

INDUSTRY



2.11

Environmental profile of Spain 2012

In the past, the most common form of thinking was: “produce dirty, clean up later if they find out. We believe today that you can achieve green growth, green industrialisation, while you are also clean”. These were the words of the Director-General of the United Nations Industrial Development Organization (UNIDO), Kandeh K. Yumkella, during the official presentation of the Green Industry Platform, within the context of the United Nations Conference on Sustainable Development (Rio+20) in Rio de Janeiro, Brazil. 2012 was, in fact, a key year for industry at global level. The launch of this platform by UNIDO and UNEP, supported by the European Commission among other organisations, aims to be a forum to catalyse, mobilise and mainstream action on Green Industry around the world.

Within the European context, 2012 was also an important year for industry, with the publication in October of the European Commission’s Communication on the review of EU Industrial policy, within the framework of the Europe 2020 Strategy. This review of industrial policy is intended to increase the importance of European industry within the economy of the Union, from 16% of GDP in 2011 to 20% in 2020. Therefore, the development of industry within the EU framework is seen as an important means of achieving sustainable growth and a fortified way out of the crisis. All this must be



necessarily accompanied by an industrial development that is sustainable to ensure efficient use of energy and resources, and minimise emissions and waste.

In a national context, Spain backed the Communication on the revised EU industrial policy, in the Competitiveness Council held in December 2012. Furthermore, in 2013, Law 5/2013, of 11 June, modifying Law 16/2002 on Integrated Pollution Prevention and Control and Law 22/2011 on Waste and Contaminated soil, was approved. This law, which will be further developed by a Royal Decree, transposes part of Directive 2010/75/EU, of 24 November, on Industrial Emissions (IED) into our legislation. Other measure that will affect the sustainable growth of industry will be the Renewable Energy Plan 2011-2020 approved in November 2011, which aims to hit the EU imposed target of 20% of gross final energy demand coming from renewable resources by 2020. Another example of the commitment of industry to sustainable development is the take up of environmental management systems, such as EMAS. In 2012, 32% of the 1,261 registered organisations were from the industrial sector.

KEY MESSAGES

- Industry consumed 21,094 ktoe of final energy in 2011, 2% less than the previous year, and the lowest level of the last 15 years.
- In 2011 N2O emissions again fell in Spain, to 62% below 1990 values.
- In 2010, industrial waste production grew 26% with respect to the previous year.
- In 2011 environmental efficiency improved as gross added value increased, at the same time as energy consumption and CO2 emissions decreased.

INDICATORS

- Energy consumption by industry
- Emissions of air pollutants by industry
- Waste generation by industry^o
- Environmental efficiency in industry

Energy consumption by industry

Final energy consumption by industry was 21,094 ktoe in 2011, 2% less than the previous year, and the lowest level of the last 15 years

Final energy consumption by industry
(excluded the final non energy consumptions)



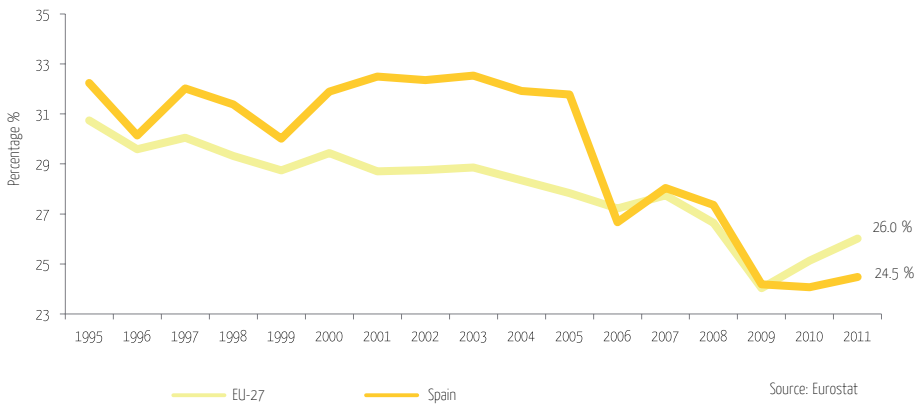
According to the Annual Energy Register published by the IDAE for the period 1990-2011, the provisional figures for 2011 show a decrease in final energy consumption by industry (excluding non-energy consumption) with respect to 2010's provisional data. Specifically, the demand was 422 ktoe less than in the previous year, a decrease of 2% in the final demand in the sector. The highest decrease was seen in petroleum products, with 11.4% lower demand, followed by gas and electricity, which decreased by 1.7% and 2% respectively. At the same time, industry consumed 20.5% and 9.5% more final energy from coal and renewable energy respectively.

In global terms, the final energy demand in Spain in 2011 (excluding non-energy consumption), was 86,062 ktoe, 25% of which was for industry. The previous year consumption was 88,827 ktoe, 3.21% more than in 2011. Nevertheless, consumption by industry represented 24%, 1% less than in 2011. This decrease in the total final energy consumption in 2011 arose due to the continuing economic stagnation, as is indicated by the publication 'Energy in Spain 2011'.



The decline in final energy consumption by industry coincides with lower industrial output (1.8% lower) registered in 2011 with respect to the previous year, as reported in a press release from the National Statistics Institute (INE) regarding the Industrial Production Index at December 2011.

Final energy consumption by industry as a proportion of total energy consumption (%)



According to Eurostat data, there was a decrease in 2011, at EU level, of final energy consumption by industry. Across the EU-27, industry consumed a total of 287,065 ktoe, 0.9% less than the previous year, an insignificant decrease in comparison with that experienced by the total final demand including all sectors (4.3%), with 1,103,260 ktoe. Final energy consumption by industry is 26% of total final energy consumption, 0.9% less than in the previous year. In Spain this percentage, according to Eurostat, was 24.5%, 0.4% less than in 2010. Therefore, the divergent trend, initiated in 2009, between the European average and Spanish values for the final energy consumption by industry compared to total consumption, continues. In 2011, the gap between the European series and the Spanish series was 1.5%, while in 2010 the difference was 1.1%.



NOTES

- The data on final energy consumption by industry from MINETUR and IDAE exclude non-energy consumption, that is, those products used by industry as raw material, whose purpose is not directly the generation of energy.
- In the case of industry, final consumption data from Eurostat excludes energy and consumption by the energy and transformation sectors.
- The Industrial Production Index. Base 2005, considers categories B, C and D of CNAE-2009.

SOURCES

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- Ministry of Industry, Energy and Tourism (MINETUR), 2013. Energy in Spain 2011
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FURTHER INFORMATION

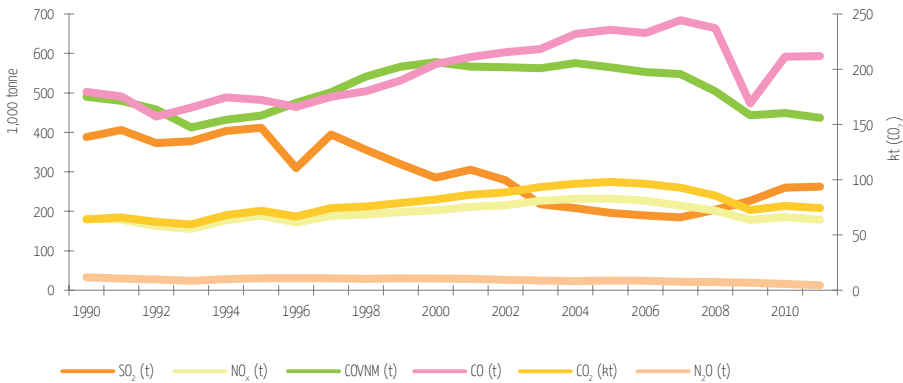
- <http://www.minetur.gob.es>
- <http://www.idae.es/>
- <http://epp.eurostat.ec.europa.eu>



Emissions of air pollutants by industry

In 2011 emissions of N₂O in Spain decreased, falling to 62% below 1990 values

EMISSIONS OF AIR POLLUTANTS BY INDUSTRY



Source: MAGRAMA

After an increase in 2010 of the total quantity of air pollutants emitted by industry analysed here (SO₂, NO_x, NMVOC, CO₂, CO, N₂O and fluorinated gases), 2011 was characterised by a 2.6% drop in emissions (78,854,765 tonnes), accompanied by a lower final energy consumption by industry, as previously mentioned. Nevertheless, although a generalised decrease of the total emissions considered took place, given that each pollutant has different effects on the environment, it is necessary to analyse the trend of each of the gases separately.

The gases that experienced a decrease in 2011 were NO_x, NMVOC, CO₂ and NO₂:

- NO₂ is the pollutant that saw the largest decrease in emissions between 2010 and 2011, with a reduction of 19.6% and a total of 4,449 t released. This quantity represents 5.7% of all NO₂ emissions, which were also reduced by 5.7%. The group of activities seeing the biggest decrease in 2011 was 'Industrial processes (with no combustion)'. Industrial emissions for 2011 were the lowest for the entire series analysed (1990-2011).



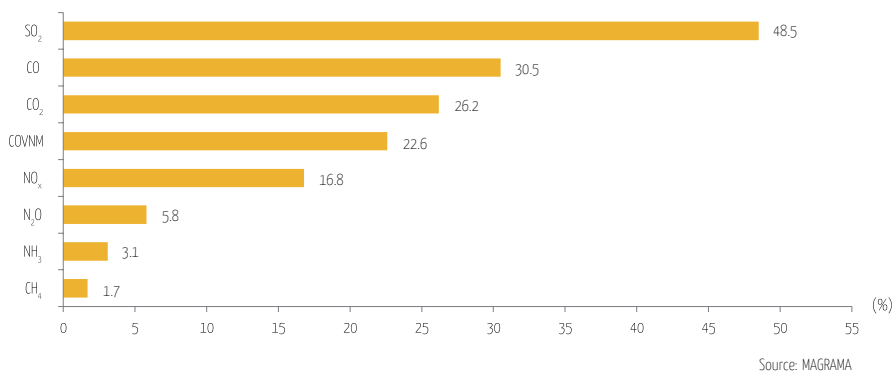
- Second in terms of the percentage reduction in 2011 are other nitrogen compounds, NO_x . The emission of these pollutants fell by 3.5% for industry as a whole, to 178,879 t, representing 16.9% of all NO_x emissions, which grew overall 3.6%.
- Next on the list are non-methane volatile organic compounds (NMVOC). The industrial emissions of these pollutants decreased from 449,321 t in 2010 to 436,492 t in 2011, a drop of 2.9%. Industrial NMVOC, which in 2011 represented 22.6% of the total emissions of these compounds, are 11% below 1990 levels.
- With a similar percentage fall to NMVOC, industry's CO_2 emissions decreased in 2011 by 2.6%. Nevertheless, the total carbon dioxide emissions increased by 1.2%. In total 26.2% of the 284,407 tonnes of carbon dioxide released in 2011 were emitted by industry.

On the contrary, the fluorinated gases, as well as SO_2 and CO_2 experienced an increase in their emissions from industry:

- Fluorinated gases increased in 2011 by 6%, from 3,755 t to 3,975 t. The HFCs saw the biggest increase in the gases in this group emitted by industry.
- Sulphur dioxide emissions (SO_2) by industry also increased, although in a more moderate manner (11%) in comparison with the period 2009-2010 (14.3%). There was a larger rise in total SO_2 emissions (10.4%); in 2011 almost 50% of these were emitted by industry
- Finally, as regards CO, emissions by industry remain practically unchanged (an increase of 0.2%), with 593,000 t emitted, after a drop in 2009 and subsequent rebound in 2010 (with an increase of 25%). Emissions by industry of CO represented, in 2011, 30.5% of the entire amount of CO released in Spain, a figure very similar to the previous year.

As regards the contribution of industry to pollutant emission, it can be seen from the graph below that industry is responsible for almost half of all SO_2 released and of 30% of CO. Nevertheless, only 1.7% of methane is attributable to industry.

Industrial emissions with respect to total emissions. Year 2011


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 solvents and other products use. The combustion in energy and energy transformation 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 also not included.
- For reasons of scale, the indicator does not include emissions of fluorinated gases, although their origin is 100% industrial. Emissions of these gases from 1990 until 2011 was as follows:

	1990	1995	2000	2005	2010	2011
SF6	2,800	4,533	8,561	11,363	15,840	16,500
HFC	205,400	399,168	1,564,341	2,414,444	3,673,157	3,913,149
PFC	131,825	123,961	64,620	42,177	43,850	45,201

SOURCES

- Ministry of Agriculture, Food and Environment, 2013. GHG Emissions Inventory in Spain. Years 1990-2011. Directorate-General of Environmental Quality and Assessment and Natural Environment.

FURTHER INFORMATION

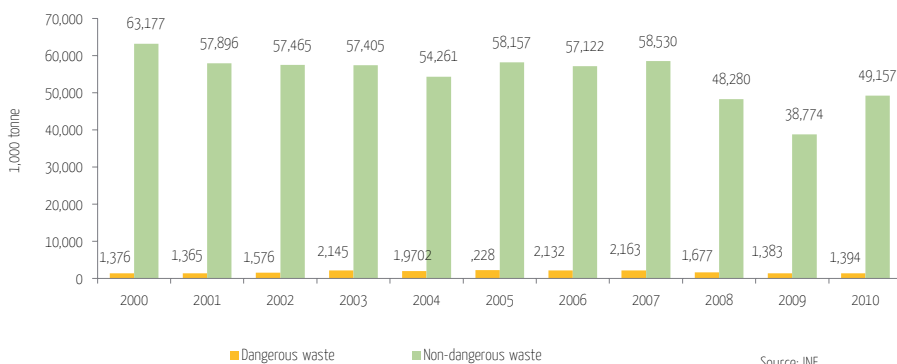
- <http://www.magrama.gob.es/es/calidad-y-evaluacion-ambiental/temas/sistema-espanol-de-inventario-sei/>



Waste generation by industry

In 2010, the waste generation by industry increased by 26% with respect to the previous year

Waste generation by the industry



Source: INE

If 2009 was characterised by a generalised drop in industrial activity, and with that an accompanying fall in waste generation, in 2010 industry slightly recovered, as shown by the 1% increase in the annual average value of the industrial production index, and at the same time waste generation by industry also rose.

In 2010, according to the survey on Waste Generation by the National Statistics Institute, the industrial sector generated 1.4 million tonnes of dangerous waste (1% more than the previous year) and 49.2 million tonnes of non-dangerous waste (27% more than in 2009), giving a total of 50.6 million tonnes. This represents an average increase of 26% concerning the waste generation by industry.

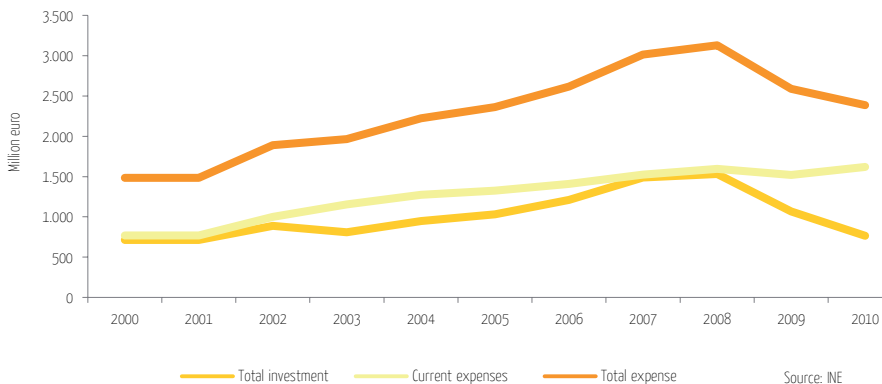
Extraction industries were responsible for the largest amount of waste generation, with almost 32,000 t, most of which (99%) was non-dangerous. In relation to dangerous waste, manufacturing industry was greatest generator of such waste, with 1,365 t, representing 98% of dangerous waste generated by industry as a whole. In comparison with the previous year, the biggest increases were experienced by the extraction industries, with

44% more non-dangerous waste generated, and the greatest decreases by the energy and gas industries, generating 30% and 20% less non-dangerous and dangerous wastes respectively.

In terms of waste categories, the largest part of non-dangerous waste was mineral waste (75%) and combustion waste (8%). For dangerous waste, of the 1.4 million tonnes generated, chemical and combustion wastes represented 29% each, and acid, alkaline or saline wastes 21%.

In relation to the increase in industrial production in 2010 and the rise in waste and emissions, the 'Survey on Company Expenditure on Environmental Protection' by the National Statistics Institute reflects how, during that year, companies' current expenses destined for environmental protection grew by 6.5%, up to 1,620 million euros. In contrast, there was a fall in the investment of equipment and installations, both independent and integrated, of 28.1%. This data led to a figure of total industry expenditure of 2,384.7 million euros (7.8% less than in 2009). The largest total investments were dedicated to the reduction of emissions of air pollutants and to the management of waste water. In terms of the distribution by sectors, electricity was in 2010 again the largest investor in environmental protection, even though its investment fell by 51.9% with respect to 2009.

Expenditure in environmental protection of the industry





For waste, industry has reduced by 23% its investment in independent equipment and by 18.2% in integrated equipment (20.5% in the total investment). In 2010, the industrial sector invested 91,205.4 million euros in waste equipment, approximately 12% of the total investment.

NOTES

- The indicator also includes data for the energy industry. The first survey of the National Statistics Institute aimed to quantify waste generated in economic activities whose main activity is included within sections B, C or D of the National Classification for Economical Activities (CNAE- 2009). The objective of the second survey of the National Statistics Institute is to assess industrial enterprises' expenditures on reducing or eliminating emissions of air pollutants and noise pollution, waste water treatment and solid waste generated, as well as investments made to be able to use less polluting raw materials or the same ones but in lower quantities.

SOURCES

- National Statistics Institute, 2013. Survey on the generation of waste in the industrial sector: year 2010. Accessible at: INEbase/Entorno físico y medio ambiente/Estadísticas sobre medio ambiente.
- National Statistics Institute, 2013. Press release of 1 August 2012. Survey on Environment in Industry. Results relative to the generation of waste in industry. Year 2010.
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- National Statistics Institute, 2013. Press release of 18 July 2012. Survey on environment in industry. Results relative to the company expenditures on environmental protection. Year 2010

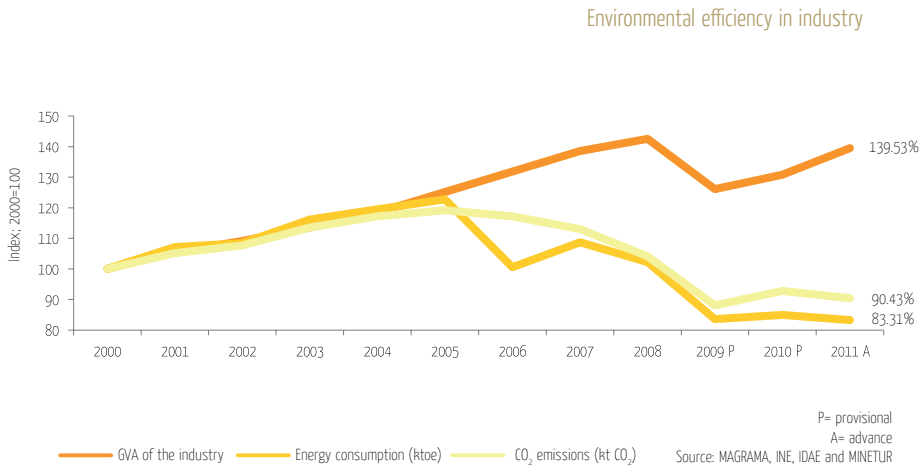
FURTHER INFORMATION

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



Environmental efficiency in industry

The eco-efficiency in industry in 2011 improved, increasing gross value added while at the same time energy consumption and CO₂ emissions fell



Industry's gross value added (GVA), categories C to E CNAE-2009, increased in 2011 by 6.64% with respect to the previous year, from 154,770 to 165,051 million euros. In 2011, manufacturing represented 80% of the total GVA of the industry with 132,038 million euros, with net sales that increased by 5.1%, to 465,399.24 million euros, according to a press release from the National Statistics Institute on the Industrial Survey for Enterprises 2011. Of this amount 32.2% was sold overseas, 2.1% more than the previous year. In terms of branches of manufacturing activity, the food sector, motor vehicles and the oil industry were the most active, with 18.3%, 11.4% and 10.5% of total sales respectively. If we take the 2000 index as a GVA reference value (index 2000=100), it can be observed that the figure for 2011 was almost 40% higher than for 2000.

This increase in the GVA contrasts with the fall in industrial activity during 2011 (1.8% of the Industrial Production Index). One explanation may be found in the overseas sales of the manufacturing industry, as well as in the increase of exports that improved the sector's net sales, meaning there was lower production activity but higher overseas sales than in the previous year, and those sales gave rise to a greater GVA for the sector.



In contrast, and as mentioned in previous chapters, in 2011 there was a decrease of almost 2% of final energy consumption in the manufacturing sector related to the decline of industrial production activity, reaching 9.57% below year 2000 values. This decrease was accompanied, to the same extent, by a fall in CO₂ emissions (2.60%).

Taking all the above into account, and looking only at the trend shown on the graph, a divergence between energy demand/CO₂ emissions and GVA can be seen. This could be understood as an improvement in the eco-efficiency of industry, as in order to obtain one unit of wealth a lower consumption of energy and a lower quantity of CO₂ released was required.

Considering all the data series over time, and taking the year 2000 as the reference, an improvement in eco-efficiency of industry can be observed, as GVA and energy consumption are ever-more separated, which indicates that the trends of each are more highly decoupled. Up to 2005 there was a direct relationship between the three variables analysed; from 2006, the trend changes and the decoupling between GVA and energy consumption increases. This behaviour would correspond with the decoupling concept between economic growth and the use of the resources and their environmental impact, promoted by the UNEP and the International Resource Panel in its 2011 report “Decoupling natural resource use and environmental impacts from economic growth”.



NOTES

- For the calculation of GVA, the National Statistics Institute considers industrial activities to be those listed in sections B (extractive industries); D (electric energy, gas, steam and air conditioning supply) and E (water, sewerage, waste management and remediation activities) of the CNAE-2009. This therefore excludes crop and livestock farming and forestry, as well as the construction and service industries.
- The final energy consumption by industry covers the activities mentioned in the notes included in the relevant indicator.
- The data in the graph are expressed in reference to values for the year 2000, which were used as a basis (100%).

SOURCES

- GVA: National Statistics Institute, 2013. Available for consultation in: INEbase/Economía/Cuentas económicas/Contabilidad nacional de España. Base 2008. Cuadros contables 2000-2011/Agregados por ramas de actividad.
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- CO₂ emissions: Ministry of Agriculture, Food and Environment, 2013. GHG Emissions Inventory in Spain. Years: 1990-2011. General Directorate of Environmental Quality and Assessment and Natural Environment.
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FURTHER INFORMATION

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