

03.5 Natural capital



The market demands surrounding sustainable business management as the only way to develop economic activity are what mark Abengoa's commitments, as well as an opportunity for the continuity of its business.

The financial restructuring that the company has faced in the last year has led to a process of asset sales and redefinition of the business structure. The processes of optimising the organisation have also had a repercussion in environmental terms, subjecting the operational criteria to prioritisation of the main impacts that our activity generates on its environment. The variation of assets and the appreciable decrease in activity during this period has produced some distortions in the reported figures that affect to a greater or lesser extent the comparability of the information.

Due to the difficult and complex situation that has been experienced in recent times, the company has carried out a thorough review of its procedures and the resources used in order to optimise processes and maximise their performance. This has involved taking measures such as defining a basic environmental management system focused on the required aspects for control and environmental management of Abengoa companies and introducing common objectives.

Abengoa focuses its actions in terms of sustainability, based on the following principles:

- › Integrating environmental management into the company's corporate strategy
- › The commitment to environmental protection
- › Efficient use of resources
- › Reducing impacts on the environment in the life-cycle of products and services
- › Encouraging correct management of waste
- › Reduction of the effects of climate change
- › Encouraging collaboration with other organisations to achieve greater awareness and sensitivity for environmental protection

Integrating environmental management into the company's corporate strategy, defining guidelines for implementing environmental management systems in its activities

The certification of its management models allows control of its processes to be ensured. At the close of 2016, the business's companies as a whole with Environmental Management Systems (EMS) introduced pursuant to ISO 14001 standard covered most of the group's activity.

This international standard ensures that all legal, contractual and good environmental management practices are identified and are subject to effective compliance controls.

Guaranteeing the commitment to environmental protection in all its activities, guiding them beyond compliance with prevailing legislation and taking into account the requirements of customers and other stakeholders

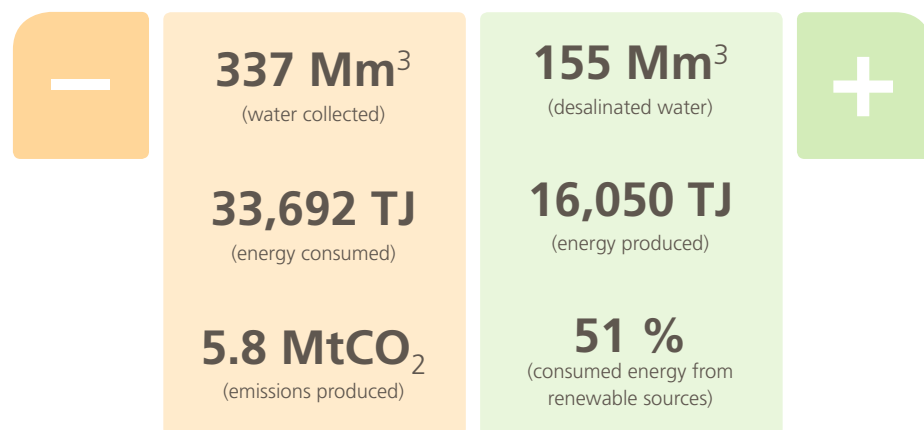
Abengoa has always been aware that its services and processes must be respectful of the environment and the preservation of natural resources. Its commitment to environmental protection goes beyond compliance with prevailing legislation.

Abengoa sees the **supply chain** as a key **factor in the management of sustainability**. For this reason, it has been working hand in hand with its suppliers and subcontractors for many years to involve them in its commitment to the environment and to share common objectives such as the fight against climate change.

Due to the special situation experienced, Abengoa removed the mandatory requirement of signing an agreement to implement a GHG reporting system, in which all suppliers were required to provide the emissions associated with each purchase order the company made. Since suppliers have been reporting this information for 8 years, the company has considerable knowledge of the **emissions associated with the main products and services** and the historical information stored in the company's management systems. For this reason, and to continue reporting this information, estimates will be made based on the use of emission factors per family of materials, defined based on these years of experience in the calculation and management of GHG emissions.

Encouraging the efficient use of resources and promoting the purchase of recycled and / or certified materials

Abengoa seeks to minimise the environmental impact of its activities and the use of the resources it employs.



Materials

The company is aware that its businesses are intensive in the use of raw materials, so it **seeks to minimise the negative impact associated with their consumption**. The main focus of work are the materials **it purchases for the development of its activities**. Accordingly, it has established an exhaustive control for their purchase and promotes the **acquisition of recycled or certified materials**.

In addition, Abengoa requests its suppliers to provide the safety data of the substances supplied for the purpose of considering the main environmental and health risks associated to the handling of these, as well as the regulatory requirements for proper transportation.

Water

Water is a basic resource of unequal access and distribution in the world geography. In this sense, Abengoa's management is aimed at its **rational, sustainable and efficient use**, avoiding competition with human consumption, minimising the effect on masses of protected water and addressing the risks related to its scarcity.

Water is essential for the development of Abengoa projects. Its application as a refrigerant at the facilities or the use as raw material in the desalination processes show the value that the water resource has in the performance of our activity.

Accordingly, the organisation has a commitment to efficiency in its use, promoting its minimisation and reuse.

The volume of water abstracted in 2016 was 345,302,034 m³, representing a 43 % increase on the previous year. This increase is mainly due to the company's increased desalination capacity, with the full operation of the Ghana (Africa) and Tenés (Algeria) plants, which contributed to an increase in tonnage of 115 Mm³ more than in 2015.

Consequently, the values of production of desalinated water have risen, reaching 154,690,662 m³, 47 % more than in 2015.

G4-EN8

Water collection (m ³)	2016	2015	2014
River water	6,976,001	9,455,579	17,310,479
Seawater	336,653,375	221,199,378	161,825,953
Grid supply	1,256,693	3,336,161	7,857,499
Well water	369,382	4,378,293	10,008,679
Rainwater	4,611	3,665	297,405
Used water	41,972	3,854,598	3,949,218
Total	345,302,034	242,227,674	201,249,233

The percentage of water reuse has decreased compared to the previous year, reaching 1.08 % of the total consumption of our companies (excluding sea water consumption). The fall in value is justified by the sale of the bioethanol production plants, which represented the highest share of Abengoa's reused water. **G4-EN10**

Water reutilisation (m ³)	2016	2015
Air-conditioning	295	295
Processing	7,307	409,115
Cooling	75,751	71,075
Others ⁽¹⁾	10,155	12,659
Total	93,508	493,144
Water reuse %	1.08	2.35

(1) Irrigation of green areas.

Likewise, in order to remedy possible damages caused by the use of water in its activities, Abengoa undertakes to perform correct treatment and discharge of the water used so that the final quality is within the limits established under legal regulations. The total volume of discharges in 2016 was 190,755,578 m³, of which 96 % corresponds to discharge of brine to the sea, taking the necessary measures to guarantee the minimum impact on the marine ecosystem.

G4-EN22

Discharges (m ³)	2016	2015	2014
Discharged to surface water masses	182,934,628	121,599,041	94,421,928
Discharged to sewer networks or external facilities	85,306	600,880	1,115,880
Discharged due to soil infiltration	7,854	6,594	226,241
Disbursed or undefined land discharge	100,185	61,817	–
Delivered to third parties for reuse	7,627,604	8,229,846	7,455,368
Total	190,755,578	130,498,178	103,219,417

Intensity of water consumption	2016	2015	2014
Consumption of water / sales (m ³ / k€)	228.68	66.4	28.1

Energy

As regards the pillars of its own business philosophy, Abengoa **promotes the use of renewable energy sources**, as well as the promotion of measures aimed at increasing efficiency indices in our activities.

In 2016, direct energy consumption stood at 30,085,591 GJ, of which 51 % came from renewable sources. Elsewhere, intermediate energy consumption stood at 1,002,023 MWh.

Compared to previous years, there has been an overall reduction of 51 % in energy (direct and intermediate), coinciding with the reduction in activity that the company experienced in 2016. The main decline is in the consumption of natural gas in production of bioethanol, as a result of selling the five plants of Abengoa Bioenergy in the USA and the cessation of activity of the Rotterdam bioethanol plant in the first half of the year.

G4-EN3

Direct energy consumed ((GJ)	2016	2015	2014
Natural Gas	12,662,200	32,108,747	64,897,055
Biomass	15,372,412	15,907,281	16,688,290
Oil derivatives	2,023,164	2,682,318	2,241,744
Biofuels	25,677	63,410	75,887
Others	2,138	1,187	24,560
Total direct energy	30,085,591	50,762,943	83,927,536

Intermediate energy consumed (MWh)	2016	2015	2014
Electrical power	704,696	3,483,537	3,409,157
Thermal power	297,326	1,356,158	1,359,623
Total intermediate energy	1,002,022	4,839,695	4,768,780

G4-EN5

Intensity of energy consumption	2016	2015	2014
Energy consumption / sales (GJ / €k)	22.3	9.7	12

Reducing impacts on the environment in the life-cycle of products and services produced by the company, including the supply chain and production of raw material

One of Abengoa's main activities is the production of energy from renewable sources, actively contributing to mitigation of climate change and the transition towards an emission-free energy model. In 2016, the company's restructuring process has led to a reduction in our energy generation business, resulting in a 69% decrease in energy production compared to the previous year:

G4-EN3

Type of energy (GJ)	2.016	2.015	2.014
Biofuels	8,763,890	43,903,987	57,175,927
Electrical power	6,659,421	8,584,401	28,371,617
Thermal Power	619,121	–	15,882,830
Biomass	7,426	6,981	122,410
Total	16,049,858	52,495,369	101,552,784

Since 2008 Abengoa has created an inventory of Greenhouse Gases (GHG), whose management is carried out through an internal tool integrated in the SIGS (Integrated System of Sustainability Management) information systems. Financial restructuring has involved, as described above, changes in procedures to maximize its efficiency. To this end, in 2016, emissions from supplies have been estimated using the historical emission factors we have built with the help of our suppliers over the last eight years.

G4-EN15, G4-EN16, G4-EN17

GHG emissions (tCO _{2eq}) ⁽¹⁾	2016	2015	2014
Scope 1	1,044,098	2,135,808	3,802,197
Scope 2	418,938	637,810	564,254
Scope 3	2,306,639	4,075,808	3,437,861
Total	3,769,675	6,849,426	7,804,312

(1) The historic data from Scope 1 have been correct in order to disaggregate the emissions from the biomass.

Emissions from the biomass (tCO _{2eq})	2016	2015	2014
	2,025,292	3,289,005	3,445,101

To objectively quantify the evolution of GHG emissions, Abengoa uses ratios, i.e. analyses emissions from different indicators. The evolution of the emissions analysed compared to sales over the last three years is shown below:

G4-EN18

Emission intensity	2016	2015	2014
GHG emissions / sales (tCO _{2eq} / k€) ⁽¹⁾	3.8	1.8	1.5

(1) Biogenic emissions have been also considered.

Efficient offices

Abengoa promote energy efficiency in all its areas of activity, not only in its projects, but also in its offices and facilities. In this manner, the company has obtained LEED certification in its singular buildings of Campus Palmas Altas, Seville (Spain), which has the platinum LEED certification. The LEED certification (Leadership in Energy and Environmental Design), in its different levels, is an assessment method from the US which recognises the efficiency of so-called green buildings through objective design guidelines and quantifiable parameters.

The certification recognise the commitment acquired by Abengoa with the environment and in responsible management, as well as its involvement in the development of measures and initiatives that contribute to improving efficiency in the performance of its activity.

Abengoa and the circular economy

Efficiency in the use of resources through a circular economy system is the main alternative to an already outdated linear model of economic growth.

The company is aware that natural resources are finite so, in the face of the new business structure, the company began to work on integrating this new concept into the organisation's strategy and to focus attention on a sustainable use of resources throughout our value chain.

Encouraging correct management of waste, affecting its reduction at source and promoting its recovery and reuse

The expansion of the current economy based on consumption is causing an exponential growth in waste generation, making its management a problem that must be addressed due to its significant impact on the environment.



Waste

Regarding the generation of waste from our activities, in 2016 there were 41,646 t, 66 % fewer than in 2015. The main reason is the decrease in construction activities, the main contributors to waste generation within the company perimeter.

The total waste recovered in 2016 reached 13,139 t, representing 32 % of total waste produced.

G4-EN23

G4-EN23

Treatment method	2016	2015	2014
Reutilisation	3,735	19,940	30,063
Recycling	6,855	26,679	9,944
Composting	2,033	2,035	3,896
Recovery	516	970	107
Incineration	150	410	10,487
Landfill ⁽¹⁾	23,560	18,464	8,068
Permanent storage	619	34,600	33,426
Others	4,178	17,816	26,561
Total (t)	41,646	120,914	122,552

(1) The data from 2015 have been corrected due to an error in the consolidation data from last year.

Waste generation by type	2016	2015	2014
Non-hazardous	37,344	111,010	111,087
Hazardous	4,301	9,903	11,464
Total	41,645	120,913	122,551

Promoting the adaptation and reduction of the effects of climate change

The activity performed by Abengoa is marked by its possible impact on climate change. Therefore, it takes into account all factors involved in the business that may impact its local environment, including the emissions associated with its products and services. Aware of its responsibility, the company carries out various initiatives that contribute to alleviating these impacts and that cover each of the areas that are part of the organisation.

Risks and opportunities *G4-EC2*

Abengoa publishes the company's performance in relation to risks and opportunities associated with climate change through the Carbon Disclosure Project (CDP), a non-profit organisation that manages the global outreach system for investors, companies, cities, states and regions, in order to manage their impact on the environment.

In 2016 Abengoa was again awarded an A rating in an "A to E" scale by the Carbon Disclosure Project (CDP) Southern Europe, for its leadership in the fight against climate change.

Specifically, Abengoa was awarded in the category "*Best Voluntary Responder*" of the Iberia region (Spain and Portugal) in 2016, for the best performance in terms of climate change.

The company analyses the environmental and climate change risks to which the projects are exposed, as well as the implementation of the necessary measures to mitigate these.

The **environmental risks** of greatest impact for the company are:

- › Uncertainty regarding new environmental regulation
- › The changes in the conditions of the physical environment
- › Vulnerability to natural catastrophes
- › Use of crops as raw material in the bioethanol production process competing with food

To control and manage these, Abengoa establishes mitigation mechanisms, such as increasing safety coefficients in the design of projects considering the most unfavourable meteorological and environmental parameters, or research focused on the use of alternative raw materials for the production of ethanol.

In addition, the Global Risk Management System allows us to detect **new business opportunities** such as:

- › Increase of renewable energies business, if regulations governing fossil fuels become more stringent
- › Increase of water demand caused by the potential rise in temperatures or greater number of sunlight hours through decreased rainfall
- › Lobbying from stakeholders to introduce measures against climate change, through consolidated collective awareness in environmental terms

Encouraging collaboration with other organisations to achieve greater awareness and sensitivity for environmental protection and sustainable economic development

G4-16

Mutual cooperation with associations, forums and working groups, as well as active participation in environmental initiatives is key to achieving a greater impact on making society aware of the responsibility the parties have to protect the environment.

In 2016, the company has collaborated with the following organisations:

Carbon pricing Leadership Coalition

Abengoa is a member of the Carbon Pricing Leadership Coalition (CPLC), a joint initiative of 20 governments and more than 90 companies and other organisations, whose common aim is to foster systems and mechanisms to fix carbon prices through rates or the creation of CO₂ markets worldwide, in support of the Paris Agreement.

As a result of this commitment, Abengoa has continued to develop its mechanisms for **calculating internal carbon prices in 2016**, to align them with the emerging climate regulation as a result of the Agreement and with the evolution of the business itself.

This year, two internal carbon pricings differ for the first time: one applicable to our businesses in countries with mature systems for taxing GHG emissions and another for countries that do not have these mechanisms:

6 tCO₂ / €

Regions with
emission trading
schemes

0.1 tCO₂ / €

Regions without
emission trading
schemes

For the company, this new internal calculation mechanism makes it possible to foresee the impact of the new climate change policies as a result of the Paris Agreement and its possible derivation in CO₂ levies in the different geographic areas where we operate.

These prices also incorporate the cost of the actions developed by the company to reduce emissions.

Spanish Group of Green Growth (GECV)

The purpose of this group is to share with society and public administrations its vision regarding the implementation of an economic growth model in line with the [Barcelona Declaration](#), as well as to contribute to the generation and dissemination of the necessary knowledge to enable the required changes for sustainable development to be achieved.

Abengoa has belonged to the GECV since its inception. In 2016, the company assisted in preparing the reports presented at the Marrakech Summit held in November 2016, highlighting the position of the Spanish Group of Green Growth with regard to climate policy and energy transition.

Caring for Climate (C4C)

An international initiative of the United Nations Global Compact promoted by Ban Ki-moon in 2007 that brings together leading companies worldwide in the management of climate change. C4C proposes to its members a framework of action in the fight against climate change and encourages them to contribute to the preparation of public policies that support the aim.

Abengoa joined the working group 'Caring for climate business leadership criteria on Carbon Pricing' in September 2014. The company currently sits on the Governing Board.

Climate Change Cluster

Abengoa has formed part of the Climate Change Cluster launched by Foretica, as Spain's only representative from the World Business Council for Sustainable Development (WBCSD) and the Spanish Business Council for Sustainable Development (CEEDS).

During 2016, Abengoa and other partner companies have worked to **lead the strategic positioning of climate change** in the management of organisations, talking and exchanging opinions and good practices, to be part of the global debate and to play a key part in the decisions taken at administrative level.