

05.6

Natural capital



Sustainability as a core business of Abengoa

The business model and the strategy of Abengoa are designed around the creation of innovative technological solutions for sustainable development. In this way, excellent environmental management and the fight against climate change are intrinsic to the business itself and are present in all its activities and areas.

Although the management of **sustainability is** and shall remain **a differential element and priority in Abengoa**, it is undeniable that the situation experienced during the last quarter of 2015, has led to changes in the ability to operate the management systems and some distortions in the data reported from the companies through the Integrated Sustainability Management System (SIGS), which affect, to a greater or lesser extent, the comparability of the information.

In this sense, the intensity of the modifications and changes has made the management indicators evolve in a very different way. For example, water consumption ratios have improved while the intermediate consumption of energy and material intensity have worsened since, in both cases, the indicators have a high degree of rigidity and are not adjusted linearly to the variations in production.

This situation has led to the restructuring of the environmental management of the company for the future, with measures such as the definition of a **basic environmental management system** focused on the aspects required for the control and environmental management of Abengoa companies and the establishment of common objectives for its environmental performance.

Among the milestones prior to November 2015, in May Abengoa made public a **statement of the environmental policy** of the company on its website, which focuses its **present and future activities** in the field of sustainability around the following principles.

Integrating environmental management into the corporate strategy of the company, defining the guidelines to implement environmental management systems in all its activities

In line with its commitment to caring for the environment, Abengoa **has implemented environmental management systems in all its companies**, in accordance with the international standard ISO 14001, in order to prevent and mitigate the risks and negative environmental impacts that an incorrect management could cause.

93.24 % of Abengoa companies had a certified environmental management system in 2015.

ISO 14001	2015	2014	2013
Certified companies based on sales volumes (%)	93.24 ⁽¹⁾	89.56	92.92

(1) The fluctuation of percentages has to do with the fact that several newly incorporated companies that were in the certification process in 2014 obtained their certificates over the course of 2015.

Guarantee the commitment to the protection of the environment in all its activities, aiming this to go beyond complying with legislation in force and taking into account the requirements of customers and other stakeholders

Abengoa is aware of the importance of protecting the environment so that its commitment to looking after the environment, goes beyond regulatory compliance, and seeks to respond to the growing needs of its stakeholders.

In recent years, awareness and the requirements demanded by the stakeholders have been growing and Abengoa has taken steps to incorporate these requirements in its management. Thus, four years ago, the company started carrying out a **labeling of GHG emissions** in some of its products and services, offering a differential value to its customers to enable them to know the emissions generated in the production process and/or service delivery.

In 2015, Abengoa calculated eleven new labels on the basis of ISO 14067:2013 on carbon footprint of products, which are to be added to those calculated in previous years and now there are a total of 38 labels for GHG emissions of its products and services, among which are the following:

- › Metallic structure; electricity, both from solar energy and cogeneration; steam; desalinated water; bioethanol; biodiesel and man-hours of engineering activities.

The company also has CO₂ footprints of construction projects, mostly of transmission lines.

The supply chain is another important aspect for sustainability management at Abengoa and, in recent years the company has worked hand in hand with its suppliers in order to involve them in its commitment to the environment and share common goals such as the fight against climate change.

Thus, since 2008 Abengoa has required its suppliers to sign an agreement to implement a system for reporting GHG emissions by which they all had the obligation to provide the CO₂ emissions associated with each order that they carried out to the company. There have been achievements during these years and considerable progress has been made in the knowledge of emissions associated with the main products and services contracted by the company.

Thanks to this knowledge and the historical information stored in the company's management systems, Abengoa shall continue reporting scope 3 emissions associated with the acquisition of products and services, although since November 2015 it shall no longer be a mandatory requirement for its suppliers. From now on, estimates shall be made based on the use of emission factors per family of materials, defined on the basis of more than eight years of experience in the calculation and management of GHG emissions.

Undoubtedly the Abengoa team is a basic pillar to achieve the company's objectives and it is also to ensure a correct environmental management. Therefore, **Abengoa backs training as a basis for achieving excellence** in its activities and to increase the awareness of environmental issues among its employees. It is essential that the human team of the organization understands both the commitment of the company for the search for efficiency as well as the impact that their activities have on the environment.

For this reason, work has continued with the increase in the hours for environmental training started in 2012, reaching the 77,375 h taught in 2015.

In addition, and as has already been discussed in the previous section, the company has implemented environmental management systems based on ISO 14001 in the majority of its companies, so that both the enforcement of existing legislation as well as the protection of the environment in its activities, are ensured.

Promote the efficient use of resources and encourage the purchase of recycled and/or certified materials

Materials

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

In addition, Abengoa has **security protocols for the use of substances**, in order to minimize the risks arising from their use and disposal.

The company sets the optimization of resources that it acquires as the cornerstone of its environmental policy. Thus, in 2015, the total consumption of materials was 14,297,970 t¹, remaining at values similar to those achieved in 2014. **G4-EN1**

In addition, the company promotes the **use of recycled or certified materials**. In 2015, Abengoa used a total of 482,804.17 t of recycled material (3.38 % of total materials), mainly plant raw material and molasses for its processes. **G4-EN2**

Note 1 More information on the details of raw materials consumed in Appendix C.

Some of the raw materials acquired by Abengoa have the following certificates or labels:

- › **RBSA:** Company's own certification standard that allows the sustainability requirements that the European Directive for the Promotion of Renewable Energies (DER) requires to be verified. Among them, mention should be made of GHG emission savings in relation to the original fuel and the protection of biodiversity through an exhaustive control of the value chain through life cycle analysis.
- › **Ecolabel:** labeling of the European Union that helps to identify products and services that have reduced their environmental impact through the analysis of their life cycle, from extraction to disposal as waste.
- › **Blue Angel:** environmental label launched by the German Government for products and services which respect the environment.
- › **FSC:** global, non-profit organization dedicated to the promotion of responsible forest management. Its certificate allows the origin of the product to be identified, guaranteeing their quality. It also establishes that the material comes from sustainable sources.

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 efficient use, avoiding competition with human consumption and minimizing the effect on masses of protected water.

During the catchment stage, Abengoa identifies the source of all its water sources to verify that none is included in the Ramsar² Wetlands list. During 2015, only 2.5 % of abstracted water originated from an area of particular sensitivity. This is the water abstracted in the facilities of Abengoa Bioenergy agribusiness in Brazil. **G4-EN9**

Note 2 Ramsar List: list of wetlands of international importance published by the Convention on Wetlands, an intergovernmental treaty that provides the framework for the national convention and international cooperation for the conservation and wise use of wetlands and their resources.

The volume of water abstracted³ in 2015, amounted to 242,227,674 m³, which is an increase of 20 % compared to 2014, due to the consumption derived from the testing phase and commissioning of a desalination plant built by Abengoa in Ghana, before delivery to customer. 98 % of the water abstracted went to processing water. **G4-EN8**

The commitment to efficiently use water refocuses the Abengoa business, which carries out research to develop technologies applicable to areas where the availability of the water resources condition its activity. A clear example of this is the work of Abengoa Research in the experimentation with melting salts, used as a heat storage fluid in thermosolar energy facilities. This technology reduces water consumption in this type of facility, usually located in areas with a water deficit.

Furthermore, Abengoa promotes the reduction and reuse of water. In 2015 reused water was a 2.35 %⁴ of the total volume abstracted by the all companies. **G4-EN10**

As part of its strategy of efficient use of resources, Abengoa has carried out various initiatives for the reduction in consumption, among which are those actions performed in bioethanol plants in Brazil in order to reduce the consumption of water to 1 m³ per ton of processed sugar cane.

Abengoa also generates drinking water through its desalination plants in those geographies where its availability is limited. In 2015 105,346,138 m³ of desalinated water was generated.

Likewise, to remedy the damage resulting from the use of water in its activities, Abengoa is committed to **properly treating and discharging used water** so that the final quality is within the limits set by the legal regulations. The total volume of liquid water and steam⁵ in 2015 was of 133,322,531 m³, of which 90 % corresponds to a brine discharge at sea, taking the necessary measures to ensure minimum impact on the marine ecosystem. **G4-EN22**

Note 3 More information on the breakdown of water abstracted by source type and use in the Appendix C.

Note 4 More information on the percentage of water that is reused and its use in the Appendix C.

Note 5 More information about the destination of discharges in the Appendix C.

Energy

Abengoa promotes the implementation of measures to optimize the energy efficiency of all its activities, as well as the use of renewable energy sources. In 2015, direct energy consumption, stood at 50,762,943 GJ⁶, of which 31.46 % came from renewable resources.

In addition, facilities and work centers consume intermediate energy in the form of electricity and thermal energy. This consumption has been kept constant in the last three years:

Intermediate energy consumption (GJ)	2015	2014	2013
Electrical energy ⁽¹⁾	3,483,537	3,409,157	3,463,716
Thermal energy	1,356,158	1,359,623	1,433,270

(1) During 2015, the consumption of electricity from renewable sources reached 18 %.

G4-EN3

Another essential aspect to achieve the sustainability policies and targets of Abengoa is the implementation of measures to promote energy efficiency and the emission savings in its activities and processes

During 2015 Abengoa has encouraged its companies to carry out **initiatives** for the pursuit of **greater energy efficiency**. It should be noted the improvement projects carried out in the Ecocarburantes Españoles plant in Murcia (Spain), focusing on the reduction of natural gas consumption by various techniques which, with an investment of approximately € 100,000, have avoided the emission of 1,064 t CO_{2eq} and have resulted in a saving of more than € 270,000 thanks to the reduction in energy consumption achieved.

G4-EN6, G4-EN7

In order to objectively quantify the evolution of energy consumption, Abengoa uses the ratios, i.e. analyzes said consumption by relativizing it on different indicators. The evolution in the intensity of energy consumption on sales, ebitda and the number of employees in the last three years is shown below:

	2015	2014	2013
Energy consumption / sales (GJ / €k)	9.7	12	10.5
Energy consumption / workforce (GJ / person)	2,537	3,506	2,603
Energy consumption / ebitda (GJ / €M)	107,870	54,248	44,490

G4-ENS

Efficient offices

Abengoa **promotes 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 obtained LEED certification in its singular buildings of Campus Palmas Altas, Seville (Spain) that has the Platinum **LEED certification** and Castellana, 43, Madrid (Spain) which in 2013 obtained its Gold LEED certificate. The LEED certification (Leadership in Energy and Environmental Design), in its different levels, is an assessment method from the US which recognizes the efficiency of so-called green buildings through objective design guidelines and quantifiable parameters.

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

Reduce the impacts on the environment in the life cycle of products and services generated by the company, including the supply chain and the production of raw materials

Abengoa seeks to contribute in mitigating the consequences of climate change through the production of clean, emission-free energy and to promote maximum efficiency in its operations.

The production of energy, which constitutes one of the pillars of the Abengoa's business model, allows it to contribute actively to the mitigation of climate change and the transition towards an emission-free energy model.

Note 6 More information on the direct energy consumption by source in the Appendix C.

In 2015 the energy production from different sources was 52,495,369 GJ, distributed in the following manner: **G4-EN3**

Type of energy (GJ)	2015	2014	2013
Biofuels	43,903,987	57,175,927	50,446,231
Electricity ⁽¹⁾	8,584,401	28,371,617	21,232,968
Thermal electricity	- ⁽²⁾	15,882,830	13,232,529
Biomass	6,981	122,410	8,770
Total	52,495,369	101,552,784	84,920,498

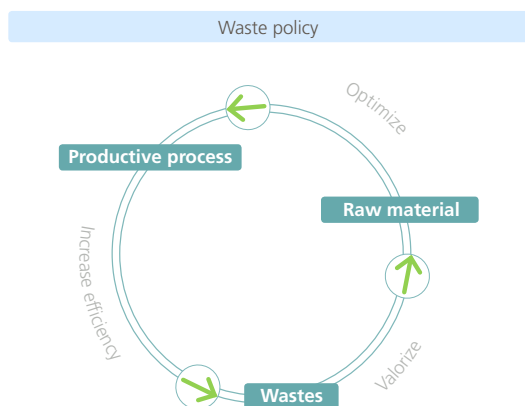
(1) Of the electrical energy produced, 28 % is from renewable sources

(2) At the close of this report, the thermal energy figure was not available.

Encourage a correct management of the waste affecting its reduction at the source and by promoting its revaluation to the maximum

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

Abengoa is aware of this and of the existing opportunity; it has established cyclical mechanisms that promote the minimization of impact through optimum recovery of waste.



Waste recovered

The total waste recovered in 2015 reached 49.623 t, with the most sustainable option representing a 13 % of the decisions taken in reference to the management of such waste.

G4-EN23

The total waste generated by Abengoa’s activity in 2015 came to 736,986 t, 501 % more than in 2015. The reason for this increase was the generation of land from the excavations carried out during a work in Denizli (Turkey) consisting of the installation of a water pipeline network under the city, whose final treatment was landfill. Only 1 % of the total waste is considered dangerous.

The transport of hazardous waste could pose a risk for both human health and the environment. In addition, its defective management creates responsibilities associated with the breach of legislation. The company ensures that this activity is carried out by authorized managers and analyzes in detail its hazard and the country of destination. During 2015 58 t of hazardous waste, was transported mainly from Brazil and Uruguay.

G4-EN25, G4-EN30

Promote the adequacy and reduce the effects of climate change through specific programs and the application of a domestic price in the carbon

The activity developed by Abengoa is marked by its possible impact on climate change. Therefore, all the factors involved in the business that can impact on its environmental surroundings are taken into account including emissions associated with its products and services. Aware of its responsibility, the company carries out a number of initiatives that contribute to mitigating those impacts and that loops through each of the areas that form part of the organization.

Abengoa’s commitment to the fight against climate change and sustainable development has therefore been extended to all its areas of activity; towards employees through hours of training given in this area; toward its supply chain through the inventory of GHG emissions with which the emissions of all of the organization’s products and services are quantified; with regards to customers with the CO_{2eq} labeling with which it communicates to the market

the carbon footprint linked to the development of the business and towards the community, with the launch in 2014 of the Forum for Energy Transition and Climate Change. This Forum has had numerous contributions during 2015 although, due to the current situation that the company is experiencing, is temporarily inactive. It expects to recover its activity, once the restructuring process has taken place.⁷

Risks and opportunities associated with climate change

Abengoa analyzes in detail the different aspects associated with climate change, including possible regulatory or physical changes, in order to protect its assets, contributing to mitigate the risks inherent to it and takes advantage of the potential business opportunities that might arise as a result of this new phenomenon.

The financial implications of the risks and opportunities related to climate change and the media that the company puts into action in order to face the first are shown below:

G4-EC2

Risks	Risk management	Opportunity
<p>The current framework of uncertainty about the continuation of the Kyoto Protocol could reduce capital investments in emission reduction projects and renewable energy in developing countries. Part of Abengoa's activity is to act as an intermediary in the sale-purchase of emission rights. If a post-Kyoto regime is not set up, this activity would not continue.</p>	<p>Abengoa is facing this risk by holding regular meetings with the Spanish Office of climate change to analyze the evolution of the carbon markets and monitor national and international policies.</p>	<p>The activities relating to thermal energy shall not have free allocations during 2013 to 2020. This fact would be an opportunity to develop advantageous low in carbon activities with free assignments.</p>
<p>The changes in the conditions of the physical environment (changes in temperatures, rainfall, rise in sea level, increased natural accidents, etc.) can cause water shortages, destruction of facilities and/or paralysis of the business activity in the territories concerned.</p>	<p>Abengoa is facing this risk taking into account the most unfavorable meteorological and environmental parameters, and increasing their security coefficients in the design of projects and processes, analyzing and estimating the chemicals and the consumption of enzymes laid down in the contingency plans developed during the construction of desalination, water treatment and of bioethanol plants. In addition, it analyzes and monitors the inputs of the thermal processes that take place in the solar power plants</p>	<p>Taking into account the forecasts made by the IPCC, an increase in temperature and decrease in average rainfall is expected in certain geographical areas. An increase in temperatures could mean a greater demand for water. On the other hand, a reduction of the annual rainfall could mean an increase in hours of light by increasing the production of energy by the solar power plants located in these areas.</p>
		<p>Public awareness with regard to climate change presupposes that Abengoa's stakeholders shall show a growing interest in the organization's measures aimed at combating climate change. Therefore, all the activities that voluntarily comply with regulations related to climate change shall positively affect the company.</p>

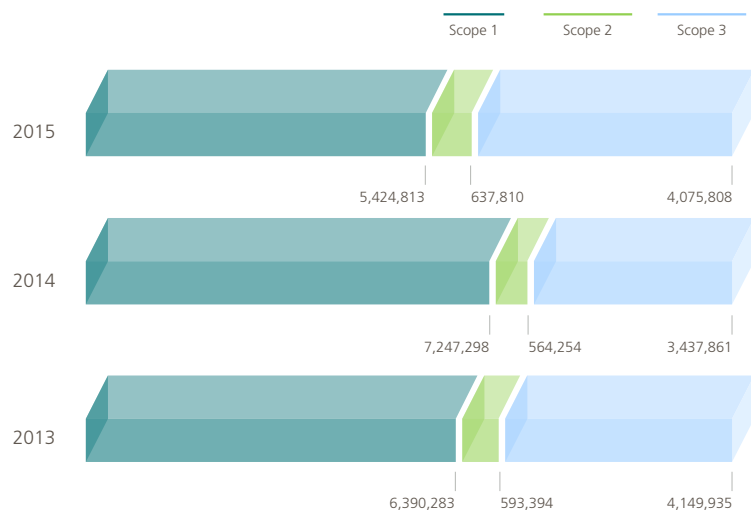
Note 7 More information on the section "Community" of the social and relationship chapter.

Greenhouse gas emissions

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 Sustainability Management System). The maturity of the system has allowed **plans for the reduction of emissions** and the development of the CO₂ labeling of the products and services it offers to be created.

Abengoa's emission management system is externally verified each year in accordance with the **ISO 14064** standard. The information that appears below corresponds with that included in the GHG emission report verified by AENOR for 2015.⁸

The following graph shows the evolution of GHG emissions resulting from Abengoa's activity: **G4-EN15, G4-EN16, G4-EN17**



GHG emissions (tCO _{2eq}) ^{(1) (2)}	2015	2014	2013
Scope 1	5,424,813	7,247,298	6,390,283
Scope 2	637,810	564,254	593,394
Scope 3 ⁽³⁾	4,075,808	3,437,861	4,149,935
Total emissions	10,138,431	11,249,413	11,132,612

(1) More information on the independent verification statement for the inventory of GHG emissions issued by AENOR, available in the "External verification" annex of this report.

(2) The consolidation criterion used in this indicator is that of operational control; therefore, in addition to the emissions generated in the company's facilities, other emissions released in third-party plants operated by Abengoa are also included. The emissions generated in these plants amount to 262,933 tCO_{2eq}: (level 1: 34,570 tCO_{2eq}, level 2: 138,285 tCO_{2eq}, level 3: 90,078 tCO_{2eq}). More information can be found in the Independent Verification Report of GHG Emissions issued by AENOR.

(3) Includes emissions from the following sources: acquired supplies, travel for work, travel to work, losses in the distribution of electrical energy, value chain of the fuel consumed in energy acquired. Emissions of supplies of December were estimated on the basis of the purchase history of previous months of the year.

The decrease in emissions with regards to 2014, was mainly due to the situation the company is currently facing which negatively impact on the activity of the last quarter of the year.

To objectively quantify the evolution of GHG emissions, Abengoa uses ratios, i.e. analyzes emissions from different indicators. The evolution of the emissions analyzed compared to sales, ebitda and the number of employees in the last three years is shown below.

G4-EN18

Note 8 More information on chapter "External verification".

	2015	2014	2013
GHG emissions / sales (tCO _{2eq} / €k)	1.8	1.5	1.5
GHG emissions / ebitda (tCO _{2eq} / €k)	19.7	6.9	8.2
GHG emissions / template (tCO _{2eq} / employee)	462.5	462.8	449.9

It should be noted that Abengoa promotes the design of yearly plans for the reduction of emissions for all companies of the organization. Since 2011, these reduction plans have been optimized and executed as a targeted actions, in accordance with the requirements of ISO 14064-1. Unlike previous years, in 2015 the actions have not been verified by AENOR since, given the current complex situation, this check was an intensive investment in resources not available at the moment.

Some of the most relevant initiatives carried out during 2015 were the following:

- › 1) **Implementation of a system to capture CO₂** at the **bioethanol plant in Salamanca** with a reduction of 22,078 tCO_{2eq} and an economic benefit of € 198,000. The cost of the initiative for the plant has been € 4,000 since the capture system is funded by the customer.
- › 2) **Operational optimization** with the **aim of reducing self-consumption** in the **Spanish solar platforms**. The measures have focused on changes in the programming logic with regards to its functioning and a reduction of 7,493 tCO_{2eq} has been achieved. These initiatives have not had an associated cost, but have resulted in cost savings of € 1,378,800.

In total, Abengoa has contributed in the fight against climate change by reducing a total of 241,506 tCO_{2eq} by optimizing its productive processes, the momentum of the capture systems for CO₂ and the promotion of purchasing supplies that are less intensive in emissions.

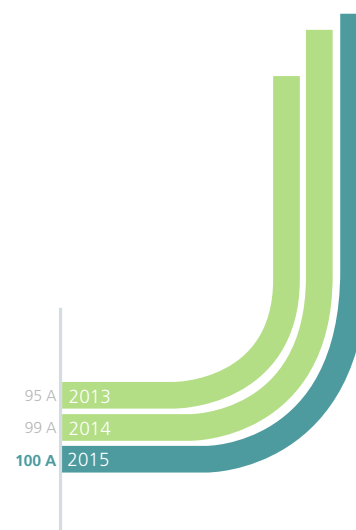
G4-EN19

Carbon Disclosure Project

The company's effort in the field of fighting against climate change has been considered by Carbon Disclosure Project (CDP), which has recognized Abengoa as one of the 200 companies with the best performance in the fight against climate change in the world (The A List), and one of the 125 largest quoted companies of Spain and Portugal which have shown

a strategy committed to climate change. In 2015, Abengoa has consolidated its leading position to reach the rating of 100 A, thus exceeding the rating of 99 A obtained in 2014, even when the qualification criteria has been more demanding in this edition.

Evolution of Abengoa in CDP



Carbon pricing: putting a price on carbon

Since 2015 Abengoa has been part of, and with a three year mandate, the Board of Directors of Caring for Climate, the United Nations initiative for leadership against the Climate Change in the private sector.

As a member of the Board of Directors, Abengoa had an active participation in the climate summit in Paris (COP 21). Abengoa also belongs to the Carbon Pricing Leadership Coalition (CPLC), a joint initiative of 20 Governments, more than 90 companies and other organizations, promoted in the climate summit in Paris in December 2015, whose common objective was to promote the systems and mechanisms to fix carbon prices through fees or creation of markets for CO₂ throughout the world.

Abengoa adhered to the initiative on September 8, 2014 and in doing so, acquired a series of commitments, among which are the following:

- › Establish an internal price on carbon that is high enough to affect investment decisions and thus reduce emissions of greenhouse gases.
- › Publicly defend the importance of setting a price for carbon through policies that take into account the economic characteristics and political contexts of each country.
- › Report on the progress of the two previous criteria in the public information reported by the company.

And all with the intention of contributing to the objective of limiting the increase of 2 °C of the global mean temperature above pre-industrial levels.

So Abengoa has set a domestic price in carbon of 9 €/tCO₂. This price has been calculated using the volume and the investment in reduction initiatives, the volume and cost of the carbon credits acquired, and the cost of the green energy acquired.

Promote the control and action on the set of environmental factors and indicators to improve the global footprint

In 2013 Abengoa began to develop an internal standard, called "Global Footprint", in order to identify the main impacts of its activities, allowing their quantification to improve the management and establish commitment to improvement in performance.

The standard is materialized in a group of indicators capable of assessing the impact that a project has on its environmental, social and economic surroundings; and that in turn shall make it possible to predict the future impact of similar projects and set targets for improvement.

Abengoa believes that the main impacts of its activity fall on the following factors:

In the environmental area:

- › Raw materials used and recycled materials consumed.
- › Catchments of water, reuse and efficiency.
- › Primary and intermediate energy consumption and reuse and efficiency.
- › Waste generated and recovered.
- › Total GHG emissions generated by scope.

In the social and economic area:

- › Purchases made from local providers.
- › Local employees (in the country and the region) on the total contracted.
- › Negative impact on local communities.
- › Investment in social action.
- › Accident rate and frequency.

In 2014 Abengoa completed the creation of the internal regulation that covers the procedures and tools required to calculate the overall footprint according to international standards (ISO 14001, ISO 14067, ISO 50001, ISO 26000, SA8000, GRI G4 and OHSAS 18001) and which establishes reference values for each indicator, which in 2015 shall be adapted to the different types and locations of the projects.

Due to the context in which the company currently operates and with the objective of improving the efficiency in the process, in 2016, a series of significant criteria have been developed to select the most relevant projects and installations of the organization in which the "global footprint" project shall continue to be developed in and the reference values have been updated for the three typologies of existing facilities; equivalent to offices, equivalent to industrial plants and works.

Promote collaboration with other entities to achieve a greater degree of sensitization and awareness for environmental protection and the sustainability of economic development

Abengoa believes that the **promotion of awareness on the importance of taking care of the environment** and respectful growth with the needs of future generations is crucial for building a sustainable future.

For this reason, Abengoa, as a member of the **“Spanish group of Green Growth”**, in 2015 signed the “Declaration of Barcelona”, which includes ten recommendations with the aim of promoting an economy low in carbon consumption.

On the other hand, Abengoa considers it necessary and important to work in the study of solutions and proposals to deal with current environmental problems, promoting partnerships and collaborations with different entities.

Thus, as it has been previously mentioned, Abengoa collaborates with the United Nations in its initiative “Caring for Climate”, participating in the Carbon Pricing Leadership Coalition (CPLC).

G4-16