 - Very wet: precipitation is greater than the 80th percentile and less than the maximum value recorded in the series ($747 < P < 893$ mm).
 - Extremely wet: precipitation equals or exceeds the highest value in the series (893 mm).
- 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. Lack of precipitation (meteorological drought) can lead to a lack of water resources (hydrological drought) needed to supply current demand. There is therefore no universally accepted definition of drought as this differs from place to place, and each water user will have her own concept of drought.
- Previous editions have included ample information regarding the consequences, definitions and types of drought. The EU makes a clear distinction between "drought", a temporary decrease in water availability due to lack of precipitation, and "lack of water", which occurs when water demand exceeds exploitable water resources under sustainable conditions.

SOURCES

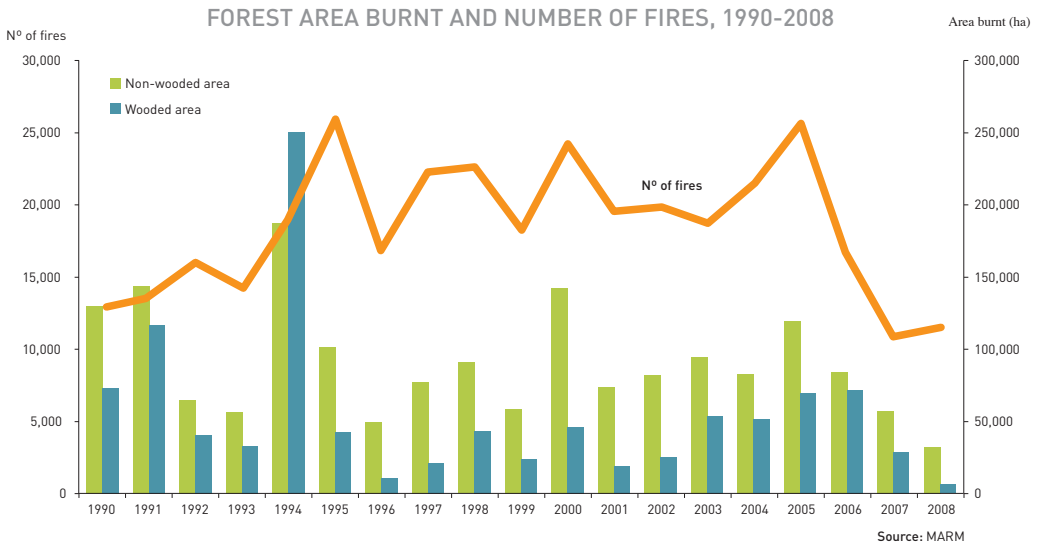
- Precipitation figures provided by the National Meteorological Agency (AEMET). MARM.

MORE INFORMATION

- <http://www.aemet.es/es/portada>
- <http://www.eea.europa.eu>
- http://hispagua.cedex.es/documentacion/especiales/sequia/indicadores_sequia.htm

Forest fires

The area burnt in 2008 reached a low that hadn't been seen for several decades (7,636 ha of wooded area versus the ten-yearly average of 43,298 ha)



The number of incidents in 2008 was the lowest for a decade, except for 2007, which saw 680 fewer incidents. However, the amount of forested area affected was the lowest for a decade with a highly significant difference with respect to the average for that period (39,984.8 ha of forested area vs. 131,774.5 ha).

A combination of the meteorological conditions and the preventative actions undertaken jointly by the Autonomous Regions and central government influenced the generalised reduction in number of fires during the summer in all Autonomous Regions.

The preventative actions undertaken by MARM include educational campaigns aimed at the rural population and schoolchildren, the Forest Fire Prevention Teams (EPRIF) who work together with the rural population and providing subsidies to the Autonomous Regions to undertake preventative forestry measures. The deterrent effect of the monitoring undertaken by the Civil Guard and the Forest and Environmental Wardens appointed by the Autonomous Regions, in coordination with other security forces in some regions, should also be mentioned.

The large fire-fighting body employed by all administrations, together with the circumstances outlined above, led to these results. The difference between the area of forest burnt in 2008 and that burnt in 2001, the year with the smallest amount of forest burnt in the past decade, was more than 10,000 ha of wooded land.

August saw the highest number of interventions by MARM's fire-fighting teams, with 1,770 incidents and 2,784 ha of forest area affected. There were two major fires (more than 500 ha) in this month, one in Zuera (Zaragoza) and another in Honrubia de la Cuesta (Segovia). These two, together with the fire in Porto (Zamora) in February, were the largest fires in 2008.

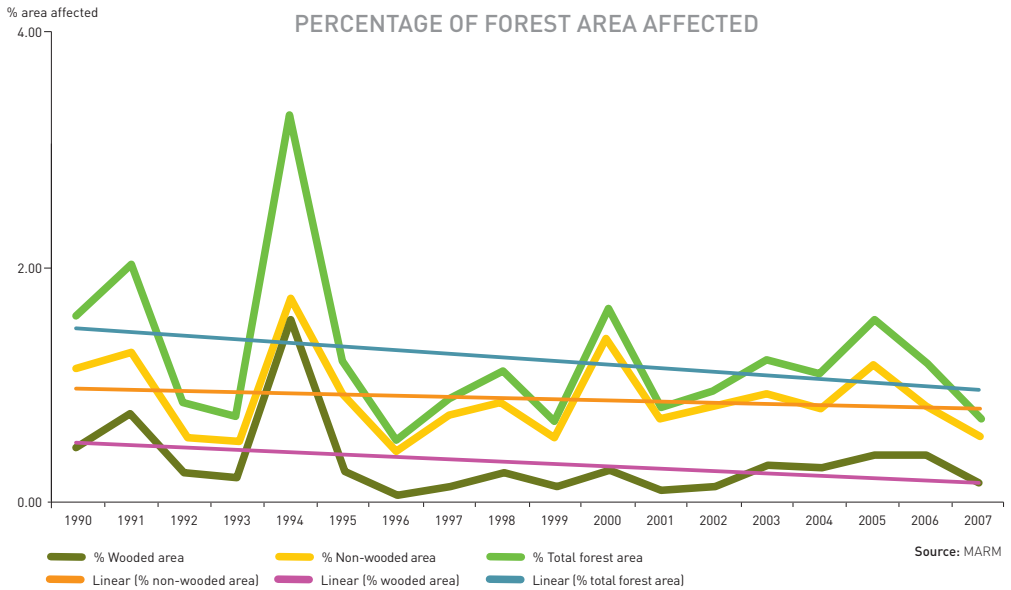
The general scenario for forest fires can be described in terms of the following variables, which complement the information resulting from the General Forest Fire Statistics (EGIF). These data are compiled and maintained by MARM's Forest Fire Defence Area on the basis of information provided by the forest fire defence services from each Autonomous Region.

- **Percentage of forest area affected (total, wooded and non-wooded):** describes the effects of the fires in terms of area. The overall trend is downwards, except for 1994, when the wooded area was higher. This indicates a consolidated improvement in the results achieved with forest fire defence strategies.
- **Percentage of outbreaks (incidents < 1 ha):** describes the number of small fires (< 1 ha) with respect to the total number of fires. The higher this figure the lower the overall impact of the fires. The trend is upwards, reaching 68% in 2007.
- **Percentage of fires at which the first fire-fighting team arrived less than 15 minutes after detection:** reflects the operational efficiency of the fire-fighting team. The higher the number, the greater the operational efficiency. The trend is neutral, with values of between 45% and 50%, although in 2006 and 2007 this figure dropped to 40%.
- **Percentage of fires with a known cause:** reflects the operational efficiency of the prevention system as a greater percentage of fires with a known cause justifies the preventative actions to be undertaken. This figure is around 85% for Spain as a whole, with an upward trend, although it reaches almost 100% in some Autonomous Regions.

Various cooperation mechanisms exist within the EU by which countries can share human and technological resources when faced with natural or man-made disasters.

2.14 NATURAL AND TECHNOLOGICAL DISASTERS

In 2008, for example, Bulgaria and Greece received help from Spain, France, Italy and Cyprus to fight forest fires. During this year a pilot project with a budget of 3.5 million euros was launched to increase cooperation in the fight against this problem.



NOTES

- The data for 2008 are provisional.

SOURCES

- Data provided by the Forest Fire Defence Area. Directorate General for the Environment and Forestry Policy. MARM.
- MARM, 2009. "Forest fires between January 1 and December 31 2008". Preliminary report for 2008 based on provisional data published on the web page.

MORE INFORMATION

- <http://www.marm.es>
- <http://www.incendiosforestales.org>

Road and rail accidents causing possible environmental damage

A significant number of accidents which could lead to environmental damage occur every year when transporting hazardous materials

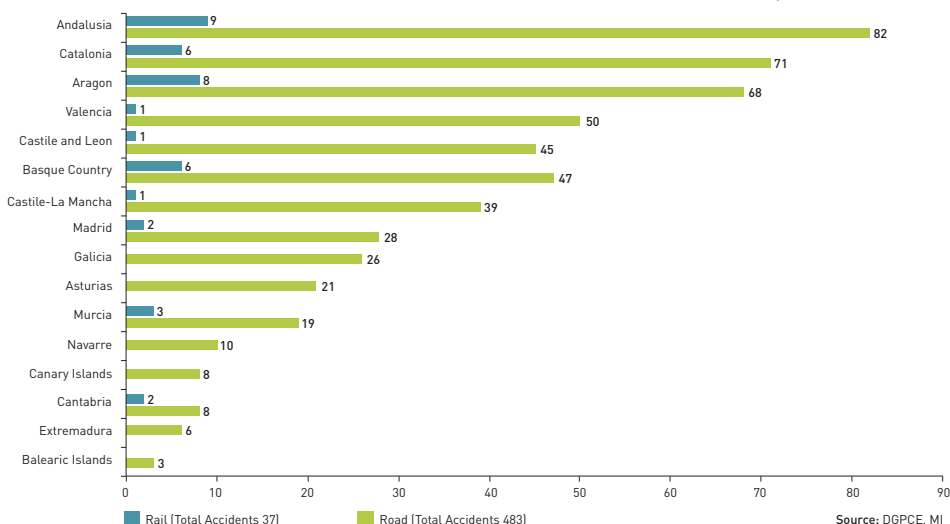
NUMBER OF ACCIDENTS WHICH MAY HAVE CAUSED ENVIRONMENTAL DAMAGE DURING TRANSPORT OF HAZARDOUS MATERIALS BY ROAD AND RAIL, 1997-2007

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	Total
Road	29	50	34	53	44	47	55	64	61	46	48	531
Rail	10	8	s.d.	4	2	1	5	4	2	1	2	39
TOTAL	39	58	34	57	46	48	60	68	63	47	50	570

Source: Directorate General of Civil Protection and Emergencies. Ministry of the Interior.

Fifty accidents with possible environmental damage occurred during the transport on hazardous materials in 2007. Of these, 48 occurred on the road network and the other two during rail transport. As can be seen from the series, road transport has a higher risk of suffering an accident of this type due to its much greater use.

NUMBER OF ACCIDENTS WHICH MAY HAVE CAUSED ENVIRONMENTAL DAMAGE DURING TRANSPORT OF HAZARDOUS MATERIALS BY ROAD AND RAIL, 1997-2007



Andalusia is the Autonomous Region which suffered most accidents of this type, for both road and rail transport, between 1997 and 2007, followed by Catalonia and Aragon. Factors such as its area, strategic location for international trade and

2.14 NATURAL AND TECHNOLOGICAL DISASTERS

industrial development should be taken into account when evaluating the risk of this type of accident. In 2007 Aragon suffered most accidents (nine road and one rail), followed by Andalusia and Catalonia, both with six.

The total number of environmental effects in the period under consideration was 630, with an annual distribution for each medium as shown in the following table. Land was the most frequently affected (close to 80% of incidents), followed by water (13.5%) and the atmosphere (10.3%).

NUMBER OF INCIDENTS WITH POSSIBLE ENVIRONMENTAL DAMAGE THAT OCCURRED DURING TRANSPORT OF HAZARDOUS MATERIALS BY MEDIUM AFFECTED, 1997-2007

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	Total
Atmospheric pollution	5	3	2	4	3	0	8	8	17	7	8	65
Water pollution	7	11	6	9	5	5	4	14	9	8	7	85
Land pollution	36	49	29	51	41	46	57	55	49	41	43	497
TOTAL	48	63	37	64	49	51	69	77	75	47	50	630

Source: Directorate General of Civil Protection and Emergencies. Ministry of the Interior

NOTES

- For road and rail accidents, hazardous materials are considered to be those substances which, in the event of an accident during their transport, could cause a risk to the population, property and/or the environment. Possible environmental damage is considered to exist when the existence of a leak or spillage (to land, water or the atmosphere) which could cause pollution has been notified.
- It should be noted that the number of incidents is not the same as the number of accidents as a single accident can affect various media.

SOURCES

- Information provided by the Directorate General of Civil Protection and Emergencies. Ministry of the Interior.

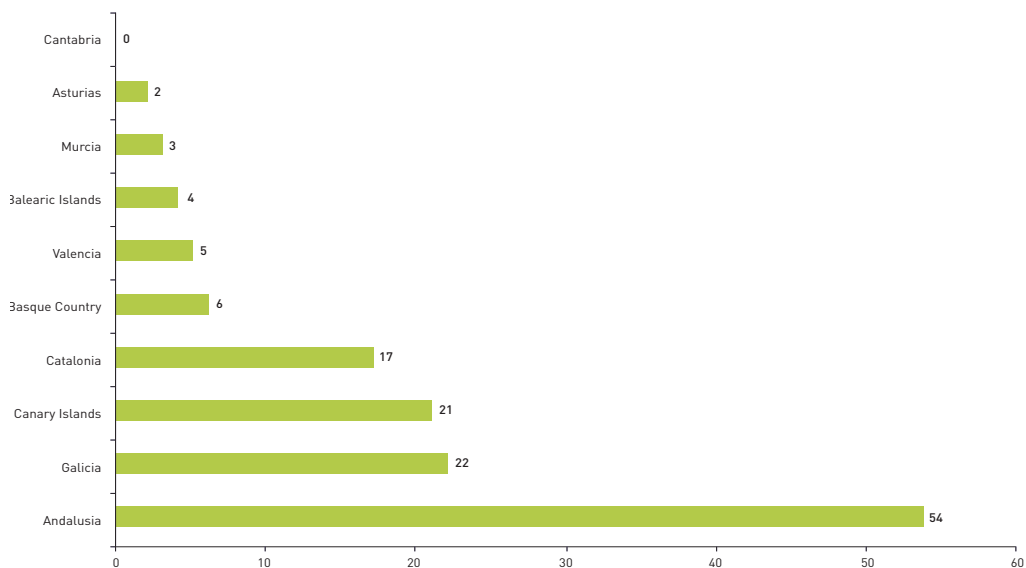
MORE INFORMATION

- <http://www.proteccioncivil.org/>
- <http://mahbsrv.jrc.it/> (Major Accident Hazards Bureau –MAHB. Comisión Europea)
- www.eea.europa.eu

Oil spills due to maritime accidents

Five accidents involving oil tankers occurred off the Spanish coast in 2007, versus the two for 2005 and the four for 2006

NO. OF ACCIDENTS INVOLVING OIL TANKERS OFF THE SPANISH COAST, 1991-2007



Source: Directorate General for the Merchant Navy, Ministry of Public Works

A total of 134 accidents involving oil tankers which led to oil leaks or spillages occurred off the Spanish coast between 1991 and 2007.

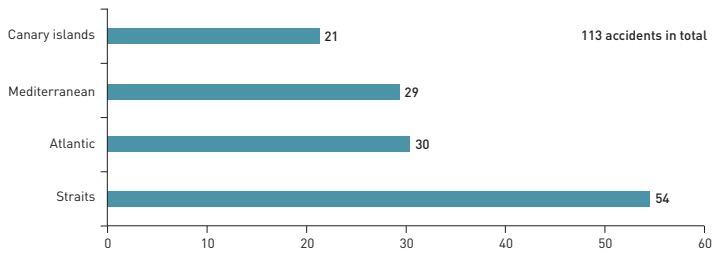
Five accidents of this type occurred in 2007, two off Andalusia, two off the Canaries and one off the Basque Country. This number is higher than the four accidents in 2006 and the two in 2005, although lower than the 14 in 2002. During the period under consideration, the Autonomous Regions which have suffered most accidents of this type are Galicia and Catalonia, followed by Andalusia and the Canary Islands.

The distribution of accidents by maritime safety region shows that the Straits of Gibraltar and the Atlantic have seen most oil tanker accidents since 1991.

As well as spills from oil tankers, a large number of oil spills occur when other types of vessels suffer an accident. Two such accidents occurred in Algeciras Bay in 2007: the reefer Sierra Nava and the cargo ship New Flame. These, together with the Greek oil tanker Samothraki, were the three accidents which occurred in the Straits. A similar

type of accident involving the merchant vessel Don Pedro in August 2007 close to the port of Ibiza resulted in the closure of several beaches due to spillage of the fuel it was carrying.

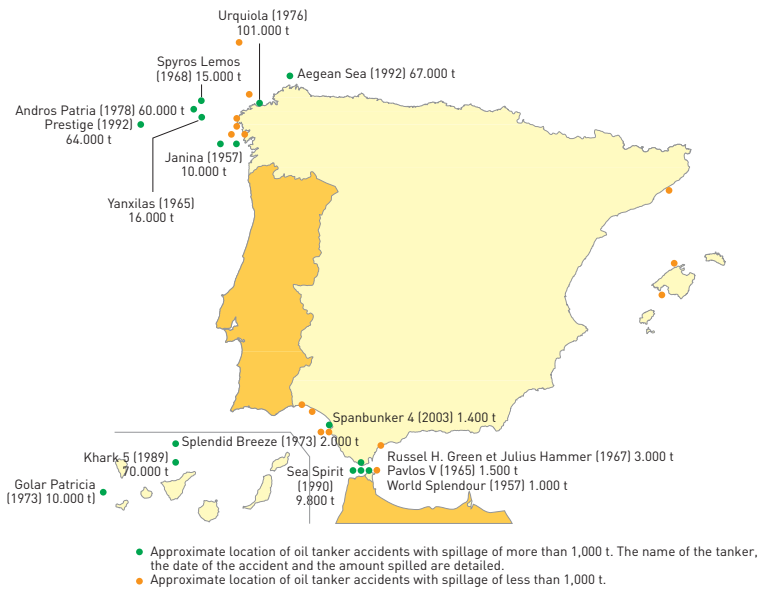
NATURAL AND TECHNOLOGICAL DISASTERS OIL TANKER ACCIDENTS OFF THE SPANISH COAST BY MARITIME SAFETY REGION, 1991-2007



Source: Directorate General for the Merchant Navy, Ministry of Public Works

It should be noted that spillages at sea as a result of an accident do not always involve liquid hydrocarbons. Thus, in 1986 the Castillo de Salas spilt 100,000 tonnes of coal, along with its fuel, close to Gijón, 39 miles from Cabo Peñas.

LOCATION OF OIL TANKER ACCIDENTS OFF THE SPANISH COAST WITH HYDROCARBON SPILLAGE



Source: Prepared in-house with data from CEDRE

NOTES

- The Documentation, Research and Experimental Centre for Accidental Water Pollution (CEDRE), created in 1978, is responsible for documenting and for research and experimentation with pollutants, their effects and the methods and means required to fight them. Its advice and experimentation mission covers both marine and inland waters.

SOURCES

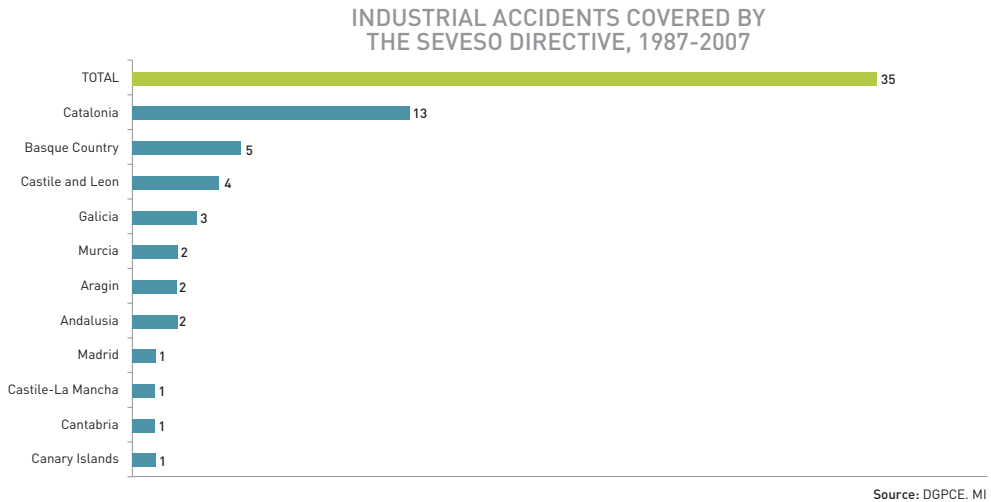
- Data provided by the Maritime Safety Area. Sub-directorate General for Maritime Safety and Pollution. Directorate General for the Merchant Navy. Ministry of Public Works.

MORE INFORMATION

- www.mfom.es
- www.eea.europa.eu
- www.itopf.com/
- www.le-cedre.fr/index_es.html

Industrial accidents involving hazardous substances

Only one industrial accident covered by the Seveso Directive occurred in 2008



Only one industrial accident covered by the Seveso Directive occurred in 2008, in Castile and Leon. The total number of accidents in the period 1987-2008 was 35. Catalonia has suffered most accidents of this type, although it is also the Autonomous Region with the highest number of industrial plants covered by this Directive.

The basic Civil Protection control and planning guidelines for serious accidents involving hazardous substances specify that External Emergency Plans will determine the preventative, informational, organisational and procedural actions and coordinate the equipment and resources from central government and other public and private bodies. Twenty-four such Special Plans were approved by the National Civil Protection Committee in 2008, and from July 1994 up to the end of 2008 the total number of plans approved was 224.

NOTES

- The group of accidents considered is those covered by the Seveso Directive, which occurred during industrial operations (chemical, pharmaceutical, energy industry, etc.) and include the storage, distribution and sale of hazardous materials or products.
- Directive 96/82/EC concerning the control of risks inherent to serious accidents involving hazardous substances (Seveso II) aims to prevent this type of accident and reduce their effects on the safety and health of people and the environment. It replaces Directive 82/501/EEC (Seveso I). The Seveso II Directive was incorporated into Spanish legislation by RD 1254/99, of 16 July, which approved control measures for the risks inherent to serious accidents involving hazardous substances. This Royal Decree was subsequently modified by RD 119/2005, of 4 February, and by RD 948/2005, of 29 July. This regulatory framework is complemented by RD 1196/2003, of 19 September, which approves the basic Civil Protection control and planning guidelines for serious accidents involving hazardous substances. (BOE no. 242, of 9 October 2003).
- Serious accidents: any event involving one or more hazardous substances, such as a major leak or spillage, fire or explosion, which occurs as a consequence of an uncontrolled process during the functioning of any establishment subject to RD 1245/1999 and which supposes a serious immediate or deferred risk for people, property or the environment, either inside or outside the establishment.
- The existence of other types of equally serious accidents with significant effects on the environment but which are not covered by the Seveso Directive should be highlighted. These include those resulting from mining activities, such as the rupture of the Aznalcollar Dam (Seville) in April 1998.

SOURCES

- Data provided by the Sub-directorate General for Planning, Operations and Emergencies. Directorate General of Civil Protection and Emergencies. Ministry of the Interior.

MORE INFORMATION

- <http://www.proteccioncivil.org>
- <http://www.eea.europa.eu>
- <http://www.proaida.es/index2.php>