

Every company in the Abengoa Group has the power to structure and organize itself according to its needs, with management being responsible for defining the resources that are required to meet the company's environmental commitments.

As an instrument aimed at developing this commitment, each company has a specific organization suited to its needs and dedicated to the development and maintenance of the Environmental Management System. These organizations answer directly to the management teams of the company concerned, or to the management board of the business group to which they belong. In all cases, the organization is made up of fully skilled and suitably trained professionals with the corresponding academic background in each area.

At the same time, the companies whose activity involves engineering or industrial construction have a decentralized structure carrying out activities at the work or project site, at their permanent seats (delegation or regional management) and at their headquarters, the latter answering to general management.

On a corporate level, and answering directly to Abengoa's Chairmanship, there is a Corporate Board of Management to deal with Organization, Quality and the Environment. Enjoying its own resources, its environmental responsibility involves reporting to the Abengoa Chairmanship on the development and state of the different Management Systems in the companies that make up the group. This supervisory activity is managed by the general coordinator for quality and the environment, who is in charge of verifying the fulfillment of objectives and the use made of the synergies arising from the control and monitoring visits.

Quality and Environment organizations are mainly concerned with the management and creation of the documentation for the Systems, keeping it updated in accordance with national and international standards and prevailing legislation, proposing and developing the annual internal audit plan, taking on the secretarial functions for the Quality and Environment Committee, where company, area and department objectives, indicators and goals are proposed, addressing queries and requests for advice from areas and departments, acting as a supervisor in the application of trouble-shooting (Trouble-shooting Report - TSR) and improvement actions (IA), as well as collaborating with general management in the annual review of systems, with the aim of identifying proposals for improvement.

The following obligations for Abengoa companies arise from the development of the internal management standards and with respect to environmental organization and structure:

- The establishment of an Environment and Quality Committee to be presided over by company Management, in which the whole organization is represented, the function of which is to act as the governing body of the Environmental Management System.
- To provide the environmental structure and organization required to meet the environmental commitment set down in the standard. A responsibility that the standard itself assigns to Management, and which must be proportional to the needs of the company.

In order for an organization as complex and multi-faceted as Abengoa to be successful in meeting its environmental goals and its commitment to sustainability, it is essential that all of its members are aware of the impact that the activities they carry out from their work stations have on the environment and that they have received the benefits of proper training. All aspects of environmental management training at Abengoa form part of the general group training process. Each company has an annual training plan, which, in general, is based on the Abengoa skills management model and brings with it a systematic efficiency assessment.

In accordance with our environmental management policy, along with that of the sustainable use of natural and energy resources, Abengoa has established the implementation of Environmental Management Systems as a strategic target for all of its companies. These systems will comply with the requirements of the ISO 14001 standard. This is the framework within which specific aims are set down to reduce the negative environmental impacts that the products and services of each company may have. These objectives include reductions in the consumption of natural resources and in the generation of waste and emissions.

The environmental management systems implemented by Abengoa are extremely demanding in terms of the monitoring and measuring of environmental impact and with respect to the control of associated operations. All activities related to environmental matters that have been deemed to be significant must be taken into account in the relevant monitoring and measurement plan and in an operational control program.

Abengoa's main environmental indicators

At Abengoa we believe that the world needs solutions, and for over ten years now we have focused company growth on creating technologies that will contribute to sustainable development and which will serve to meet the needs of future generations.

Given this scenario, and in order to combat the conditions that are provoking climate change and to contribute efficiently to the control of greenhouse gas (GHG) emissions, a project was drawn up in the course of 2007 so that, in 2008, all of our companies will carry out an inventory of GHG emissions to enable the monitoring and notification of same.

This has a three-fold aim:

- To obtain in-depth knowledge of the GHG emissions of each Abengoa activity, either direct or indirect, in order to assess the situation and identify improvement options.
- To label Abengoa products and services, identifying the GHG emissions associated with the production of each product or service.
- To assess Abengoa suppliers according to the GHG emissions associated with the production of products and services purchased and contracted by Abengoa (along with specifications against child and forced labor).

Our work centers, the activities associated with the same and all of the projects directly promoted by Abengoa have been taken into account in order to calculate the environmental indicators. The magnitudes arising from our involvement, but not the raw materials, consumables or waste, for which the promoters of said projects are accountable, have been considered for all other projects.

Neither have the maintenance or operation activities at our clients' facilities been taken into account. The following companies are not covered by the environmental indicators: Abencs, Telvent China, Telvent Australia, Telvent Netherlands, Telvent Venezuela, Telvent Argentina, Telvent Scandinavia, Telvent Turkey, Telvent Thailand, Matchmind and Dedini Agro, the company recently acquired by the Bioenergy group.

The following is a mere indication of the wide range of initiatives that have been undertaken in this sense:

- All business units are implementing policies to reduce the consumption of paper, toner, water and electricity in offices and to collect waste for treatment or recycling.
- The Engineering and Industrial Construction unit is carrying out environmental programs for works, reforesting areas in the environs of project sites and coordinating sub-contracted transportation operations in order to adapt the type of transportation to the size and quantity of materials to be transported.
- Environmental Services is carrying out initiatives to reduce the generation of waste such as the bulk sale of certain products in tanks in order to avoid the generation of waste packages, the reuse and recovery of packages, etc.
- In order to reduce water consumption, raw and process water supply networks have been created, among other actions. In addition to other R&D projects, such as the development of advanced wastewater treatment systems, or other projects focusing on the desalination process: minimizing the possible environmental impact of the brine by means of studying the dilution phenomenon of the same, developing desalination by means of renewable energies, etc. All of these projects are still in the development stage, and consequently results are not yet available.
- The Bioenergy business unit is carrying out actions such as the reuse of wastewater, and collection of rainwater, among others.

Improvements have been made in the data collection and data pooling processes with the aim of improving the reliability of the environmental indicators. Some values from previous years have been corrected in accordance with estimate criteria and revised calculations.

All the shown indicators have been defined and calculated with the aim of being able to check the development of the same year after year.

Raw Materials

Given the nature and variety of the activities carried out by Abengoa, it is practically impossible to thoroughly list all the raw materials employed; consequently, the available data has been pooled and consolidated in such a way as to provide an accurate and real impression of our environmental impact.

In a business unit the main activity of which is engineering, paper has been the traditionally used means for holding all relevant information. Consequently, in order to reduce its consumption, over recent years different strategies have been used: use of recycled paper, printing on both sides of the page and, above all, the extensive use of a corporate network so personnel from different companies, distributed over sixty countries on the five continents, can share information.

Paper Consumption in Offices (Tons)

	2005	%		2006	%		2007	%
Total paper consumption	243	100		260	100		269	100
Recycled paper consumption	87	36		102	39		73	27
Consumption of paper for packaging*	269			339			403	

(*)100% recycled paper

An important group of raw materials used for overall Abengoa activity comes from livestock and farming. On the one hand, slurry for treatment and transformation. On the other hand, grain and wine alcohol surplus are used to produce bioethanol as a component of ecological fuels. Moreover, several chemical substances are used in the latter process.

Slurry Treatment (Tons)

	2005	2006	2007
Slurry*	50,184	53,196	64,200

(*) Slurry is liquid manure that comes from livestock farming

Bioethanol Production

	2005	2006	2007
Raw materials of agricultural origin			
Grain: wheat, corn and barley (Tons)	1,488,177	2,026,630	2,279,202
100% volume wine alcohol (m3)	93,549	58,872	61,368
Chemical substances used (Tons)			
Enzymes	1,372	1,677	2,026
Antibiotics	6.26	8.98	6.49
Other chemicals*	12,272	17,551	20,545

(*) Caustic solution, sulfuric acid, phosphoric acid, sulfamic acid, ammonia, etc.

A wide range of raw materials are used in the fields of industrial construction and industrial waste recycling, though the importance of metal products particularly stands out.

Iron is mainly used in the industrial construction area to build metallic structures for electrical energy transmission lines. Zinc is used in the galvanizing of the metallic structures.

Main Metals in the Engineering and Industrial Construction Area (Tons)

	2005	2006	2007
Iron	29,946	20,971	19,426
Zinc	1,523	840	1,054
Copper	90	117	111

Companies in the Environmental Services area deal with the recycling of industrial waste. By means of treating, assessing and recovering it, they obtain products such as secondary aluminum, concentrated blocks of aluminum, Waeltz oxide with 65% zinc content, secondary zinc and zinc oxide.

This is the area in which there is the greatest possibility of recycling sold products, which in the majority of cases can be achieved 100%.

The main industrial waste treated and the additives used are indicated in the following table:

Recycled Industrial Waste (Tons)			
	2005	2006	2007
Salt slag	154,350	176,025	190,280
Smelting and steelworks dust	93,934	95,273	139,005
Desulphurizing waste (sulfur)	103,092	105,064	98,559
Aluminum metal waste	94,633	107,116	104,214
Aluminum slag	19,620	27,656	28,863
Different types of zinc waste	25,830	20,802	20,149
Additive elements (Si, Cu, Mg, Mn)	5,279	6,392	8,474

The companies that carry out the management and treatment of waste also form part of the Environmental Services area. The waste employed is classified in accordance with whether it is hazardous or not, and the treatment it is to receive.

Waste for Management and Treatment (Tons)

	2005	2006	2007
Hazardous			
Physico-chemically treated waste	14,023	24,442	30,313
Energy value treated waste	27,249	42,170	50,183
Inerting treated waste	247,224	260,866	258,924
Recycled treated waste	4,959	5,376	32,409
Hazardous deposit treated waste	85,231	64,512	72,293
Thermally treated waste	1,034	897	3,029
Evapo-condensed treated waste	7,379	12,790	8,941
PCB treated waste	64	285	337
Segregated waste treatment	677	951	721
Sub-total	387,839	412,288	456,434
Non-hazardous			
Non-hazardous deposit treated waste	211,801	577,804	630,313
Inert deposit treated waste	1,776	1,232	865
Non-hazardous energy value treated waste	4,080	2,869	1,290
Non-hazardous physico-chemically treated waste	6,046	7,363	8,270
Non-hazardous recycled/re-use treated waste	9,906	15,504	21,430
Sub-total	233,608	604,771	662,168
Total	621,447	1,017,059	1,118,601

Industrial Cleaning (Tons)

	2005	2006	2007
Tank cleaning waste	260	345	354
Centrifugally treated oil-based items	52,817	59,700	73,298
Accelerator charged waste	1,600	1,870	3,213
Biological waste in filters	59,513	50,600	22,462
Waste treated in mobile plants	8,100	9,700	28,243
Total	122,290	122,215	127,570

Another Environmental Services area of activity involves the management of PCB contaminated equipment, which consists of the treatment and cleaning of transformers, condensers, both solid and liquid, recovering the materials that can be reused.

PCB (Tons)

	2005	2006	2007
Electrical equipment contaminated with PCB	3,083	4,102	3,558

The majority of the consumption of plastics as a raw material arises from the recycling of film that has been used as greenhouse roofs.

Plastics (Tons)

	2005	2006	2007
Plastic waste from farming activities	12,554	11,739	12,316

Below is a list of some of the chemical substances most consumed in the different production processes within the framework of the aforementioned industrial construction and environmental service activities. It must be borne in mind that the number of substances used is wide-ranging, the majority in non-representative quantities.

Various Chemical Substances used in Production Processes (Tons)

	2005	2006	2007
Sodium bicarbonate	2,950	2,569	3,100
Sulfuric acid	797	2,780	4,024
Hydrochloric acid	219	130	207
Caustic solution (25%)	136	1,063	4,597
Bleaching soda	185	380	382
Nitrogen	56,665	34,127	20,571
Oxygen	6,350,682	15,155,052	15,139,720

Energy

The data on the amount of electrical energy consumed from the grid correspond to the stable work centers, both production as well as offices, and to those projects that have been directly promoted by Abengoa.

The fuels consumed in the different production processes such as grain dryers, smelting furnaces, machinery, etc. are the most important elements in the energy balance. Moreover, consumption associated with cogeneration activities is also noteworthy. Finally, the fuel contribution of the vehicle fleet is also indicated.

Energy (GJ)			
	2005	2006	2007
Grid electricity	970,265	943,910	1,183,514
Electrical self-consumption	123,039	126,672	124,197
Fossil fuels (GJ)			
Gasoline	50,051	56,455	48,606
Diesel	226,034	314,284	364,673
Gas	41,286,013	35,292,145	22,895,466
Other gasoline by-products	1,484,878	1,962,221	2,284,818
Total Energy	43,048,981	37,627,111	25,595,571

The indirect consumption of grid electricity in accordance with IEA data for different countries where Abengoa operates would be as follows:

Indirect energy consumption by primary sources (GJ)			
	2005	2006	2007
Coal	1,476,295	1,446,493	1,835,691
Natural gas	194,060	194,089	242,182
Petroleum products	180,702	170,693	207,689
Crude	195	194	73
Biomass	9,564	8,921	10,585
Solar	0	0	0
Wind	8,856	8,228	9,978
Geothermal	7,237	6,984	8,407
Hydraulic	144,244	140,260	171,233
Nuclear	965,134	931,332	1,174,632
Total	2,986,289	2,907,194	3,660,469

Water

Process, cooling and sanitary operations are responsible for most of the water consumption.

Water Consumption (m ³)			
	2005	2006	2007
Process/cooling consumption	4,889,352	5,993,140	8,310,953
Sanitary	3,201	3,111	1,741

None of the sources used to collect water by Abengoa is included in the Ramsar list of wetlands nor may they be considered especially sensitive. Nor is there any record of cases in which the annual consumption represents over 5% of the volume of the source in question.

Biodiversity

There is no land owned, administered or leased in biodiversity-rich habitats, nor in habitats where endangered species live, which might be affected by group activities.

Neither have any noteworthy impacts been identified on biodiversity arising from company activity itself.

Emissions, Spills and Waste

Direct and indirect emissions associated with electricity consumption have been taken into account to calculate the emission of greenhouse gases.

Greenhouse Gas Emissions						
	2005		2006		2007	
	Ton	CO ₂ Ton equivalent	t	t CO ₂ equivalente	t	t CO ₂ equivalente
CO ₂	13,741,370	13,741,370	7,474,072	7,474,072	13,896,791	13,896,791
CH ₄	54.43	3,048	55.34	3,099	50.31	2,817
N ₂ O	25.91	7,255	25.52	7,146	87.05	24,374
HFC	0	0	0	0	0	0
PFC	0	0	0	0	0	0
SF ₆	0	0	0	0	0	0
Total Direct Emissions		13,751,673		7,484,316		13,923,982
Total Indirect Emissions		396,252		388,759		493,142
Total Emissionss (CO₂ Ton Equivalent)		14,147,925		7,873,075		14,417,124

Sources:

Global Warming Potentials. Source: United Nations Framework Convention on Climate Change.

WRI/WBCSD GHG Protocol Initiative calculation tool: Indirect CO₂ Emissions from the Consumption of Purchased Electricity, Heat, and/or Steam.

A thorough picture of greenhouse gas emissions must take indirect emissions into account. Abengoa is currently developing an ambitious and complex project to inventory its total emissions, including the indirect ones. Business trips, everyday employee commuting between home and work center and the emissions associated with the supply chain are being accounted for, among other sources. As soon as this information becomes available, it will be included in the sustainability report in order to reinforce the company's commitment to transparency.

NO_x, SO_x and other Atmospheric Emissions (Tons)

	2005	2006	2007
SOX	353	427	483
CO	1,284	1,173	1,069
COVs	627	1,216	600
NO _x	7,247	6,301	7,673
Particles	1,252	1,364	1,455

No emissions have been identified of ozone layer-reducing substances from all of the emission measurements, calculations and estimates carried out to date.

Without taking into account the waste treated by the Environmental Services area and which has been included in the raw materials section, Abengoa produces a wide variety of waste in the course of its normal activity, the majority of which is monitored by means of several Environmental Management Systems implemented in individual group companies. Below is a list of the most significant in terms of quantity and impact:

Non-hazardous Waste (Ton)

	2005	2006	2007	Destination
Paper and cardboard	250	461	574	Recycling
Metal scrap	8,787	9,849	9,225	Recycling
Plastics	1,012	518	540	Recycling
Slag	3,567	7,198	15,523	Treatment/Dump
Surplus soil and topsoil	27,493	7,319	635,010	Dump
Syrup	944	8,332	2,320	Treatment
DDGS Rejected-pre-cleaned powder	1,094	1,055	856	Treatment

Hazardous Waste (Tons)

	2005	2006	2007	Destination
Salt slag	163,601	184,304	65,282	Recycling
Liquid with PCB	798	985	965	Incineration
Solids contaminated with PCB	225	329	288	Incineration
Contaminated hazardous waste	1,750	2,216	2,091	Treatment
Oils	318	257	389	Treatment
Aluminum slag	22,021	29,719	3,060	Treatment
Filter powders	17,145	15,444	4,512	Treatment
Sludge	6,333	13,853	19,440	Treatment/Dump
Contaminated water	55	2,851	1,045	Treatment
Lixiviates	10,242	10,394	9,910	Treatment
Aluminum oxide	30,460	12,600	7,999	Dump
Ammonium sulfate	1,872	0	0	Fertilizer
Other rwaste	801	3,616	687	Treatment

We must not lose sight of the fact that this hazardous waste, the saline and aluminum slag generated in the production of secondary aluminum, is recovered for reuse in the Environmental Services business group recycling unit. This activity enables the closure of the recycling cycle and the complete use of this waste.

Moreover, today there are companies that as a result of the kind of equipment they manufacture – electrical and electronic – are joined to integrated waste recovery systems in order to ensure the proper recovery and valuing of their equipment at the end of its service life. At present, Telvent GIT has signed a contract with the ECOTIC Foundation on behalf of the Telvent Traffic and Transportation and Telvent Energy and Environment companies.

Spills (m³)

	2005	2006	2007
Public network	89,208	101,227	926,483
Drainage	6,839,155	28,391,235	36,071,127

Accidental spills due to Abengoa activities registered over the last three years have been irrelevant in terms of both magnitude and impact. They did not exceed the total of 5 m³ of spilled oil, or 5 tons of contaminated and removed soil.

Products and Services

Practically all Abengoa activities are covered by an environmental management system in compliance with the ISO 14001 standard, and, therefore, all significant environmental impacts are identified in accordance with each company's internal procedures as a basic requirement of these systems. Significant environmental impacts are described at the beginning of the chapter.

Compliance

Only one environmental non-compliance incident with result of sanction took place over the course of 2007. Occurring in Spain, it was resolved through payment of a fine of 1,800 euros.