

INDUSTRY 2.10



Industry is a key sector for sustainable development due to being closely linked to the economy and wealth of a country, but also to the environment. It is, on the one hand, an important source of employment and income and, on the other hand, a major consumer of resources and energy and generator of pollution, discharges and waste.

The “Europe 2020” strategy adopted by the EU Council in 2010 provided the road map to achieve intelligent, sustainable and inclusive growth and economic governance within the EU and its member states. The result was the flagship initiative “An industrial policy for the globalization era”, which pursues economic growth and employment by maintaining and supporting a strong, competitive and diversified industrial sector in Europe that offers well-paid jobs, is less energy dependent and produces less CO₂ emissions. Another flagship initiative emerged in 2011, namely the “Europe 2020” strategy called “A resource-efficient Europe”, the purpose of which is to achieve sustainable growth by means of an efficient and low-carbon economy. The scope of this initiative includes industry. In line with the foregoing European strategies, Spain approved the Integral Plan for Industrial Policy 2020 (PIN 2020) at the end of 2010. In addition, various plans and policies were approved in 2011 that directly affect industry as regards the consumption of energy, emissions and



energy efficiency, as were the cases of the Action Plan for Energy Saving and Efficiency 2011-2020, the National Plan for the Improvement of Air Quality, Indicative Energy Planning and the Renewable Energy Plan 2011-2020 (PER).

KEY MESSAGES

Industry has economic and environmental implications that make it a multi-faceted issue which is present in national and international policy. It is vital for the achievement of economic growth and a way out of the crisis based on sustainable development with its sights clearly fixed on a transition into a green economy.

Emissions of pollutants from industry rose in 2010, in contrast to the decreases experienced the previous year. Almost 53% of total emissions of SO₂ were due to industry.

Energy consumption grew in 2010, after the marked decrease in 2009, bucking the downward trend observed in the two previous years.

Waste generation once again decreased in 2009. Company expenditure on environmental protection also decreased.

Spain is still has the second highest number of companies registered in the Community Eco-Management and Audit Scheme (EMAS) in the EU.

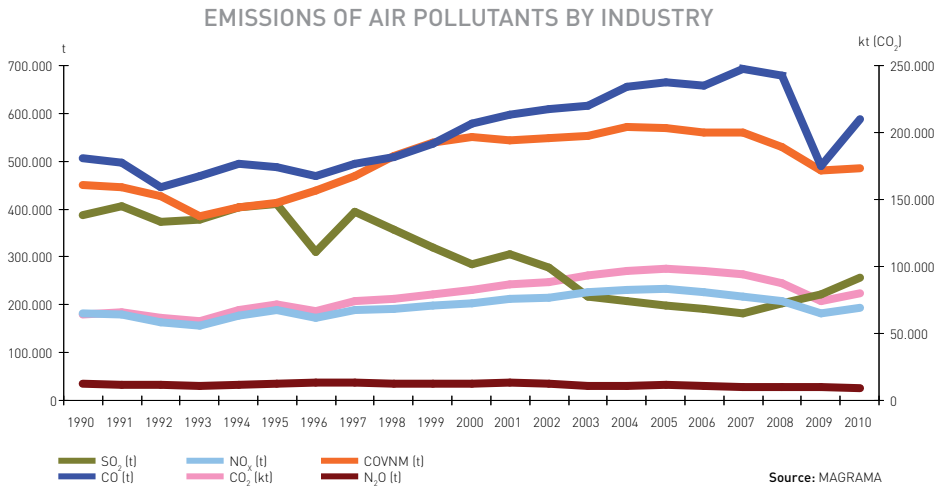
In 2010, growth in energy demand and CO₂ emissions in the sector outpaced that of GVA, ending the decoupling process observed between economic growth in the sector and these two environmental pressures.

INDICATORS

- Emissions of air pollutants by industry
- Energy Consumption by industry
- Waste generation by industry
- Number of industrial enterprises with Environmental Management Systems
- Eco-efficiency in industry

Emissions of air pollutants by industry

Industry's emissions of all pollutants increased in 2010, with the exception of N₂O, which were reduced by 2.5%



2010 marks the end of the trend that began to emerge two years earlier. Only N₂O recorded a reduction in emissions in 2010 (2.5%), while some pollutants registered quite significant growth. The increase in energy consumption experienced this year gave rise to this upturn in emissions.

In the case of SO₂, the increase has been visible since 2007 and rises of 11.4% and 9.1% were recorded in 2008 and 2009, respectively. However, the increase was slightly higher in 2010, reaching 15.4%. Industrial combustion plants are behind this rise following a 17.5% increase in emissions in 2010. The final situation of total SO₂ emissions is characterised by a significant decrease of 77.8% since 1990. The long-term trend in total SO₂ emissions is characterised by a significant fall of 77.8% since 1990. The decrease was calculated at 6% in 2010.

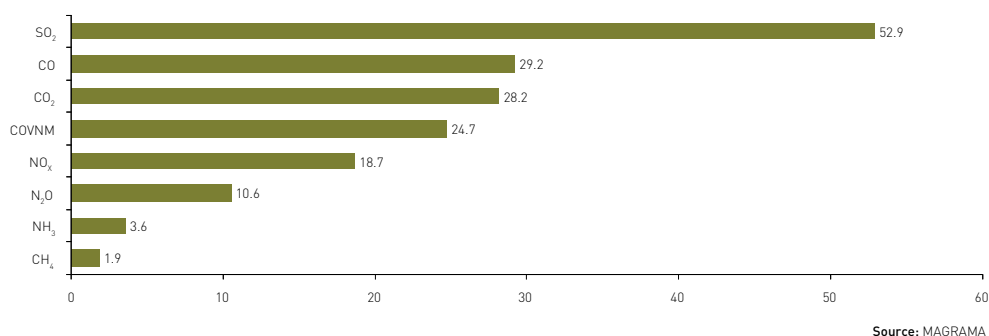
However, the rest of pollutants have inverted the trend observed the previous year, recording increases in emissions that vary in size:

- CO recorded the largest rise (19.9%), in clear contrast to the decrease of 27.8% witnessed in 2009. This increase was due to the strong emissions from production processes, which were up by 28.3%.

- CO₂ emissions, up by 7.9% on 2009 due mostly to industrial combustion plants, recorded the largest rise over the period 1990-2009, at 25.2%. This increase is in contrast to the marked 15% reduction experienced in 2009.
- NO_x emissions increased by 5.4% after falling by 11.5% the previous year.
- COVNM emissions registered the smallest increase in 2010 of 1.1%. These emissions decreased by 9.2% the previous year.

Industry's contribution to the emission of air pollutants is presented in the graph below. The contribution of SO₂ emissions from the industrial sector stands out, accounting for 53% of total SO₂ emissions in Spain in 2010.

EMISSIONS BY INDUSTRY AS A PERCENTAGE OF TOTAL EMISSIONS (2010)



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: Industrial combustion plants; 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 2010 were as follows:

EMISSIONS OF FLUORINATED GASES (KG)

	1990	1995	2000	2005	2010
SF ₆	2,800	4,533	8,561	11,365	15,107
HFCs	205,400	399,168	1,564,341	2,414,444	3,673,157
PFCs	131,825	123,961	64,620	42,177	43,850

Sources: MAGRAMA

SOURCES

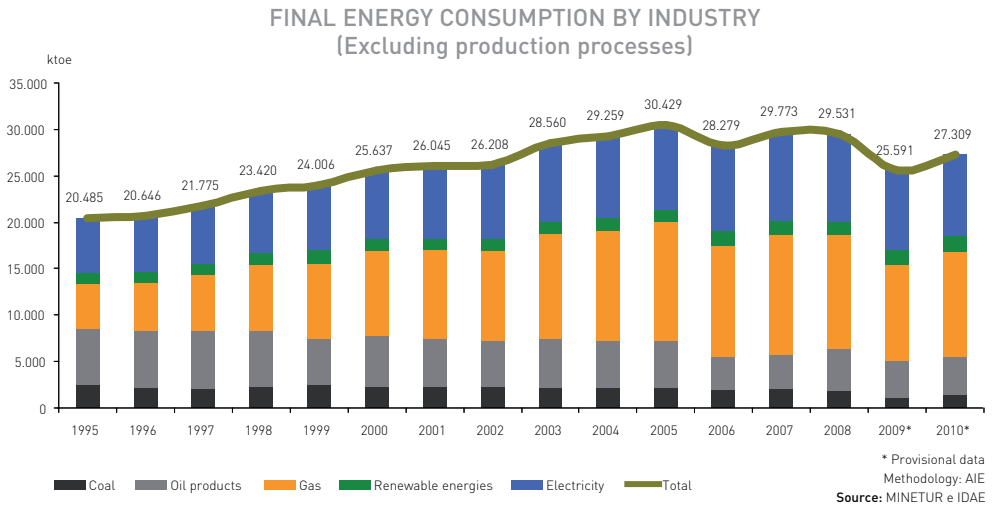
- Ministry of Agriculture, Food and the Environment, 2012. Inventory of Greenhouse Gas Emissions in Spain (1990-2010). Directorate-General for Environmental Quality and Assessment and the Natural Environment.

FURTHER INFORMATION

- <http://www.magrama.gob.es/es/calidad-y-evaluacion-ambiental/temas/sistema-espanol-de-inventario-sei-/>

Energy consumption by industry

Energy consumption by industry increased in 2010 after two consecutive years of decline

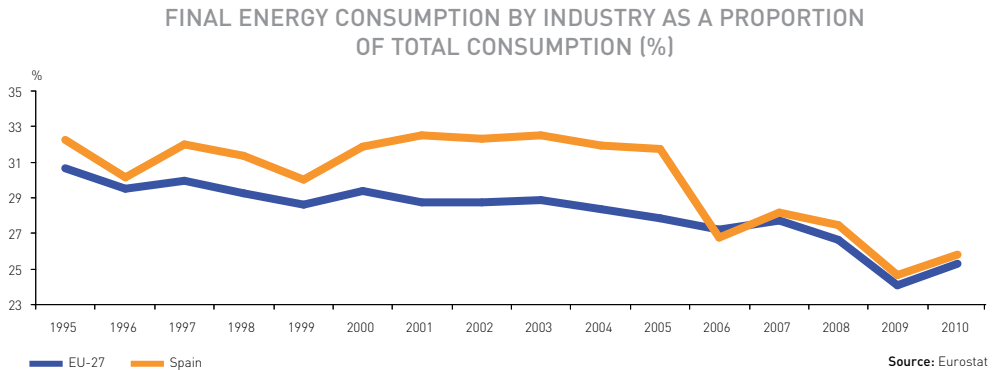


Final energy consumption by industry rose in 2010 after the sharp drop suffered the previous year when consumption fell to 25,591 ktoe (similar to the amount consumed in 2000). The 2010 figures, estimated according to provisional data from IDAE at 27,309 ktoe, have resulted in an increase in final energy consumption by industry of 6.71%, considerably less than the 13.34% decrease registered in 2009. This increase was observed in all energy sources, although it was perhaps most visible in the case of coal (27.45%), followed by natural gas (9.8%) and renewable energy (8.9%), which recorded their highest value (1,714 ktoe) of the series under analysis (1995-2010). Petroleum products remained practically stable, recording a modest rise of 0.76%.

According to the publication *“Energy in Spain 2010”*, the increase in energy demand in the industrial sector is due to the recovery of activity in certain sectors that are intensive in energy consumption. This is shown by the 1% increase in the Industrial Production Index in 2010, following the sharp drop in 2009.

The EU-27 also experienced the change in trend in final consumption by industry, recording an increase in 2010 of 8.95% in regard to the previous year to 291,725 ktoe, according to data from Eurostat. However, not all sectors registered this rise in final energy consumption, as industry alone accounted for 58.3% of the increase in

total final energy consumption, estimated at 3.7% in regard to 2009 (approximately 1,112,212 ktoe), total final energy consumption in 2010 amounting to 1,153,319 ktoe. As regards Spain, Eurostat data also reveal the large contribution of industry to the increase in total final energy consumption (80.9%).



Analysing the ratio between final energy consumption by industry and total final energy consumption in the EU-27 and Spain, it is clear that the Spanish trend is evolving in parallel to and is close to the European average. The EU-27 recorded a 5.1% increase and Spain a 4.5% rise in the ratio between final consumption by industry and total final consumption in 2010. This means that industry accounted for 25.3% of total final energy consumption in the EU-27 and 25.8% in the case of Spain. The difference places Spain only 0.49 percentage points above the European average, which confirms that the proportion of final energy consumption by industry over the total for Spain is converging with that of the UE-27, a trend that began in 2006.

NOTES

- The data on final energy consumption by industry from MINETUR and IDAE exclude non energy consumption, i.e. products used by industry as raw materials, but whose purpose is not directly the generation of energy.
- In the case of industry, Eurostat final consumption data exclude energy consumption by the energy and transformation sectors.

SOURCES

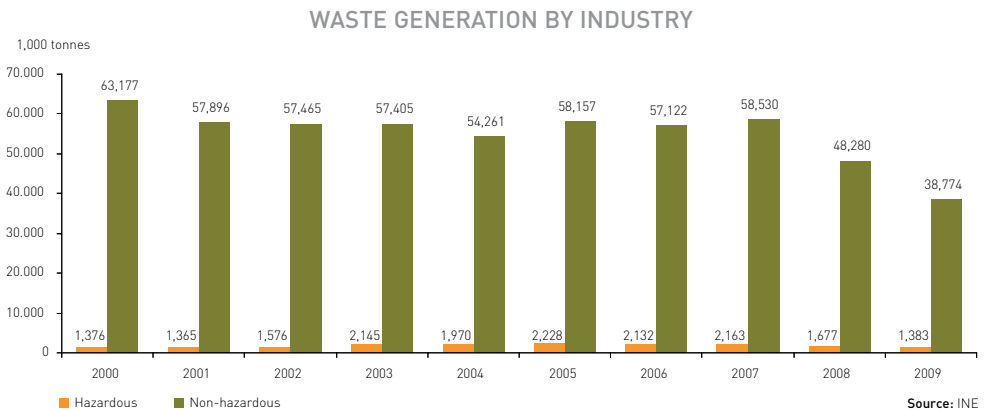
- Ministry of Industry, Energy and Tourism and Institute for Energy Diversification and Saving (IDAE). Annual energy reports. Period: 1990-2010.
- Ministry of Industry, Energy and Tourism, 2011. Energy in Spain 2010.
- EUROSTAT, 2012. Information from the web page. Available at: Statistics/Statistics by theme/Environment and Energy/Energy/Database/Energy statistics-quantities.

FURTHER INFORMATION

- <http://www.minetur.gob.es>
- <http://www.idae.es/>
- <http://epp.eurostat.ec.europa.eu>

Waste generation by industry

The almost linear decline in waste generated by industry continued for the second consecutive year



According to the survey by the National Statistics Institute (INE) in 2009, the downward trend in the amount of waste generated by industry that began in 2008 continued in 2009. Industry generated 19.6% less waste 2009 than in the previous year, taking the total to 40,156,993 t. The largest decreases were observed in the generation of mineral and combustion waste, according to the INE. Extraction industries generated more than half (almost 22 million) of the total waste produced by industry, the rest being generated by manufacturing industries (almost 15 million) and electricity and gas producers (3.3 million).

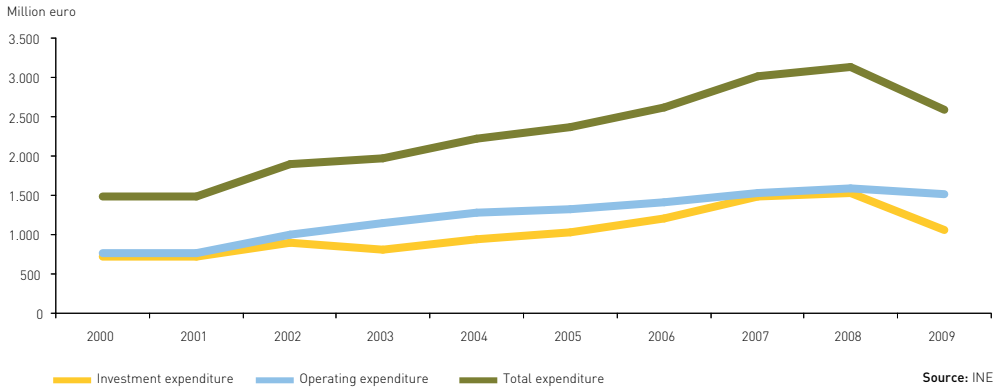
As regards whether the waste generated by industry was hazardous or non-hazardous, the former accounted for 3.4% of the total (1,383,142 tonnes), while the latter represented 96.6% (38,773,851 t). Both types of waste recorded similar decreases of 19.7% and 17.5% for non-hazardous and hazardous waste, respectively.

In relation to the reduction in industrial waste generation in 2009, industry has also invested less in treating waste, a decrease of 20.3% being recorded between 2008 and 2009, as reflected in the INE survey on company expenditure on environmental protection.

According to the INE, industry spent 2,586.6 million euros on environmental protection in 2009, 17.3% less than the previous year. The expenditure item that registered the largest decrease was investment in independent and integrated

equipment and facilities, which dropped by 30.5%, companies spending 542.7 million euros less. As regards investment, the items that recorded the largest decreases in absolute terms were those related to air emissions (34.1%), although they are still the largest investments made by industry in environmental protection.

COMPANY EXPENDITURE ON ENVIRONMENTAL PROTECTION



Current expenditure did not suffer such a marked decrease as investment, dropping from 1,595.6 million euros in 2008 to 1,520.7 million euros in 2009 (-4.7% in 2009).

Within industry, the electricity sector invested the most in environmental protection in 2009, with a total of 272.1 million euros, which was 52% less than the previous year. As regards current expenditure, Food, beverages and tobacco figured prominently with 343.3 million euros, an increase of 3.5% with respect to 2008.

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

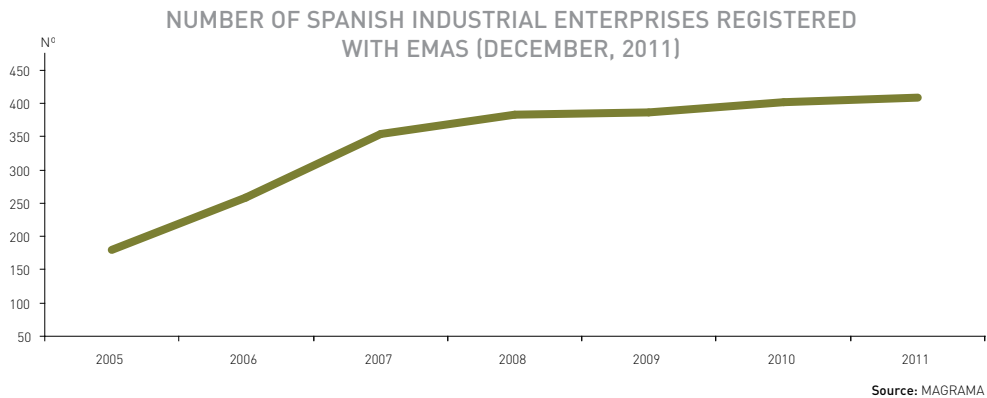
- National Statistics Institute (INE): Survey on the generation of waste in the industrial sector: 2009. Accessible at INEbase/Physical environment and environment/Statistics on environment/Survey on the generation of waste in the industrial sector.
- INE: Survey on company expenditure on environmental protection: 2009. Accessible at INEbase/Physical environment and the environment/Statistics on environment/Survey on company expenditure on environmental protection.

FURTHER INFORMATION

- <http://www.ine.es>

Number of industrial enterprises with Environmental Management Systems

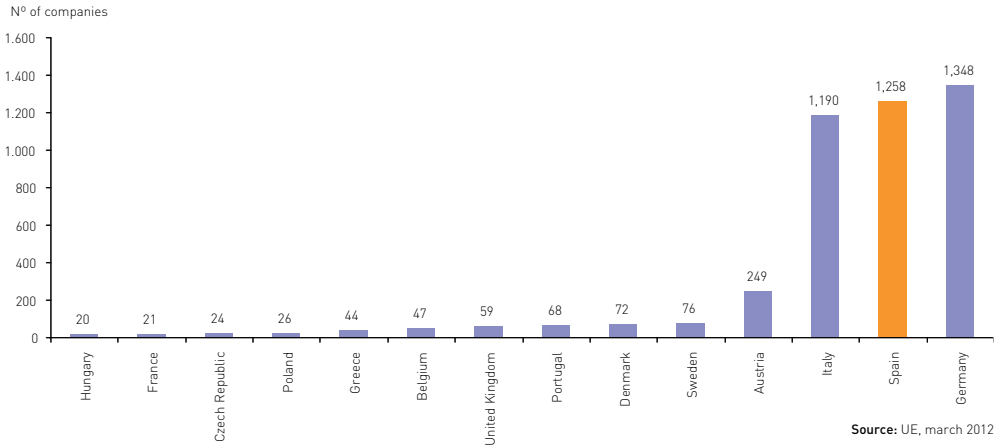
The overall figure of Spanish companies adopting Environmental Management Systems (EMS) remains positive



In 2011, 26 new industrial enterprises signed up to the Community Environmental Management and Audit Scheme (EMAS), while a further 20 decided to withdraw, resulting in a positive figure of six new industrial enterprises with Environmental Management Systems. According to data from MAGRAMA, in December 2011 there were 408 companies in Spain that were signed up to the EMAS, 1.5% more than the previous year. The most significant increase was recorded in Galicia, where 7 new industrial enterprises joined the EMAS. As regards the companies that withdrew from the scheme, Madrid suffered the most, with a decrease of 19 industrial enterprises.

Taking into account all sectors, a total of 1,258 companies were registered with the EMAS in Spain by 30 April 2012, 0.32% less than in the previous year, according to the EMAS web of the European Commission. This figure maintains Spain as the EU-27 country with the second highest number of companies registered in the EMAS, behind Germany with 1,401. The country with the third highest number of companies registered is Italy, where a 13.3% increase in a single year took the total number of enterprises registered to 1.190. The rest of countries are far behind with less than 250 companies registered with the EMAS.

NUMBER OF COMPANIES WITH EMAS ENVIRONMENTAL MANAGEMENT SYSTEMS IN EU COUNTRIES WITH OVER 10 COMPANIES REGISTERED WITH EMAS (March, 2012)



NOTES

- For the purpose of calculating the indicator, the industrial enterprises included are those listed in sections B to E 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 (known as EMAS III regulation) amended Regulation 761/2001 of 19 March 2001. EMAS III's current scope extends to cover all enterprises, irrespective of sector.

SOURCES

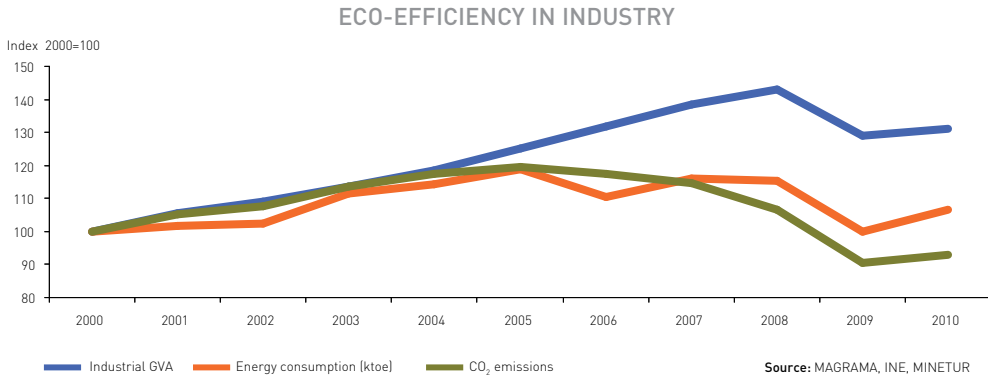
- European EMAS Data: information from the EMAS website, European Commission. Available at: European Commission/Environment/EMAS/EMAS documents/Statistics.
- Data for Spain. Ministry of Agriculture, Food and the Environment, Directorate-General for Environmental Quality and Assessment and the Natural Environment.

FURTHER INFORMATION

- <http://ec.europa.eu/environment/emas>
- <http://www.magrama.gob.es>. Available at: Environmental quality and assessment/Community Environmental Management and Audit Scheme: EMAS.

Eco-efficiency in industry

Industrial energy intensity increased in 2010 as did emissions of CO₂



Industrial demand for final energy increased by 6.71% in 2010 (non-energy uses excluded). This increase was accompanied by a much more modest rise of 1.77% in Gross Value Added (GVA) at current prices from 152,499 million euros in 2009 (provisional estimate) to 155,191 million euros in 2010 (advance estimate), according to data from the INE. As a result of this rise in final energy consumption by industry and GVA, CO₂ emissions by industry were also up from 74,302 in 2009 to 80,166 in 2010, representing an increase of 7.9%.

In the longer term, if one considers the trend since the year 2000, the 31.2% growth in industrial GVA has occurred at the expense of a lower increase (6.52%) in energy consumption. But above all, the rise has been accompanied by a 7.2% decrease in CO₂ emissions. These variables are decoupling from their trends, which were highly pronounced up to 2009. This can be interpreted as an improvement in eco-efficiency in emissions, as the sector has grown in economic terms at the same time these emissions have decreased. The drive of renewable energies and the shift in the energy mix, with less coal and oil and more natural gas being used as fuel, have influenced this pattern.

The branches of industry that recorded the largest absolute increases in demand for energy 2010 were metallurgy, metallic mineral ores and chemical products. Furthermore, the industries that registered the strongest growth in GVA in absolute terms were metallurgy and the manufacture of metal products, chemical products, and food, beverages and tobacco. Meanwhile, emissions by industry increased due to the impact of industrial combustion plants.

The relationship between the energy consumed by industry, Gross Value Added and the emission of CO₂ can serve as a reference for the eco-efficiency of this sector, as it reflects the energy and CO₂ emissions required to produce a unit of wealth. In 2010, growth in the demand for energy outpaced growth in GVA, as shown by the graph, which results in a slight increase in industry energy intensity. This was also the case of industry CO₂ emissions. Despite the apparently erratic trend in industry energy intensity, the relationship between demand for energy and GVA seems to remain relatively stable, as reflected by the fact that the two lines in the graph are relatively parallel to each other.

NOTES

- For the purpose of calculating the indicator, the industrial enterprises included are those listed in sections B to E of the CNAE-2009. This therefore excludes crop and livestock farming and forestry, as well as the construction and service industries.
- The data in the graph are expressed in reference to values for the year 2000, which were used as a basis (100%).

SOURCES

- Ministry of Agriculture, Food and Environment, 2012. Inventory of Greenhouse Gas Emissions in Spain. Directorate-General for Environmental Quality and Assessment.
- Ministry of Industry, Energy and Tourism and IDAE. Annual energy reports. Period: 1990-2010.
- Ministry of Industry, Energy and Tourism, 2011. Energy in Spain 2010.
- National Institute of Statistics. Web page consultation. INEbase/Economy/National Accounts/Spanish National Accounts. Base 2008. Accounting series 2000-2010.

FURTHER INFORMATION

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- <http://www.minetur.gob.es>
- <http://www.idae.es>
- <http://www.ine.es>
- <http://epp.eurostat.ec.europa.eu>