# 2.10 INDUSTRY

Industry has also been affected by the economic and financial situation of recent years, as is underlined by the sector's production and employment figures, which show a historic slump in activity in 2009. In Spain, the price of non-energy industrial goods fell and GVA decreased by an average of about 5%, with manufacturing dropping by around 14%.

Emissions of almost all pollutants (particularly $CO_2$, NMVOC and $NO_x$) produced by industry decreased dramatically, as did industry's final energy consumption. Of the energy sources used in industry, the reduction in coal use was the most significant, followed by those of gas and petroleum products. There was also a fall in the amount of both hazardous and non-hazardous waste generated by industry. Overall, the proportion of final energy consumption by industry in relation to total final energy consumption decreased.

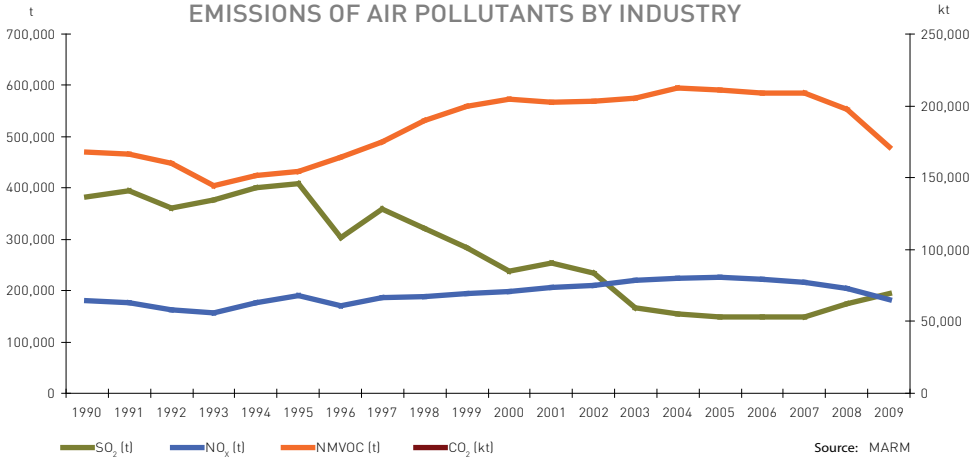
Despite this, the number of Spanish businesses registered with the European Eco-Management and Audit Scheme (EMAS) continued to increase, albeit slightly, keeping Spain in second place in the ranking of EU countries by number of companies affiliated to the scheme.

The sector's eco-efficiency therefore changed, significantly, as is reflected in the indicators: industrial Cross Value Added decreased by 13.7%, final energy consumption fell by 12.9%, and industry is $CO_2$ emissions dropped by 14.4%. These reductions meant the sector's indicators returned to levels last seen 4 or 5 years previously.

| INDICATOR | GOAL | TREND |
|---|---|---|
| **Emissions of air pollutants by industry** | Prevent and reduce pollution | Emissions of $CO_2$, NMVOCs and $NO_X$ are falling, while those of $SO_2$ are rising |
| **Energy consumption by industry** | Reduce consumption and improve resource use efficiency | Final energy consumption by industry is decreasing dramatically |
| **Waste generation by industry** | Prevent and reduce pollution | Generation of both hazardous and non-hazardous waste by industry is decreasing |
| **Number of industrial enterprises with Environmental Management Systems** | Mainstream environmental concerns into industry | The number of enterprises registered with the EMAS environmental management system is slowly rising |
| **Eco-efficiency in industry** | Decouple industrial production from consumption of resources and pollution | Industry's $CO_2$ emissions, final energy consumption and GVA are falling drastically |

# Emissions of air pollutants by industry

## Industry's emissions of $CO_2$, NMVOCs and $NO_X$ fell markedly, though those of $SO_2$ have been rising since 2007




The previous year's fall in the majority of pollutants emitted by industry continued and accelerated in 2009. Industry's $CO_2$ emissions decreased by 14.47%, from 87,247 kt in 2008 to 74,619 kt in 2009. The drop was more than double those of 2007 and 2008. In 2009, industry's $CO_2$ emissions accounted for 25.13% of total emissions of this gas.

The existing downward trend in emissions of $NO_x$ and non-methane volatile organic compounds (NMVOCs) continued. Industry's $NO_x$ emissions plummeted from 203,785 tonnes in 2008 to 181,740 tonnes in 2009. This fall of 10.82% in one year is practically double that of the two previous years. Industry's NMVOC emissions fell from 553,250 tonnes to 479,490 tonnes, a decrease of 13.33% in a single year.

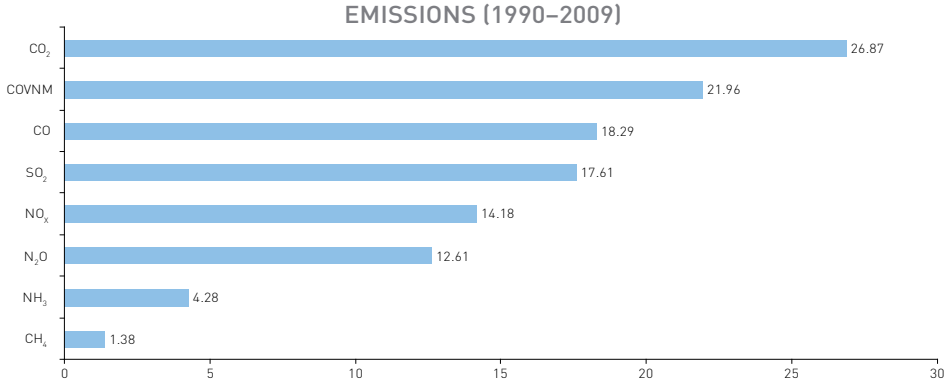
However, as was the case the year before, there was also an increase in industry's $SO_2$ emissions. Industrial emissions of this gas rose by 11.02%, from 175,028 tonnes in 2008 to 194,308 tonnes in 2009. In 2009, industrial emissions of $SO_2$ accounted for 44.94% of total emissions, whereas in 2007 industrial emissions only constituted 12.74% of the total.

Analysis of all of the pollutants emitted over the past twenty years (1990–2009) reveals that industry's emissions of $CO_2$ (1,565,942 kt) made up 26.87% of total $CO_2$ emissions in this period (5,828,701 kt). Meanwhile, total $NO_x$ emissions in the same

period stood at 27,431,138 tonnes, of which industry was responsible for 3,890,970 (14.18%). Over 1990–2009, total CO emissions reached 60,842,125 tonnes, of which industry contributed 11,128,886 (18.29%). During this twenty-year period, $N_2O$ emissions totalled 1,851,948 tonnes, of which industry accounted for 233,534 (12.61%).

As regards $CH_4$, emissions between 1990 and 2009 amounted to 32,462,543 tonnes, 449,064 tonnes (1.38%) of which were attributable to industry. Finally, $NH_3$ emissions over these twenty years totalled 7,113,488 tonnes, of which 304,548 tonnes (4.28%) were emitted by industry.

EMISSIONS BY INDUSTRY AS A PROPORTION OF TOTAL EMISSIONS (1990–2009)




**Source:** MARM

NOTES

- For the purpose of calculating emissions of air pollutants, the following groups or sectors (SNAP classification) are considered to form part of the industrial sector: combustion in manufacturing industry; production processes; and solvent and other product use. The combustion in energy and transformation industries categories are not included, since these emissions are covered by the chapter on energy. Likewise, emissions generated by the extraction and distribution of fossil fuels and geothermal energy are not included either.
- For reasons of scale, the indicator does not include emissions of fluorinated gases, even though these are 100% industrial in origin. Emissions of these gases between 1990 and 2009 were as follows:

EMISSIONS OF FLUORINATED GASES (kg)

| | 1990 | 2005 | 2006 | 2007 | 2008 | 2009 |
|---|---|---|---|---|---|---|
| $SF_6$ | 2,800 | 11,365 | 13,541 | 14,225 | 14,814 | 14,685 |
| HFCs | 205,400 | 2,429,474 | 2.600,692 | 2,788,894 | 3,207,829 | 3,385,094 |
| PFCs | 131,825 | 42,194 | 42,972 | 43,523 | 45,880 | 43,047 |

**Source:** MARM

FUENTES

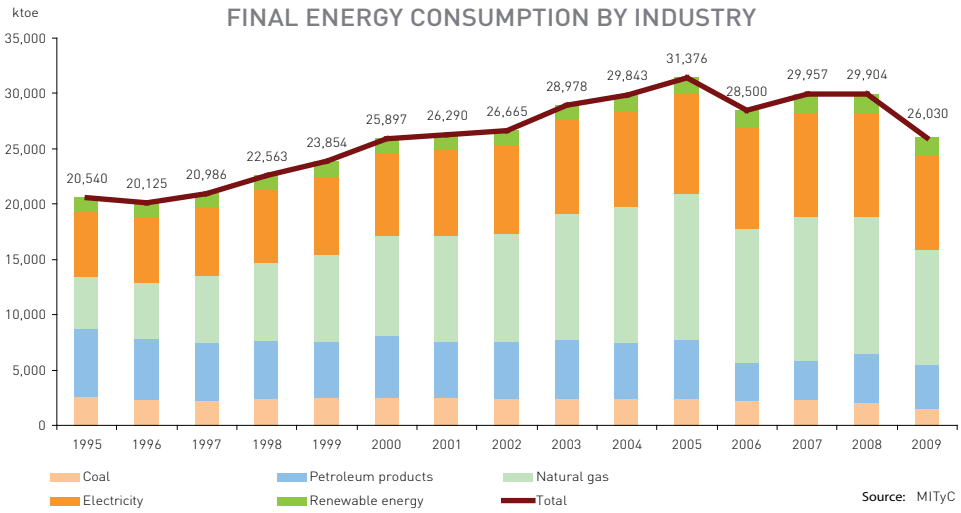
- MARM, 2011. *Inventario de Gases de Efecto Invernadero de España*. Years 1990–2009. Directorate-General for Environmental Quality and Assessment.

FURTHER INFORMATION

- http://www.marm.es

# Energy consumption by industry

## Final energy consumption by industry decreased dramatically in 2009

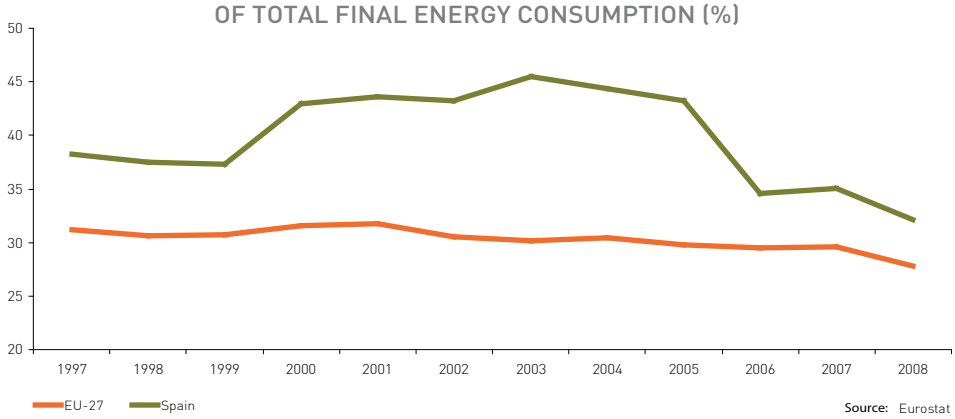



In 2009, final energy consumption by industry (26,030 ktoe) fell considerably compared to 2008 (29,904 ktoe), dropping by 12.95% in a single year. This decrease, which occurred across all energy sources, was most pronounced for coal (30.45%), though it was still considerable for natural gas (14.50%) and petroleum products (11.51%). Industry's final energy consumption also fell for electricity (9.29%) and, to a lesser extent, for renewable energy (4.54%). As regards renewable sources, consumption of final energy generated from biomass fell by 4.50% and from biogas by 10.56%, while that generated from thermal solar energy rose by 7.59%.

In 2008, final energy consumption by industry as a percentage of total final energy consumption dropped in the EU, continuing and accelerating the downward trend of previous years. This percentage, which stood at 31.14% in 1997, fell to 27.81% in 2008. This reduction was bigger in Spain, which recorded a drop from 38.25% in 1997 to 32.09% in 2008. However, it is worth noting that this percentage has decreased greatly since 2005 after peaking at 45.51% in 2003.

In absolute figures, and according to provisional data provided by the IDAE, industry's final energy consumption in Spain shrank from 31,376 ktoe in 2005 to 26,030 ktoe in 2009.

FINAL ENERGY CONSUMPTION BY INDUSTRY AS A PROPORTION OF TOTAL FINAL ENERGY CONSUMPTION (%)




Source: Eurostat

NOTES

- For the purpose of calculating final energy consumption by industry, only data corresponding to energy consumption are considered. Petroleum products or natural gas that form part of industrial processes but do not directly produce energy are not included.

SOURCES

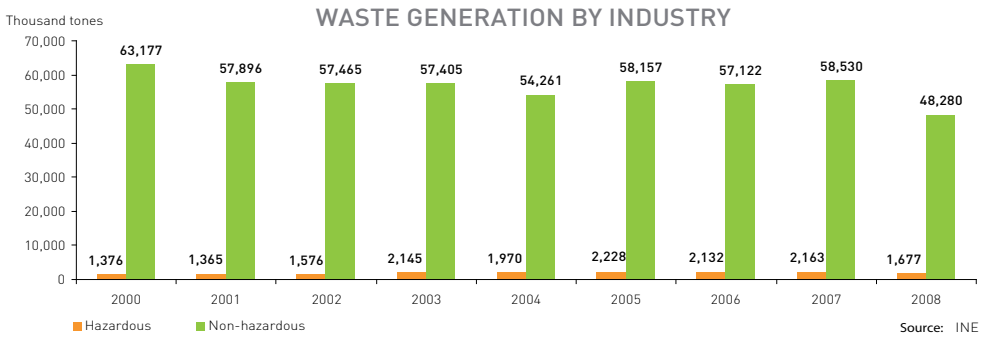
- Eurostat, 2011. Website: Statistics/Statistics by theme/Energy/Database/Main indicators
- MITyC, 2010. *La Energía en España 2009*
- IDAE. *Boletín energético*, various years.

FURTHER INFORMATION

- **http://www.idae.es**
- **http://www.mityc.es**
- **http://epp.eurostat.ec.europa.eu/portal/page/portal/eurostat/home**

# Waste generation by industry

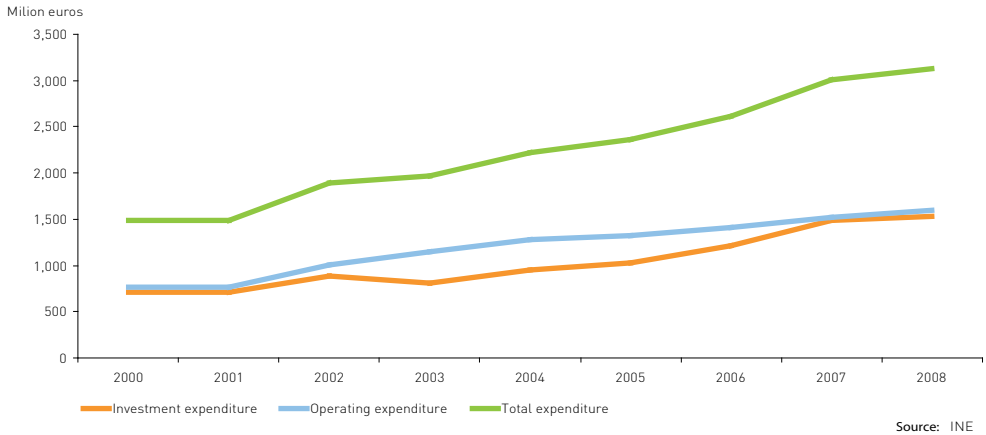
## The amount of waste generated by industry decreased slightly




The fall in industrial activity in 2008 brought with it a reduction in the amount of waste generated by the sector. Non-hazardous waste decreased by 17.51% in a single year, from 58,530,051 tonnes in 2007 to 48,280,437 tonnes in 2008. Hazardous waste produced by industry dropped even more, from 2,162,614 tonnes in 2007 to 1,676,669 tonnes in 2008, a decrease of 22.47% in just 12 months.

Despite financial difficulties in 2008, businesses still spent an increasing amount of money on environmental protection. Operating expenditure on environmental protection rose by 4.69% from €1,525 million in 2007 to €1,595 million in 2008. Likewise, investment expenditure on environmental protection increased by 3.05% from €1,488 million in 2007 to €1,533 million in 2008. Although total expenditure on environmental protection by companies increased by 3.88%, this was well below the figures of previous years (for example, investment expenditure in 2007 increased by 23% on that of 2006).

## COMPANY EXPENDITURE ON ENVIRONMENTAL PROTECTION




Source: INE

### NOTES

- This indicator also includes data for the energy industry. The first INE survey aimed to quantify waste generated in economic activities classified as industrial (as per CNAE categories C, D and E, branch 40). The second INE survey aimed to evaluate industrial enterprises' expenditure on reducing or eliminating emissions of air pollutants and noise pollution, on treatment of the wastewater and solid waste generated, and on use of less pollutant raw materials or on use of the same ones but in lesser quantities.

### SOURCES

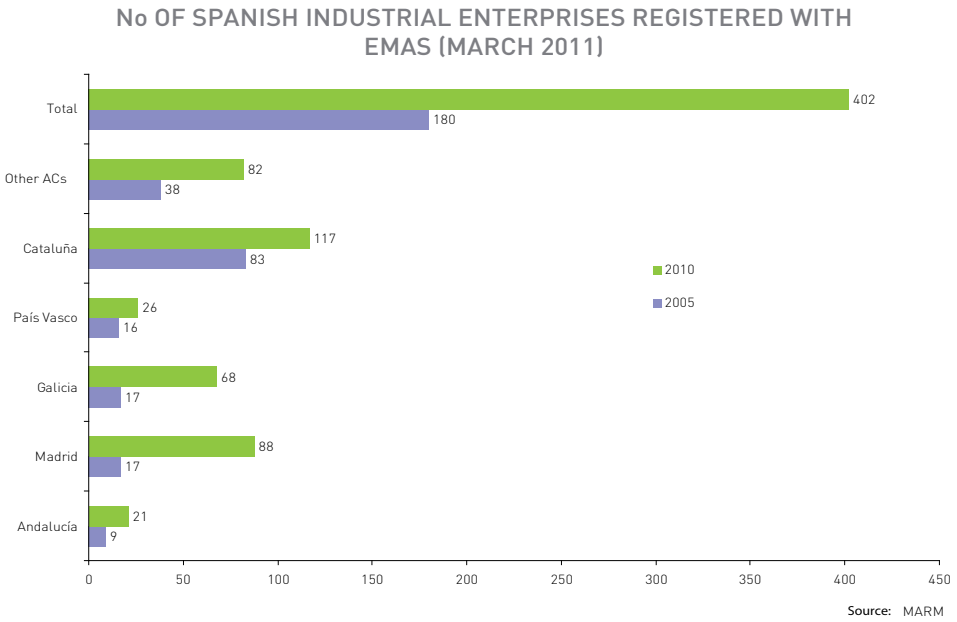
- INE, 2011. *Survey on waste generation.*
- INE, 2011. *Survey on Company Expenditure on Environmental Protection.*

### FURTHER INFORMATION

- **http://www.ine.es**

# Number of industrial enterprises with Environmental Management Systems

## Spain has the second-highest number of companies in the EU registered with the EMAS environmental management system



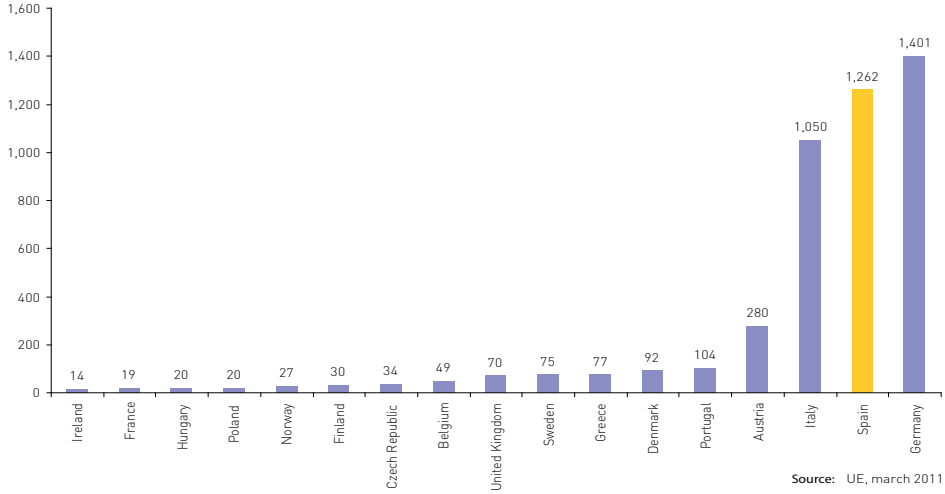

Source: MARM

According to figures provided by the European Commission's Directorate-General for the Environment, at the start of 2011 Spain still had the second-highest number of companies in Europe registered with the EMAS (Eco-Management and Audit Scheme) environmental management system, behind Germany. In March 2011, a total of 1,262 Spanish companies were signed up to this scheme, while in Germany 1,401 firms were registered with it.

Of these Spanish companies, 402 were industrial firms (CNAE categories 10 to 41). The number of companies registered with the EMAS rose in Galicia, the Basque Country and Catalonia, remained stable in Andalusia and decreased slightly in Madrid. There was also a slight overall increase in the rest of Spain's autonomous communities. Although the number only rose by 3.88% between 2009 and 2011, between 2003 and March 2011 it rose by 195%, increasing from 136 companies 402 firms.

Regulation (EC) No 1221/2009 of the European Parliament and of the Council on the voluntary participation by organisations in a Community eco-management and audit scheme, improves the tools available to industry and reduces the associated administrative burden. It also aims to encourage participation by organisations, especially small enterprises, in the EMAS by providing access to information, to existing funds and to public institutions, as well as facilitating technical assistance.

### No OF COMPANIES WITH EMAS ENVIRONMENTAL MANAGEMENT SYSTEMS IN EU COUNTRIES WITH OVER 10 COMPANIES REGISTERED WITH EMAS (MARCH 2011)




**Source:** UE, march 2011

### NO OF INDUSTRIAL ENTERPRISES IN SPAIN REGISTERED WITH THE EMAS (2003–2011)

| 2003 | 2009 | 2011 | Increase 2009/2011 | Increase 2003/2011 |
|---|---|---|---|---|
| 136 | 387 | 402 | 3.88 % | 195.59 % |

**Source:** MARM

**NOTES**

- For the purpose of calculating the indicator, the industrial enterprises included are those listed in categories 10 to 41 of the CNAE. This therefore excludes crop and livestock farming and forestry, as well as the construction and service industries.
- Regulation 1221/2009 (EC) of 25 November amended Regulation 761/2001 of 19 March 2001. The EMAS' current scope extends to cover all enterprises, irrespective of sector. Actions derived from its application include:
  - Creation and implementation of environmental management systems in enterprises and systematic, objective and regular assessment of their operation.
  - Dissemination of information on environmental performance.
  - Active employee involvement in the programme, achieved through continuous vocational training.

**SOURCES**

- European EMAS data: EMAS website, European Commission.
- Data for Spain: Directorate-General for Environmental Quality and Assessment, MARM.

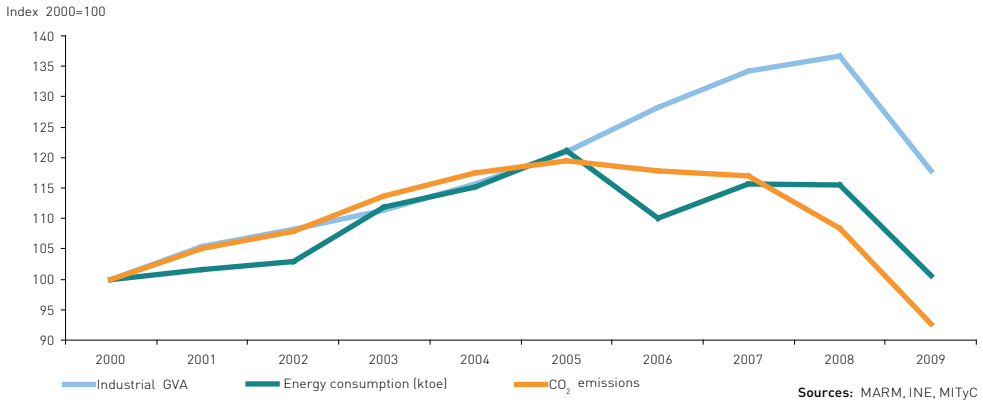
**FURTHER INFORMATION**

- http://ec.europa.eu/environment/emas/index_en.htm
- http://www.marm.es

# Eco-efficiency in industry

## GVA, $CO_2$ emissions and final energy consumption indicators all fell sharply and simultaneously

ECO-EFFICIENCY IN INDUSTRY




**Sources:** MARM, INE, MITyC

In 2009, industry's indicators changed considerably, significantly altering the existing scenario. Industry's Gross Value Added at current prices fell by 13.72%, from €141,310 million in 2008 to €121,917 million in 2009. The sector's energy consumption also decreased, dropping by 12.95% from 29,904 ktoe in 2008 to 26,030 ktoe in 2009. $CO_2$ emissions by industry fell further still, from 87,247 ktoe in 2008 to 74,619 ktoe in 2009, a decrease of 14.47%.

As a result, the trend of previous years has changed drastically. Industry's Gross Value Added, which had grown between 2000 and 2008 by 136.64%, shrank to 117.89% for the period 2000–2009, a figure very similar to that recorded in 2004 and 2005. Final energy consumption by industry, which in 2007 stood at 115.67% of the 2000 value, decreased in 2009 to almost the same figure as in 2000. $CO_2$ emissions by the sector, which in 2005 were 119.54% of those in 2000, plummeted sharply in 2009 to 92.66% of the 2000 value.

SOURCES

- MARM, 2011. *Inventario de Gases de Efecto Invernadero de España*. Years 1990–2009. Directorate-General for Environmental Quality and Assessment.
- MITyC, 2010. *La Energía en España 2009*
- IDAE. *Boletín energético*, various years.
- INE. Website: INEbase / Economy / National Accounts / Spanish National Accounts. 2000 base.

FURTHER INFORMATION

- http://www.marm.es
- http://www.mityc.es
- http://www.idae.es
- http://www.ine.es
- http://epp.eurostat.ec.europa.eu/portal/page/portal/eurostat/hom