

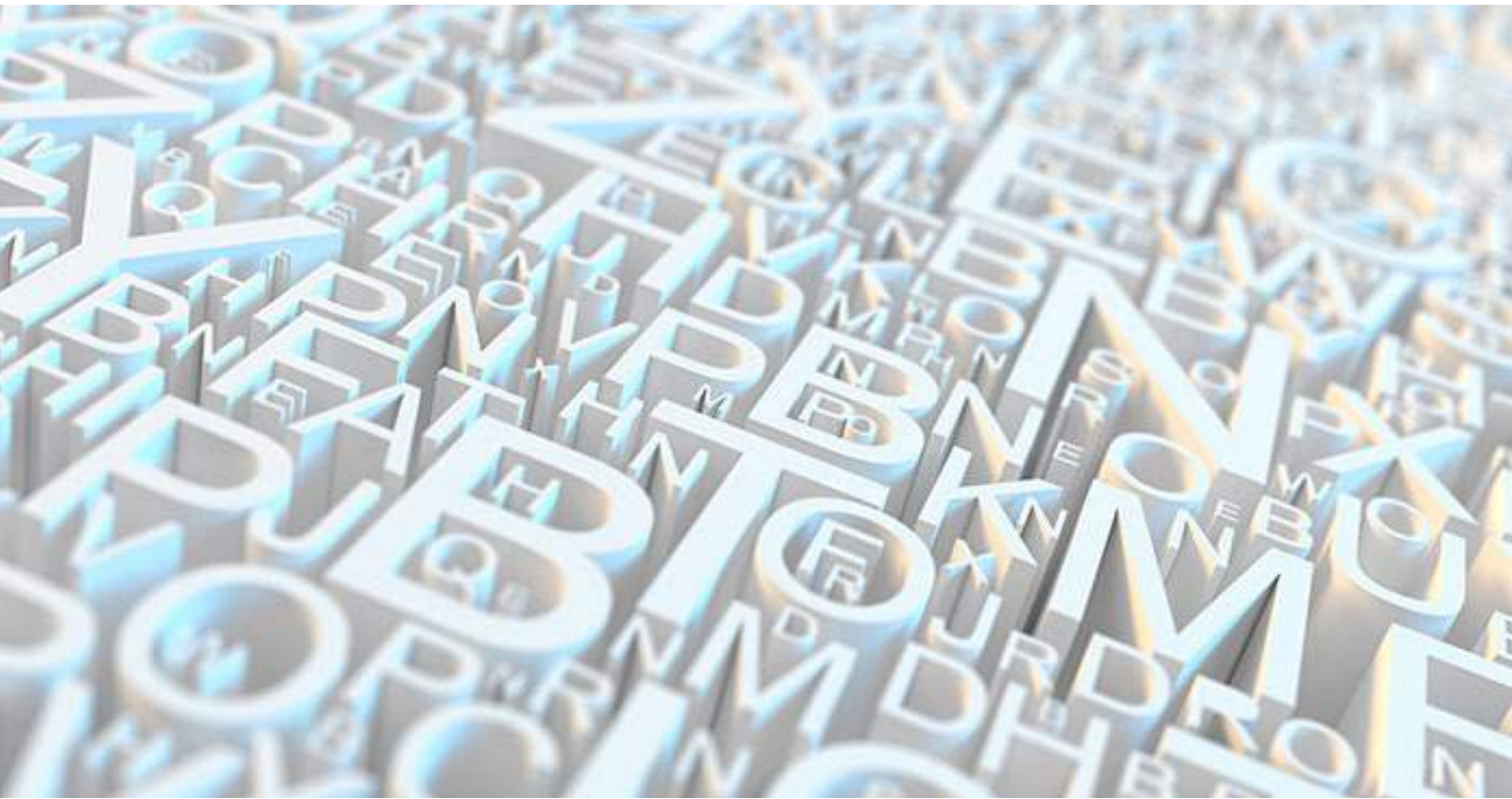
01

ABENGOA

Annual Report 2013

Innovative technology solutions for sustainability





01

Glossary

01

Glossary

Operating terms

A	Ampere
bar	Bar
bsh	Bushel
BTU	British thermal unit
CO ₂	Carbon dioxide
DGS	Distilled Grains and Solubles
EPC	Engineering, Procurement and Construction
ETBE	Ethyl Tertiary Butyl Ether
g	Gram
gal	Gallon
GHG	Greenhouse Gas
h	Hour
ha	Hectare
Hz	Hertz
ISCC	Integrated Solar Combined Cycle
J	Joule
km/h	Kilometer per hour
L	Liter
m	Meter
m/s	Meter per second
m ²	Square meter
m ³	Cubic meter
N	Newton
Pa	Pascal
ppm	Parts-per-million
s	Second
t	Metric ton
V	Volt
VA	Volt-ampere
VAr	Volt-ampere reactive
W	Watt
We	Electric warr
Wh	Watt hour
Wth	Thermal watt

01 Glossary

Financial terms

€	Euro
\$	US Dollar
BRL	Brazilian Real
CAGR	Compound Annual Growth Rate
EBITDA	Earnings Before Interest, Tax, Depreciation and Amortization
GDP	Gross Domestic Product
PCAOB	Public Company Accounting Oversight Board
ROE	Return On Equity
SOX	Sarbanes Oxley

Prefixes according to the International Metric System

m	Mili	10^{-3}
c	Centi	10^{-2}
d	Deci	10^{-1}
h	Hecto	10^2
k	Kilo	10^3
M	Mega	10^6
G	Giga	10^9
T	Tera	10^{12}



02

Main Figures

02 Main Figures

During the period 2003-2013 Abengoa's revenues have been growing at a compound annual rate of 16.2 %, the ebitda by 22.1 % and net income by 7.9 %.

Economic – Financial Data

	2013	% Var 2012-13	2012 ⁽¹⁾	2003	% CAGR ⁽²⁾ (2003-13)
Income statement (M€)					
Revenues	7,356	16.5	6,312	1,635	16.2
Ebitda ⁽³⁾	1,365	43.8	949	185	22.1
Net income	101	83.6	55	47	7.9
Balance sheet (M€)					
Total assets	21,153	9.4	19,334	2,363	24.5
Shareholders' equity	1,893	1.8	1,860	331	19.1
Net corporate debt (cash)	2,124	(14.6)	2,486	263	23.2
Significant ratios (%)					
Operating margin (Ebitda / Revenues)	18.6	–	15.0	11.3	–
ROE (Return on Equity) ⁽⁴⁾	5.8	–	5.1	14.2	–
Data per share (€)					
Earnings per share	0.17	65.8	0.10	0.10	5.0
Dividend per share	0.11	54.2	0.07	0.03	14.8
Last share price (share B)	2.18	(7.0)	2.34	–	–
Last share price (ADS's share B)	\$ 15.1	–	–	–	–
Capitalization (Share A+B) (M€)	1,817	43.8	1,263	522	13.3
Daily avge. trading volume (M€)	8.9	(13.7)	10.3	1.0	24.7

(1) For purposes of comparison, the information for 2012 has been expressed on the basis of changes occurring due to application of new NIIF 10 and 11A norms, due to the change in CINIIF 12 application, and as the result of considering Befesa as a discontinued operation.

(2) Compound Annual Growth Rate.

(3) Earnings before interest, tax, depreciation and amortization.

(4) Net income / Shareholders' equity.

02 Main Figures

Types of activities & geographies

Evolution 2013 – 2003 (%)

	2013		2003	
	Revenues	Ebitda	Revenues	Ebitda
Areas of activity (%)				
Engineering and construction	65.3	59.1	60.6	61.0
Concession-type infrastructures	7.1	23.3	3.6	3.3
Industrial production	27.6	17.6	35.8	35.7
Consolidated total	100	100	100	100

	2013	2003
	Revenues by geographies (%)	
US	27.8	12.8
Latin America (ex. Brazil)	18.9	15.4
Brazil	9.9	5.0
Spain	15.8	59.3
Europe (ex. Spain)	11.7	4.7
Africa	11.4	1.7
Asia	4.5	1.1
Consolidated total	100	100



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Our Commitment

03 Our Commitment

At Abengoa, we believe that the world needs solutions to pave the way for more sustainable development. Scientists tell us that **climate change** is a reality and at Abengoa we believe that now is the time to seek out solutions and put them into practice.

Over ten years ago, Abengoa made the strategic decision to focus its growth on the creation of new technologies geared towards **sustainable development**:

- Generating **energy** from renewable resources.
- Recycling industrial **waste**.
- Generating and managing **water**.
- Creating **infrastructures** that eliminate the need for new investments in assets that generate emissions.
- Creating **new horizons** for development and innovation.

To this end, we invest in Research, Development and Innovation, R&D&Innovation, **globally** expand those technologies with the greatest potential, and attract and develop the necessary **talent**.

In a similar vein, we channel human and financial resources into the **Focus-Abengoa Foundation** to promote social action policies that champion social and human progress.

By following this approach, we create **long-term value** for our shareholders, ensure the growth of the companies through which we operate and help to make the world a better and more sustainable place for future generations.





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Report from the Chairman

04 Report from the Chairman

Last year, 2013, was better than expected, offering glimpses of growth possibilities that will help to put the financial crisis behind us. However, climate change continues to lie at the heart of the problems facing mankind. The UN's Intergovernmental Panel on Climate Change is warning that the planet's average temperature is increasing while glaciers melt, sea levels rise and CO₂ emissions grow, all of which are attributed to humankind with 95 % certainty. The Stern Report states that there is still no trend in emissions reductions, meaning that global warming will continue and that, by 2100, hundreds of millions of people would have abandoned their homes.

According to the World Energy Outlook for 2013, the decision facing the world requires greater emphasis on energy efficiency. Our sector will play a fundamental role in whether climate change targets are achieved or not. The current trend is taking us towards a 3.5 °C long-term rise in the planet's temperature. To avoid this we have to accelerate the rate of renewable energy growth, currently around 2.5 % per annum.

Our company has viable solutions to these challenges. Knowledge creation and a commitment to technology form the basis of our competitive advantage in the energy and environment sectors, enabling Abengoa to become a scientific and technological leader in our business areas and a privileged place for training professionals in R&D and innovation.

Abengoa Research (AR), the research institute launched in 2011, is making highly significant progress in producing and storing solar power at competitive prices, transforming municipal solid waste into bioethanol (W2B), promoting energy vectors such as hydrogen or second-generation bioethanol, the desalination and reuse of industrial water and water from other sources, and developments related to enzymes and biomass.

Abengoa has also increased the number of technology patents it holds to 261 and is acknowledged as the leading Spanish company in the international patent applications ranking. These achievements are the result of the work carried out by the company's team of 781 researchers, as well as investment in R&D and innovation projects totaling € 426 M during the year.

We are implementing the scheduled investments in our strategic plan, arranging financing for the corresponding projects and working with partners that can make our investments sustainable. Abengoa's projects map has expanded this year to include countries such as Israel, Sri Lanka, Ukraine and Angola, while we have consolidated our leadership position in countries like Brazil, USA, South Africa, Chile, Mexico, Peru and Uruguay.

Abengoa's global presence enables us to make the most of our opportunities for growth. This year revenues have grown by 17 % to € 7,356 M compared to 2012, and this growth is also reflected in our results, with an 44 % increase in EBITDA to € 1,365 M.

At the financial level, this year we have successfully completed our listing on the NASDAQ stock exchange in the USA through a capital increase of € 517.5 M, we have raised € 1,280 M from five bond issuances and made divestments totaling € 804 M, all of which have enabled us to cover the company's financing requirements for 2014, reduce our dependency on the banking market following the partial repayment of the syndicated loan, and to extend the maturity profile of our debt.

Corporate net debt at the end of 2013 was 2.2 times corporate EBITDA, totaling € 2,124 M. We ended the year with a cash position of € 3,878 M, which will allow us to meet our investment and debt commitments scheduled for 2014.

We believe that Abengoa will continue to grow in 2014, strengthening its financial structure and consolidating a sustainable asset rotation program.

Engineering and construction

Revenues have grown by 27 % to € 4,808 M, bringing the backlog at the end of the year to € 6,796 M. In the USA we have commissioned the world's largest solar-thermal plant, Solana, in Arizona, which uses a pioneering system that provides six hours of energy storage for when there is no sun. Work also continues on construction of the solar-thermal plant in California, which has the same capacity. Furthermore, the US power company Portland General Electric (PGE) has selected Abengoa to develop a 440 MW combined cycle plant.

04 Report from the Chairman

We have also been selected to construct the largest combined cycle plant in Poland, transmission lines in Europe, Latin America, Africa and Australia, and new desalination plants in the Middle East and North Africa.

Concession-type infrastructures

We have generated more than 5,700 GWh of power in solar, hybrid and cogeneration plants during 2013, as well as commissioned three new plants in Abu Dhabi (Shams 1), USA (Solana) and Spain (the Extremadura Platform) with a total installed capacity of 480 MW. We have also produced 102.1 ML of desalinated water.

The total capacity (installed and under construction) of our power plants in the USA, Abu Dhabi, South Africa, Algeria, Israel, Mexico, Brazil, Uruguay, Spain, India and the Netherlands is 2,912 MW. At present, we are also constructing new desalination plants in Algeria and Ghana, and electricity transmission lines in Brazil, Peru and Chile.

Industrial production

The construction in Hugoton, Kansas (USA), of the first industrial plant to produce second-generation ethanol using Abengoa's proprietary technology and the development of the first Waste to Biofuels pilot plant in Salamanca (Spain) are two examples of our research and innovation work from recent years becoming a reality.

Growth and diversification

The growth model is based on simultaneously managing businesses with different profiles and characteristics. The cash flows from our traditional activities are reinvested in growing our emerging businesses. Rotating our investments is part of our business model and we have numerous options for the future that will evolve through to maturity. Abengoa Hydrogen and Abengoa Energy Crops are two such possibilities, in addition to other technological opportunities that Abengoa Research and the business groups are obtaining from their research.

The company's international activities account for 84 % of total revenues, including our businesses in USA with 28 %, Latin America that represent 29 %, Asia 4 %, Europa 12 % and Africa 11 %.

Human capital, employment and safety

At Abengoa we know that the future depends on the creativity of the present, which in turn relies on the training and performance of the people that are part of the company. We are well aware of this fact and place special emphasis on our employees' professional development and training. In 2013 we carried out more than 1.8 M hours of training, many in collaboration with some of the world's most prestigious universities.

It is also important to highlight the constant preoccupation in our corporate culture for the safety of our teams and operations around the world, which is managed through a strict system of quality and occupational health and safety at every level of the organization.

Audit

In line with our commitment to transparency and diligence, we have subjected our internal control system to an independent valuation process, in accordance with PCAOB auditing principles. The Annual Report therefore includes five independently verified reports on the following areas: financial statements, SOX (Sarbanes Oxley) internal control system, Corporate Social Responsibility Report, Corporate Governance Report and the design and application of the company's risk management system in accordance with the specifications of the ISO 31000 standard.

Corporate social responsibility and sustainable development

In a future defined by innovation and the challenges associated with sustainable development, Abengoa is committed to responsible management to reduce the negative impacts of its activities, contribute to developing the communities where we are present and building trusted partnerships with stakeholders. As a result of this commitment, in 2008 Abengoa designed a strategic corporate social

04 Report from the Chairman

responsibility plan and in 2013 we invested more than € 9.1 M in social actions through the Focus-Abengoa Foundation.

During 2013 we have intensified our partnerships with suppliers to reduce their impact and improve operations across the whole value chain.

Once again we have used the Corporate Social Responsibility Report, prepared in accordance with the principles of the Global Reporting Initiative (GRI) and the AA1000 sustainability assurance standard, to report on our social, environmental and financial performance during 2013, as well as the objectives, challenges and areas for improvements for the coming years.

We offer and use the Corporate Social Responsibility e-mail address (rsc@abengoa.com), our website (www.abengoa.com), our Twitter and LinkedIn profiles and our corporate blog (blog.abengoa.com) for this purpose.

Felipe Benjumea Llorente



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Our Management Model

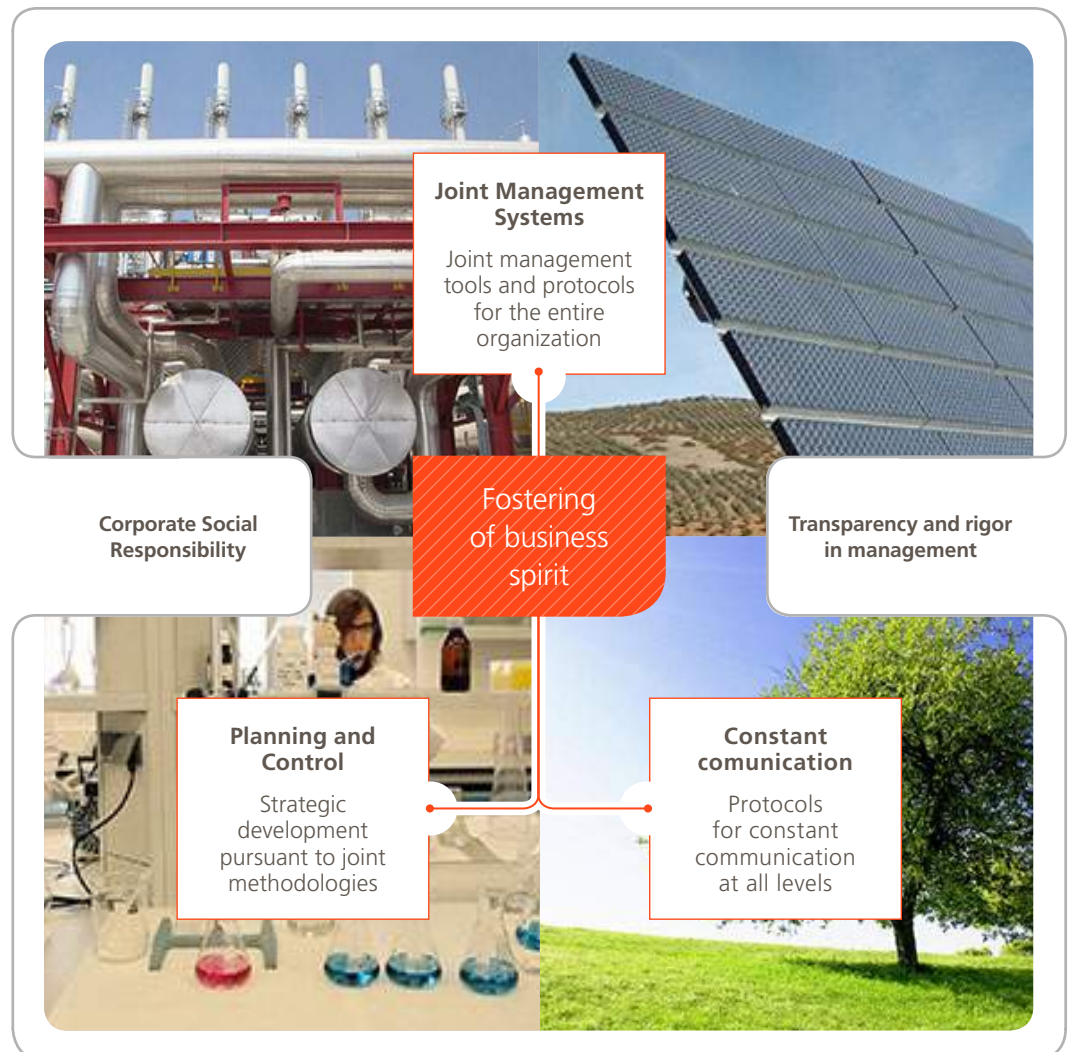
05 Our Management Model

Growth at Abengoa is founded on five strategic cornerstones:

- Creation of new businesses that help combat climate change and foster sustainable development.
- A dedicated and highly competitive human team.
- Permanent strategy of creating value by generating new options and defining current and future businesses through a structured process.
- Geographic diversification in the markets offering the greatest potential.
- Heavy investment in research, development and innovation.

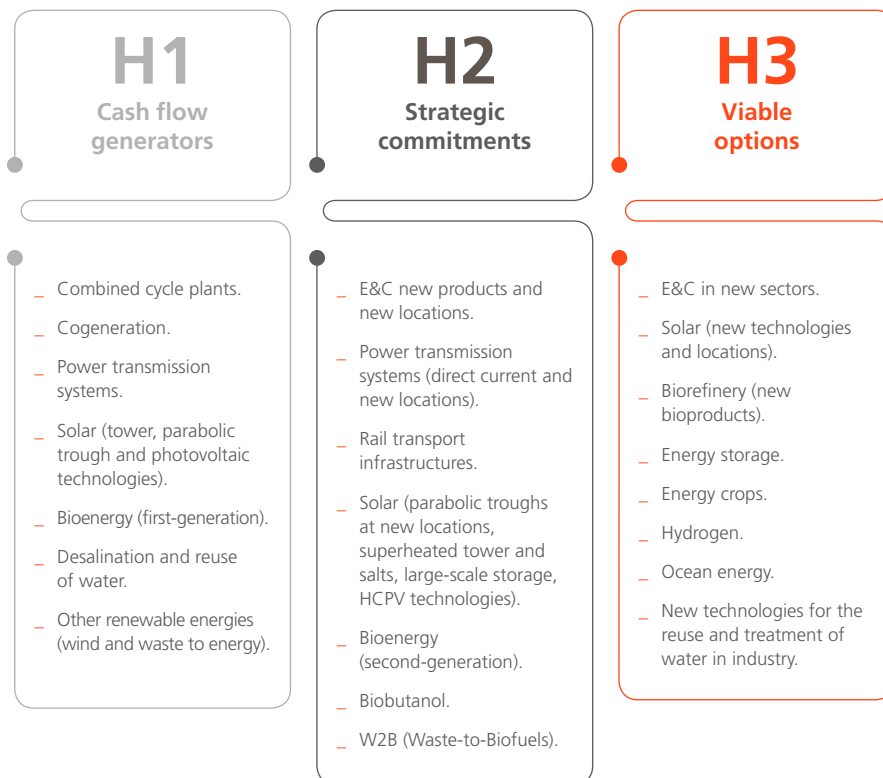
These cornerstones are shaped through a management model based on three core concepts:

- Corporate social responsibility.
- Transparency and rigor in management.
- Fostering of entrepreneurship.



05 Our Management Model

Our management model is reflected in the three business vistas:





06 Activities



06.1

Engineering and Construction

06.1 Engineering and Construction

With more than seventy years experience in the energy and water engineering and construction market, Abengoa specializes in technological and innovative turnkey solutions worldwide: solar plants, hybrid solar-gas plants, conventional power plants, biofuel plants, hydro infrastructures, including large-scale desalination plants, wind farms and power transmission lines, among others.

Engineering and construction business

Key financial figures	2013	2012	2011	Var. 13-12 (%)
Revenue (€ M)	4,808	4,512	3,807	7
Ebitda (€ M)	806	724	531	11
Ebitda margin (%)	17	16	14	1

Abengoa is experiencing excellent times in the area of Engineering and Construction (E&C). It is the international leader in the construction of electrical infrastructures, transmission lines, solar and power plants, according to the ranking published by the prestigious specialist ENR (Engineering News-Record). While the international crisis is abating, specifically in the construction sector, Abengoa joins the group of companies spearheading the business worldwide. The company has achieved excellent results in the area of E&C, with, €4,882 M in order intake and €6,796 M in the backlog, making up more than half of Abengoa's turnover.

Abengoa is an international leader in the construction of electrical infrastructures.



06.1 Engineering and Construction

The company has E&C projects in more than forty countries spanning five continents. With the general stagnation of the European market, and the Spanish market in particular, Abengoa continues with its progressive and unceasing internationalization process, mainly in the Americas, Asia and Africa. In particular, the US, China and India are expected to see the most growth, which will make these countries the leading world markets over the next decade.

Abengoa continues growing in the US, which is its main strategic market, where it occupies 7th place as international contractor, according to the ENR. The region of Latin America and the Caribbean, where it occupies 5th place, remains a key objective for the company. The Americas amounts to 50 % of the company's business. In addition, Abengoa secured its position in Africa where it has consolidated itself as a benchmark transmission and distribution contractor.

Since its beginnings, Abengoa has constructed over 45,000 km of transmission lines, equal to three times the earth's diameter. It has developed projects on all continents in countries such as Brazil, Algeria, Australia, France, Mauritania, Saudi Arabia, Spain and Morocco, and with the securing of new projects in the US and Ukraine in the course of 2013, the list continues to grow.

The multinational also knows how to capitalize on the growing international interest for renewable energies. Many countries have undertaken medium and long-term plans to build clean energy plants. Abengoa is well placed to compete and offer solutions adapted to their needs.

These exciting times for the company translate into the identified opportunities for the coming years. Abengoa boasts a diverse and extensive portfolio of international clients who rely on the multinational's experience to carry out their engineering and construction projects, and it manages its own assets. The awarding of new projects in turn becomes a port of entry into strategic markets where the company previously had no presence.

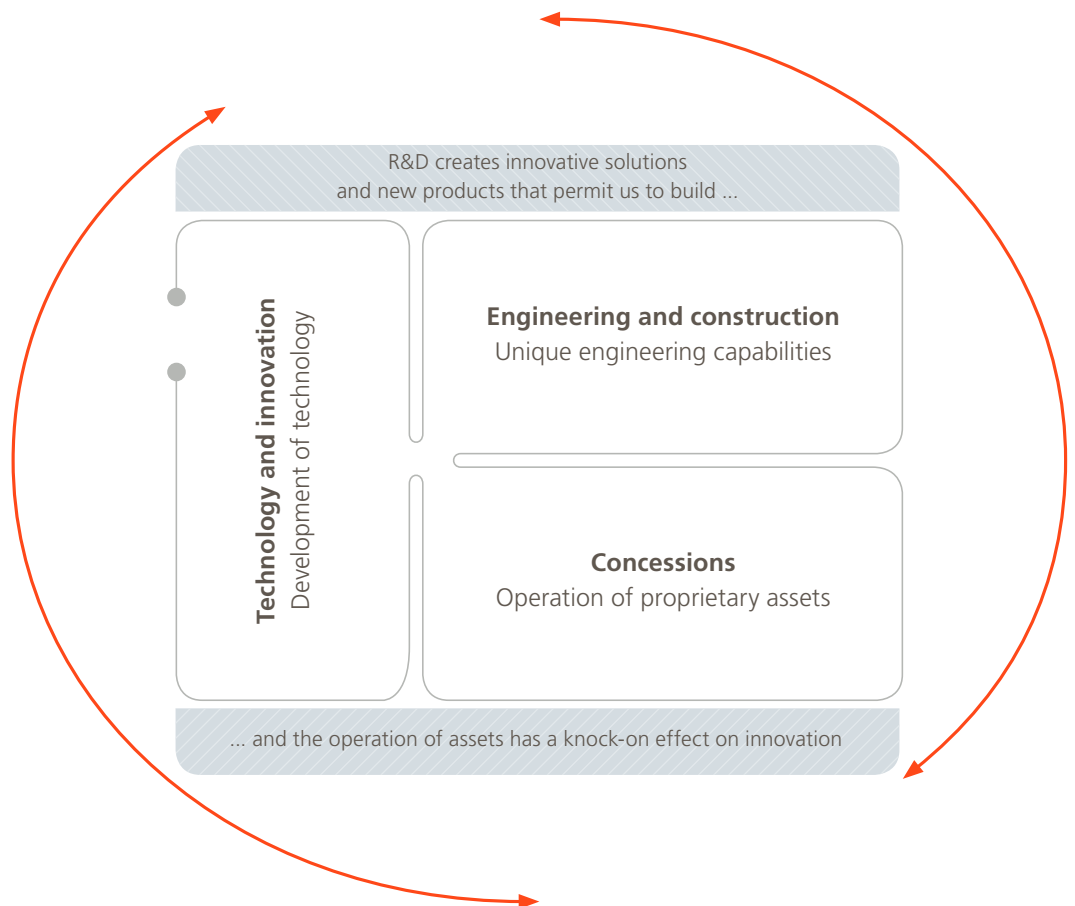
Abengoa collaborates in the development of corporations where it operates, promoting global sustainable growth. Emerging and developing countries require infrastructures for their continued growth. Electricity, water, transportation and fuels are key elements for growth. Abengoa is a global company that works on a local level, contracting local workers and vendors, implementing social projects for favorable social integration and equal opportunities and creating environmental programs to minimize the negative impact of executed works and the emission of greenhouse gases.

06.1 Engineering and Construction

The individuals of the Abengoa team are essential to achieving the company's strategic objectives. Talent acquisition, continuous training and performance appraisal are just some elements of the company's human resource strategy, where the number of jobs created in E&C continues to rise in locations such as North America, showing a 31 % increase over 2012, and Africa, with a 57 % increase in recruitments.

The company invests in its own technological development for its implementation in the design of new projects. The knowledge gained from operating these projects has a knock-on effect on innovation, favoring the development of more and better technology. This serves to generate a process of continuous improvement in R&D and innovation, which is one of the company's greatest competitive advantages.

Value chain of Abengoa's engineering and construction area.



06.1 Engineering and Construction

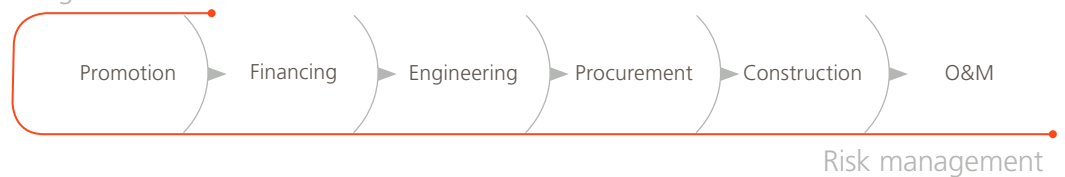
Abengoa operates the engineering and construction business in four complementary sectors and with a diverse project portfolio:

- Energy generation:
 - Renewable energies: solar (tower, parabolic trough, hybrid solar-gas and photovoltaic plants) and wind.
 - Conventional generation: combined cycle, cogeneration and biomass plants.
 - Biofuels: bioethanol, biodiesel and ETBE [a gasoline additive].
- Transmission and distribution:
 - Transmission lines.
 - Electrical substations.
- Water and the environment:
 - Desalination plants.
 - Water treatment and reuse plants.
 - Water transportation and distribution.
 - Waste.
- Infrastructures and services:
 - Industrial plants.
 - Electrical and mechanical installations.
 - Railway lines.
 - Manufacture of metal structures and towers.
 - Marketing and auxiliary manufacturing.
 - Telecommunications.
 - Specific buildings.

This diversification strategy enables the company to develop large-scale turnkey projects where it is also able to offer operation and maintenance services. In an ever-changing economic climate, it is one of the competitive advantages that will help Abengoa realize its goal of becoming the international leader in innovative technology solutions in the energy and environment sectors that contribute toward sustainable development.

Abengoa has unique engineering and construction management capabilities.

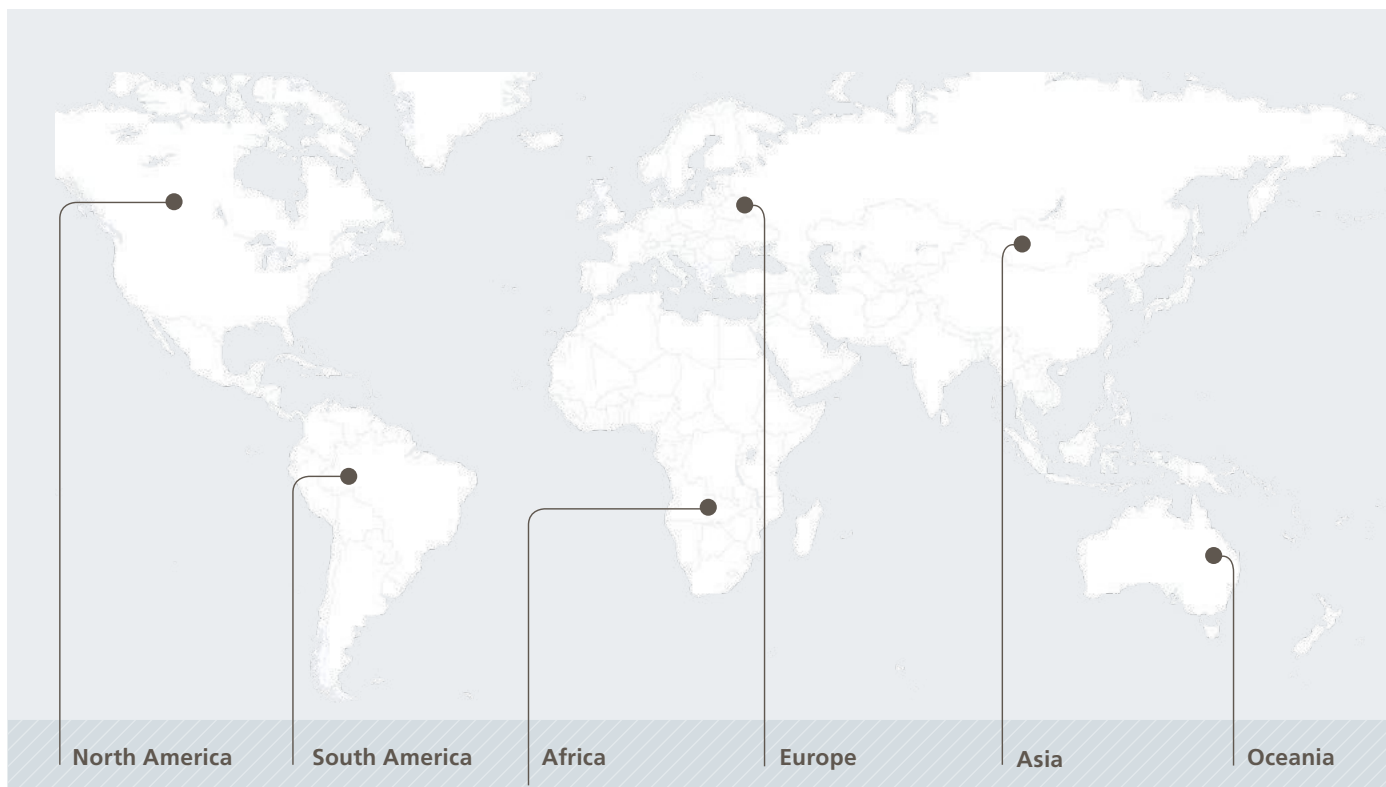
Integration value chain



06.1 Engineering and Construction

Power transmission lines and substations built by Abengoa since 2000

Power transmission lines constructed by Abengoa since 2000.



North America

USA
70 km 4SSEE

Mexico
5.600 km 110 SSEE

South America

Guatemala
Panama
Costa Rica
Nicaragua
1.200 km 8 SSEE

Peru
3.580 km 37 SSEE

Brazil
12.736 km 53 SSEE

Chile
3.112 km 53 SSEE

Uruguay
539 km 16 SSEE

Argentina
*5.207 km 37 SSEE

Africa

Morocco
695 km

Algeria
60 km 1 SE

Libya
500 km 4 SSEE

Kenya
132 km 1 SE

Mauritania
87 km 2 SSEE

Europe

Spain
1.370 km 55 SSEE

France
193 km 6 SSEE

Romania
3.000 km

Ukraine
187 km

Serbia
100 km

Asia

Saudi Arabia
23 km 2 SSEE

UAE
120 km 16 SSEE

Nepal
280 km

India
1.498 Km

Oceania

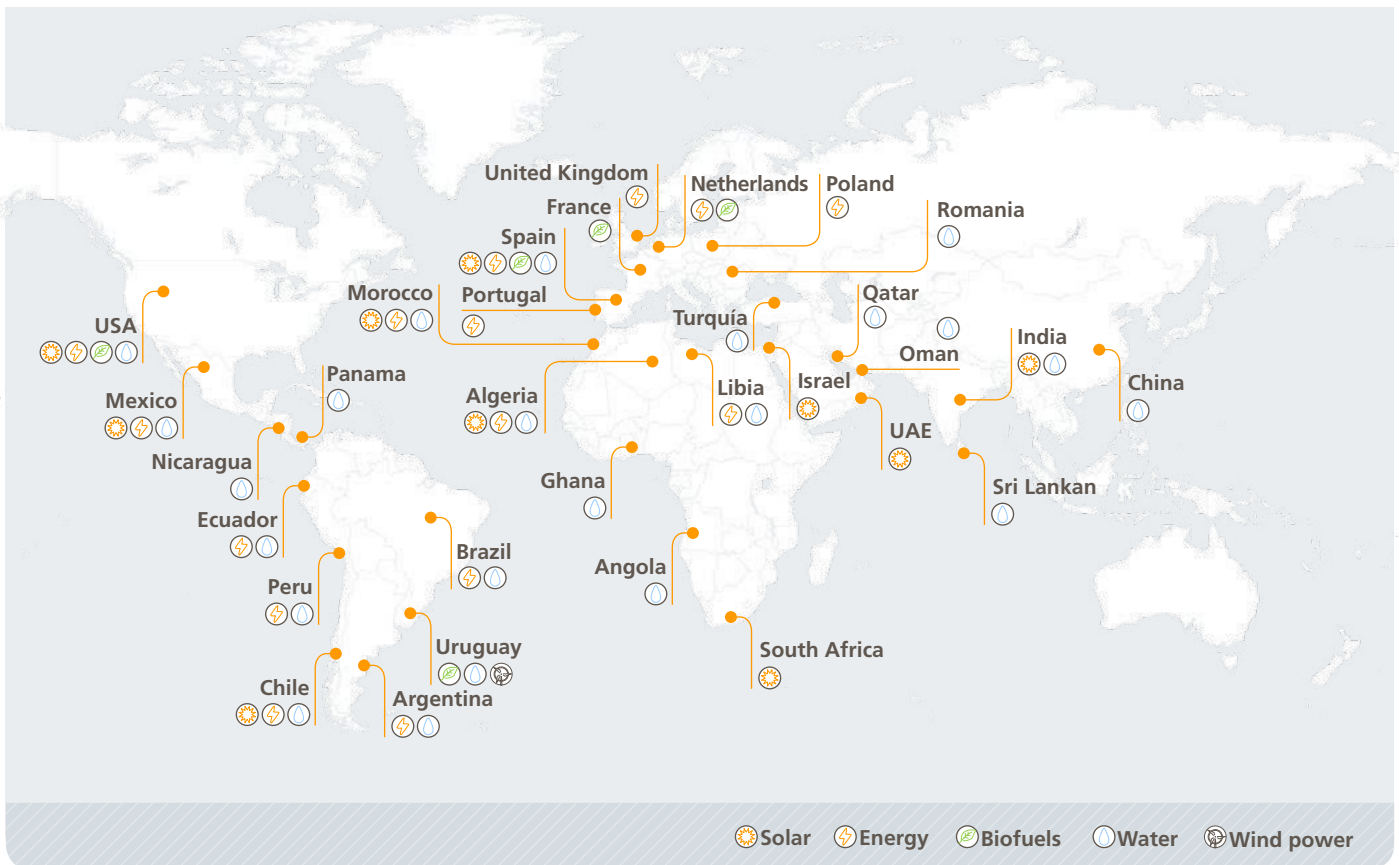
Australia
76 km

(*) Includes power transmission lines built before 2000.

06.1 Engineering and Construction

Map of energy and environment projects

Abengoa's projects in the energy and environment sectors.



06.1 Engineering and Construction

The Americas:

The US

- The US electric utility Portland General Electric (PGE) has commissioned Abengoa to carry out the engineering, design and construction of a **440 MW combined cycle plant** to supply electricity generated from natural gas to half the population of Portland (Oregon).
- New **plant for generating electricity from municipal waste located** in Glendale (Arizona). This project will treat up to 180,000 t of municipal solid waste per year to generate 15 MW of electricity for the renewable energy company Vieste Energy LLC. The contract includes the EPC (engineering, procurement and construction) and operation and maintenance of the plant for 30 years. The technology used at the plant was developed by Abengoa.
- Abengoa has secured its **first transmission project in the US**. Imperial Irrigation District has awarded the company the contract to extend a 32 km, 230 kV transmission line with three substations in southern California. Completion of the project is scheduled for April 2014.
- Abengoa was selected by the company Rentech Nitrogen to develop a **15 MW cogeneration plant** in Pasadena (Texas). Abengoa will carry out the EPC. The generated energy will be used by the Rentech fertilizer plant and the surplus will be sold on the Texas electricity market.
- Arizona Public Services (APS) has commissioned Abengoa for **7,300 t of structures** for its new Hassayampa-North Gila transmission line in the southwest of the US.
- Construction is underway on the 280 MW parabolic trough solar thermal plant being built by Abengoa in California's Mojave Desert. The project will supply electricity to 90,000 homes, curbing annual CO₂ emissions by approximately 437,000 t. Like the Solana plant, it will be **one of the world's largest solar plants**.
- Abengoa will develop **two 10- and 20-MW photovoltaic plants** for EDP renewables in California. Both plants, which will come into operation in the third quarter of this year, will supply sufficient clean energy to supply some 5,000 homes, reducing energy and fuel consumption as well as carbon dioxide emissions.

Solar thermal plant in Mojave (California), which, like the Solana plant, will be one of the world's largest solar plants.



06.1

Engineering and Construction

- Construction of the **world's first commercially operational, second-generation bioethanol plant** is in progress. It will produce ethanol from biomass, which is the world's most abundant organic raw material. Located in Hugoton (Kansas), the plant will use cereal straw instead of grain and will have a production capacity of 95 ML/year and 20 MW of power. The works will be completed in the second half of 2014.

Bioethanol plant in Hugoton (Kansas).



- Construction of the **200 MW photovoltaic plant** for AES Solar in the California desert is in progress. It comprises 1,980 photovoltaic panels that track the sun. The plant is scheduled to progressively come into operation in the second half of 2014.

Photovoltaic solar panel field in the California desert.



06.1 Engineering and Construction

México

- Mexico's Federal Electricity Board (Comisión Federal de Electricidad, or CFE) awarded Abengoa a contract for the engineering, **construction and start-up of a 201 km, 400 kV** transmission line and two substations in the state of Sonora in northwest Mexico. It is one of the largest transmission line projects awarded by the CFE in recent years.
- The CFE has also commissioned Abengoa to carry out the construction of **a 49 km, 115 kV high voltage transmission line** and two substations in the states of Hidalgo and Veracruz, in northwest Mexico. Completion of the project is scheduled for March 2014.
- The third major project being carried out with the CFE **is the construction of Mexico's biggest combined cycle plant, with 640 MW**, in Centro Morelos. Turnkey contract, including one-stop engineering and construction. This plant will form part of the "Proyecto Integral Morelos" project, a key initiative in the development of central Mexico. It will generate enough power to supply more than 280,000 homes.

Combined cycle plant in Morelos (Mexico).



- Abengoa's progress continues in the municipality of León (Guanajuato) with the construction of the **El Zapotillo aqueduct** for the National Water Board (Comisión Nacional de Agua, or Conagua), which will provide a means to supply drinking water to nearly one and a half million inhabitants. The engineering project includes the construction of 139 km of pipelines, a 3.8 ML/s capacity water treatment plant, a 100 ML storage tank and a 40 km distribution circuit. The company will operate the concession for 25 years.

Peru

- Abengoa won the international tender called by ProInversión, the state agency responsible for promoting private foreign investment in Peru, for the engineering, construction, operation and maintenance **of the 354 km, 220 kV Machupicchu-Tintaya** transmission line. The project includes the construction of two new substations and the extension of three others. It will allow for the reliable electricity supply in that part of the country.
- Construction of the **220 kV San Camilo transmission line and the La Joya substation** for the mining company Cerro Verde in Arequipa, southern Peru, is in progress. This project also includes the engineering and start-up.

06.1 Engineering and Construction

- Construction is ongoing of the 220-kV and 132-km **Las Bambas - Cotaruse (ATN 2) transmission line**. This project includes the development of the engineering, construction, start-up, operation and maintenance of the transmission line for 18 years.
- Southern Peru Copper Corporation (SPCC) again placed its trust in Abengoa Perú, awarding it the contracts for **two transmission lines of 102 km in the department of Moquegua** in southeast Peru. Abengoa Perú will be in charge of carrying out the engineering, procurement and construction of the 220-kV Moquegua transmission line, and the engineering and construction of the 138-kV Plaza Toquepala transmission line.

Brazil

- The Brazilian National Electrical Energy Agency (Aneel) awarded a contract to Abengoa to carry out **seven large-scale electricity transmission projects, totaling approximately 5,800 km**. They include the design, construction and start-up of various transmission lines: the 615-km Pernambuco-Ceará, the 544-km Maranhao-Ceará, the 1,761-km Pará-Tocantins, the 1,816-km Tocantins and Maranhao, the 286-km Ceará-Río Grande do Norte and the 370 km Minas Gerais transmission lines, as well as the 367-km transmission line located in the states of Sao Paulo and Minas Gerais. The large-scale projects also include the construction of five substations and the extension of three others. Abengoa will also operate the concession of all the assets.
- The construction of **one of the world's longest direct current transmission lines is in progress for Aneel**, spanning **2,412 km, with 600 kV and a load capacity of up to 3,150 MW**. It will run from Porto Velho to Araraquara and carry the power generated by the Madeira hydroelectric system to São Paulo, Brazil's main consumer. Abengoa will be responsible for the concession of the power transmission line.
- In addition, Abengoa won a five-year **contract this year for the operation and maintenance** of this and another line, also located in the Madeira system, which, spanning almost 5,000 km, will be the world's largest direct current transmission system. The total load capacity of both lines will be in excess of 6,000 MW.
- Abengoa will be in charge of the construction, provision of equipment, maintenance and management of the care facilities of the future **30,000 m² hospital of the northern region of Manaus**, Brazil. The company will operate the concession for 18 years and has been developed in collaboration with local partners.

Argentina

- Abengoa will carry out a new project for Argentina's Federal Council of Electric Energy (Consejo Federal de Energía Eléctrica) **for the construction of 132 km of power transmission lines** and three transformer stations in Aristóbulo del Valle and San Vicente, located in the province of Misiones, in northeast Argentina.
- Work is in progress for the Trust Fund Administration Committee (Comité de Administración del Fondo Fiduciario, or CAF) of the Federal Trust Fund for Electricity Transmission (Fondo Fiduciario para el Transporte Eléctrico Federal) of Argentina, **on the turnkey construction of a 500 kV extra-high voltage transmission line spanning 65 km** between Río Coronda and Rosario Oeste in the province of Santa Fe. The contract also includes the extension of both transformer stations.

06.1 Engineering and Construction

Chile

- The construction is underway of a desalinated water transportation and distribution project, namely the **140 km Tierra Amarilla aqueduct** for Compañía Minera del Pacífico (CAP). The aim of this project is to supply the mining industry, located in the Copiapó valley, in northern Chile, as well as the neighboring towns. It is scheduled to come into operation in March 2014.
- Abengoa will develop the electrical system of **two new Metro lines in Santiago de Chile**. The company will also be in charge of the engineering, equipment, testing and start-up of the railway traction substations of the two new train lines, the training of the Metro staff in Chile, and the maintenance of the substations for 20 years. Completion of the project is scheduled for 2018.

Uruguay

- Abengoa secured its position in the wind power market and consolidated itself as the **first private wind power developer and operator in Uruguay**, having been awarded a contract by the state-owned electric utility National Administration of Power Plants and Electrical Transmissions (Administración Nacional de Usinas y Trasmisiones Eléctricas, or UTE) for a new 70 MW wind farm. The company will be in charge of the construction, operation and maintenance of the wind farm for 20 years. It will supply renewable energy to a population of 100,000, curbing annual CO₂ emissions by 140,000 t.
- Construction of the **50 MW wind farm in Cuchilla de Peralta** (Tacuarembó) is in progress for UTE. The wind farm will have 25 wind turbines installed over an area of 1,400 ha. Apart from the design and construction, Abengoa will carry the operation and maintenance of the wind farm for 20 years. This project will supply renewable energy to a population of 50,000, curbing annual CO₂ emissions by 100,000 t.

Wind farm in Cuchilla de Peralta.



06.1 Engineering and Construction

- The third wind farm in Uruguay is **Cadonal**, with a capacity of 50 MW and 25 wind turbines, weighing 367 t and standing 90 m tall. The wind farm stretches 20 km and is located on the outskirts of Trinidad, capital of the department of Flores. Abengoa will be responsible for the concession of the three wind farms.
- Abengoa is continuing with the construction of the **70 ML bioethanol plant** for the state-owned company Alcoholes de Uruguay (ALUR). The plant will process sorghum, corn, barley and wheat and is located in Paysandú, in the west of Uruguay. The project also includes the construction of an annexed 8 MW cogeneration facility, which will supply the main plant with electricity and steam using biomass as feedstock.

Africa

Kenya

- Abengoa was awarded a contract by the state-owned Kenya Transmission Company (Ketraco) for the development of an **electricity transmission project** spanning 132 km from Lessos to the border with Uganda, as well as the extension of a substation. The project includes the engineering, construction and start-up of the transmission line. Completion of the project is scheduled for November 2014.

South Africa

- Construction is underway in South Africa of the **50 MW Khi Solar One plant, one of the world's largest plants with tower technology**. With a two-hour power storage capacity, the plant covers an area of 600 ha and is located near Upington in the province of Northern Cape. Its completion is scheduled for the end of 2014.

The Khi Solar One tower is South Africa's second tallest construction.



06.1 Engineering and Construction

- Abengoa is also constructing the **100 MW KaXu Solar One parabolic trough plant in South Africa**. With a three-hour storage capacity it will occupy a surface area of 1,100 ha. The plant is located in the same province as Khi Solar One. Completion of the project is scheduled for the beginning of 2015. Kaxu and Khi are South Africa's first two solar thermal plants and their contracts were awarded to Abengoa by the South Africa Department of Energy.
- These two major projects with the DOE see the addition of **Xina Solar One, a new 100-MW solar** plant with parabolic trough technology that will permit the storage of electricity for up to five hours after sunset. Together with Kaxu, it will form part of Africa's largest solar power platform. The plant will generate clean energy for 90,000 homes, curbing CO₂ emissions by 398,000 t.

Algeria

- Construction is in progress in Tenes, Algeria, of a **new desalination plant using reverse osmosis technology**, with a daily water desalination capacity of 200,000 m³.

Ghana

- The company is developing its first project in Ghana, **namely a reverse osmosis desalination plant** with a daily water production capacity of 60,000 m³, which will be the first desalination plant in west Africa. Completion of the project is scheduled for August 2014.

Angola

- The **Xangongo water treatment plant (WTP) in Angola has been completed and will produce** 16.3 ML/day of treated water from the Cunene river. It includes the operation of the 100 km pipeline for the transportation of water between the WTP and the towns of Mongua and Ondjiva.

Asia

Israel

- The Government of Israel has awarded a contract to a consortium comprising Abengoa and a local partner for the development of **the country's largest solar thermal plant**, namely Ashalim, with a capacity of 110 MW. Using parabolic trough collectors, it will be the first plant with molten salt storage system to generate energy for 4.5 h at night.

India

- In Gujarat, India, Abengoa has completed construction of a **plant for the manufacture of metal tower structures** for transmission lines and solar supports with an annual production capacity of 30,000 t. The project is financed by the International Finance Corporation.

Saudi Arabia

- Construction is in progress on the **Medina-Mecca high-speed** railway system. The contract for this project was awarded to the Spanish-Saudi consortium comprising Abengoa and other partners. It includes the construction and assembly of the 450 km railway system, permitting trains to run at 350 km/h. The contract includes the full maintenance of the railway system for twelve years.

06.1 Engineering and Construction

Oman

- Abengoa is working on the construction of the **reverse osmosis desalination plant** for ACWA Power International which will supply 225,000 inhabitants in Barka, in northwest Oman. Abengoa is also in charge of the design, engineering, operation and maintenance.

Reverse osmosis desalination plant in Barka (Oman).



Sri Lanka

- Construction is underway of a **drinking water plant in Sri Lanka**. With a daily water treatment capacity of 13,000 m³, the project also includes the construction of water catchment systems at the Kalu Ganga river, a 2,500 m³ storage tank and almost 20 km of pipelines for the distribution of treated water at the plant.

06.1 Engineering and Construction

Europe

Ukraine

- Abengoa has been selected by Ukrenergo, Ukraine's state-owned energy company, to **construct a 187 km transmission line** from Zaporozhye nuclear power plant to Kakhovska substation in southeast Ukraine. The project, financed by the European Bank for Reconstruction and Development (EBRD), will be completed in June 2015.

Poland

- The construction is in progress of the **largest combined cycle plant in Poland, with a capacity of 450 MW**, for the Polish state-owned energy and gas distribution company. The facility, located in Stalowa Wola, 200 km southeast of Warsaw, has one gas turbine, one steam turbine and a recovery boiler to generate electricity. It will supply electricity, heat and hot water to some 10,000 homes. This project led to Abengoa's entry into the Central European market. The company will also take charge of the operation and maintenance of the gas turbine for the first 12 years.

Combined cycle plant in Poland.



Spain

- Abengoa is building the **Costa del Sol Hospital** in Malaga. The company has a 40-year concession of the entire 31,000-m² hospital area and will manage the 25,000-m² parking lot (960 spaces).

France

- Abengoa has a long-term **contract with Réseau de Transport d'Électricité (RTE)**, France's electricity transmission system operator. The company carries out studies, works and maintenance on various high-voltage transmission lines, including high-voltage underground transmission lines.
- The company has carried out various catenary and electrification **works for the Société Nationale des Chemins de Fer (SNCF)**, state-owned railway company in charge of operating France's national rail services.

06.1

Engineering and Construction

Solar business

The solar thermal market is immersed in a consolidation phase on the international arena. In this phase, only the most competitive companies have the opportunity to play a leading role on international markets. Having a proprietary technology portfolio is essential to be able to continue offering solutions tailored to the needs of each customer at competitive prices.

This is why the development of new technologies, together with the design and manufacture of certain key components, which can be applied at the company's own plants and sold to third parties, is one of the areas of activity on which Abengoa bases its medium and long-term growth.

Strategic positioning in the different phases of the value chain of the solar thermal business, including plant operation and maintenance, gives Abengoa a significant advantage in the sector, while enabling it to offer technology and solutions tailored to greater customer satisfaction. In this regard, Abengoa focuses the industrial production of its solar business on:

- The signing of strategic alliances for the development of new, more efficient equipment and components.
- The design, manufacture and sale of key components for its own plants and those of third parties. This is the case, for example, with the company's parabolic trough collectors, collectors for industrial applications, mirrors for parabolic trough plants and tower facets, and the high concentration photovoltaic systems.
- The signing of solar technology transfer agreements.
- The provision of equipment and services for the operation and maintenance of solar power plants, owned by the company or third parties.

Abengoa's solar business has continued with its commitment to innovation in 2013, specifically in those technologies flagged as key, with a view to keeping ahead of its competitors, while lowering costs and making them more efficient. In addition, as a supplementary line of business, Abengoa licenses and transfers these technologies and know-how to third parties, generating cash flow through commercial intellectual property agreements, in the form of royalties or fees.

Likewise, the company continues to channel many of its resources into expanding its portfolio of components by seeking out new technological partnerships and strategic alliances with leading companies and institutions, shaping marketing strategies for its current portfolio of technologies and in the development of, and securing protection for, its intellectual property, thus helping to secure its ongoing technological and commercial leadership.

Thanks to its position as the world's top company in terms of solar thermal capacity, Abengoa has built up a wealth of knowledge in plant operation and maintenance, enabling it to make groundbreaking improvements in plant design, construction and operating methods. This is why Abengoa is the leading company in the operation and maintenance of its own and third party solar thermal plants, always achieving the maximum performance demanded of a facility, while continuously applying improvements based on experience.

In addition, Abengoa achieves some of the highest power generation levels, both nationwide and internationally, by combining the aforementioned knowledge with the highest work standards, a set of tools specifically developed to provide this service to the company's plants, and its full adherence to health and safety standards.

06.1

Engineering and Construction

Significant milestones in last year's industrial production include:

ASUP 140 heliostat

Having validated the design at the Solucar Complex during the last months of 2012, installation of the ASUP 140 heliostat is underway at the Khi solar field project in South Africa. The installation of this new heliostat has resulted in a solar field cost reduction of almost 30 % thanks to the introduction of an innovative facet concept that combines 2 mm-thick, highly reflective glass with a foam that gives it bearing capacity and an optimized structure that minimizes material requirements.

View of the heliostats of the Khi Solar One solar tower plant with superheated steam technology, located in the Northern Cape province (South Africa).



06.1

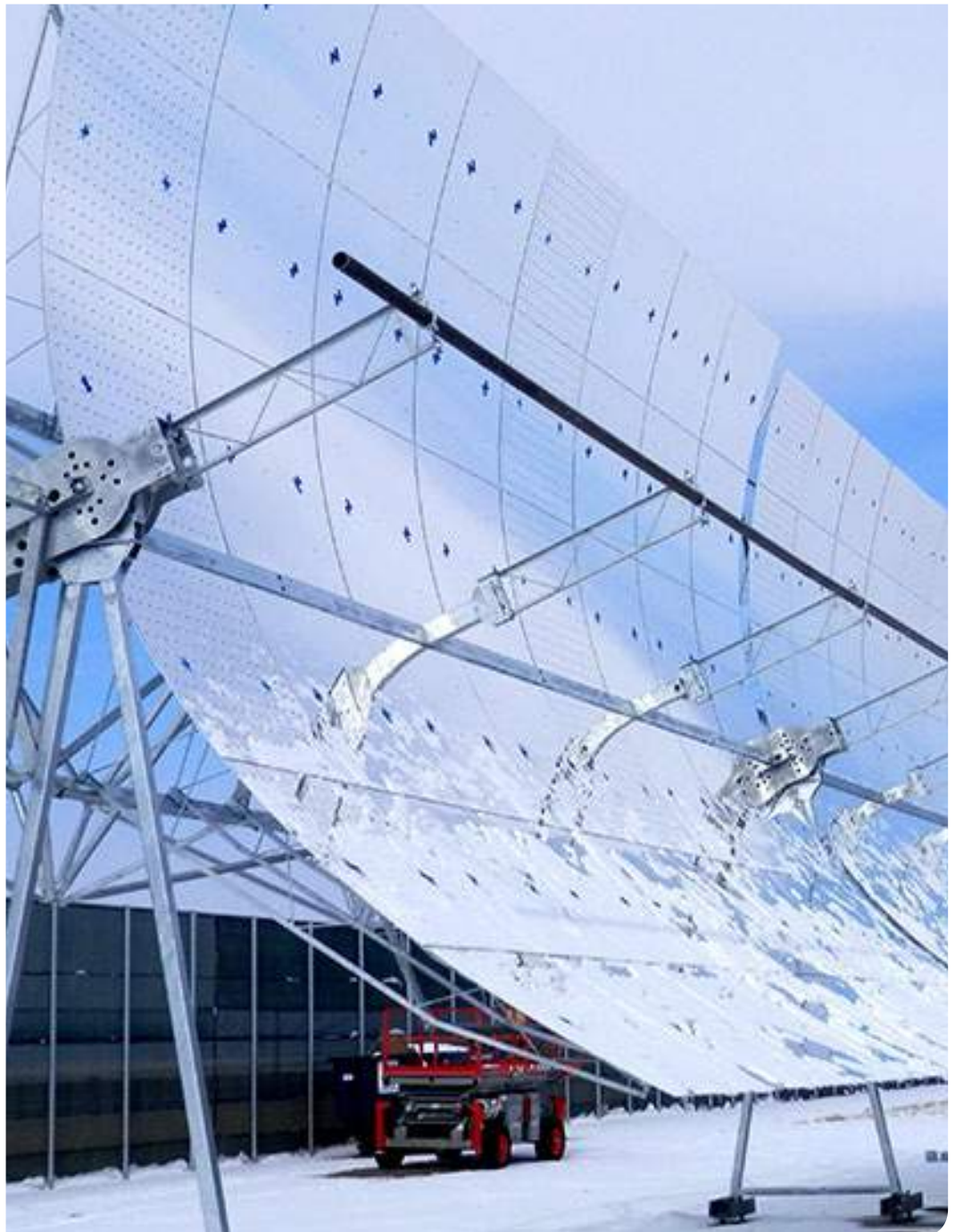
Engineering and Construction

New generations of parabolic trough structures

Abengoa continued optimizing the design of its E2 trough in 2013. This model features design improvements that allow for a more efficient installation and improved operational performance.

The year 2013 also saw the construction of the first large opening SpaceTube collector module at the Solucar Complex, with an opening of more than eight meters. This project validates the improvements implemented in technology, such as the higher concentration factor, resulting in a considerable cost reduction in the parabolic trough solar field.

SpaceTube parabolic trough collector, research project with an aperture of over eight meters.



06.1

Engineering and Construction

Operation and maintenance equipment

The existing equipment for the operation and maintenance of solar power plants, such as the Condor reflectometer and the parabolic trough collector and heliostat cleaning trucks, has seen the addition of a new piece of equipment that measures the performance of the receiver tubes in parabolic trough technology. The Mini Incus spectrophotometer is a portable device that aids in the operational optimization of solar thermal parabolic trough plants, thanks to an efficient characterization of the receiver tubes.

The Mini Incus is especially designed for the on-site evaluation of the receiver tube's optical properties, transmittance and absorbance, measuring 15 wavelengths, uniquely distributed throughout the solar spectrum.

The operation of this development has already been validated at the Solnova 1 plant and presented at the international SolarPaces conference in 2013, coinciding with the launch of the equipment on to the market.

The Mini Incus device, placed on the absorbing tube of the parabolic trough collector, aids in the operational optimization of solar thermal plants.

**Operation and maintenance services**

The company's consolidated experience in plant operation and maintenance and its continued commitment to R&D and innovation have enabled it to develop a specialized operation and maintenance service for its own plants and for third parties. With the start-up in 2007 of the company's first commercial plant, PS10, and thanks to the gradual start-up of new solar power plants, embracing both power tower and parabolic trough technologies, the company has been able to steadily optimize plant start-up, and operation and maintenance, responding well to what has become a very demanding process. Abengoa has implemented a standardized plant operation monitoring system, allowing it to track changes in key plant operation areas and carry out benchmarking. The company has also continued harnessing synergies, as a result of grouping plants together at solar complexes.

With the goal of continuous improvement and to learn from past experiences, Abengoa's solar business has rolled out training programs on operation and maintenance and how to capitalize on experience so that the company's operators can tackle the operation and maintenance of new plants with a greater likelihood of success.

06.1

Engineering and Construction

Industrial applications

Over the course of this year and having begun operations at the solar thermal plant owned by Minera del Tesoro in Chile, the company has continued offering thermal or steam power generation solutions to industrial customers, giving added value to their processes, while reducing their greenhouse gas emissions.

High concentration photovoltaic technology, or HCPV

High concentration photovoltaic (HCPV) module that reaches levels of over 30 % efficiency. The combination of the T140TM solar tracker and the M300TM module provides optimal efficiency for photovoltaic plants that supply the electricity grid.



Abengoa is marketing its latest generation of high concentration photovoltaic technology with much higher efficiency and significantly more competitive installation costs than its predecessor. These breakthroughs, apart from affording improved performance under extreme temperature conditions and the resulting high efficiency, make the company's photovoltaic technology highly competitive, permitting cost reductions while increasing module efficiency.

Tests have confirmed the efficiency of the technology with the installation of three pilot plants in Puertollano with a total of 300 kW, together with validation systems at other locations such as India, Brazil and Saudi Arabia. In addition, Abengoa's HCPV modules successfully passed the tests in accordance with the requirements of standard IEC 62108, which means they are in optimal conditions to be put on the market.

Another important achievement in the area of photovoltaics is the inauguration of the Soland Technology Center. This new infrastructure has led to important capabilities in optics, chemistry, electronics and solar laboratories, and in the characterization of materials and reliability, as well as a pilot plant for the development of solar photovoltaic technology. This serves to foster the development of new photovoltaic technologies, while supporting the commercialization of previously developed technologies.

06.1 Engineering and Construction

Technology licenses

Abengoa licenses its developed technologies, taking into account their innovative nature and maturity on the market, generating cash flow through commercial intellectual property agreements, in the form of royalties or fees.

Key industrial solar products and services in 2013

- More than 4,120 heliostats and 3,100 E2 parabolic trough collectors have been sold in different countries.

View of the Mojave parabolic trough collectors. In the background are the desert mountains of Arizona.



- As regards equipment and services for operation and maintenance, Abengoa's solar business provides O&M services to 17 solar thermal plants and 5 photovoltaic plants.

In addition, as regards photovoltaic technology, the installation of various demonstration high concentration photovoltaic systems has been completed in Saudi Arabia and India.

It is important to point out that the progress made by the company with proprietary technology has enabled it to continue cutting power generation costs and capitalize on its investments in R&D and innovation through technology transfers to third parties for the construction of solar power plants. The company is confident that this line of business will continue to generate significant revenue over the coming years on the back of its proactive management of its technologies portfolio, which already features a number of new developments, coupled with a solid industrial production strategy.



06.2 Infrastructures under Concession

06.2 Infrastructures under Concession

Abengoa boasts an impressive portfolio of proprietary assets under concession, all generating income through long-term sales agreements, guaranteed purchase agreements (take or pay) and power purchase agreements.

	2013	2012	2011	Var. 13-12 (%)
Key financial figures				
Revenue (€ M)	519	473	428	10
Ebitda (€ M)	318	307	298	4
Ebitda margin (%)	61	65	70	- 4
Key figures - power transmission				
Km constructed (km)	1,723	1,476	3,903	17
Average availability factor (%)	99.8	99.4	99.5	0.4
Key figures - solar				
Plants in operation (MW)	1,223	743	443	65
Plants under construction and pre-construction (MW)	640	910	1,210	- 29
Production (GWh)	1,310	~964	~367	36
Key figures - desalination				
Installed capacity (m ³ /day)	500,000	400,000	400,000	25
Annual production (Mm ³)	102.1	98.8	82.6	3
Key figures - cogeneration				
Installed electricity capacity (MWe)	348.39	70.56	70.56	394
Installed thermal capacity (MWt)	1,155.69	142.91	142.91	709
Annual electricity generation (MWh)	2,054,791.71	345,231.00	396,664.26	495
Annual thermal power generation (MWh)	3,204,345.1	238,702.99	285,922.89	1,242

* CHP figures have significantly increased mainly due to the new 300 MW Mexico facility.

06.2 Infrastructures under Concession

Transmission lines business

Transmission lines permit efficient and sustainable transport of electricity. Transmission assets are an essential part of the power infrastructure, significantly more so taking into account various factors such as spiraling electricity consumption, the widening gap between generation facilities and consumers, the ever-increasing weight of renewable sources on electricity markets and the growth of emerging countries.



Abengoa is operating and constructing more than 11,000 km in transmission line concessions, double the 2012 figure. The company is one of the leading private concessionaires in Latin America with assets in Peru, Chile and, above all, Brazil, where it secured four new major transmission projects this year, amounting to almost 3,200 km.

Large-scale transmission and distribution systems are one of Abengoa's business strategies. The company is the sector's undisputed market leader worldwide, with a big advantage over its competitors. As the company is vertically integrated and boasts an undisputed track record in transmission line engineering and construction, it is fully capable of tapping into the huge opportunities currently emerging worldwide in the area of transmission concessions, with this concession model becoming ever more frequent.

The company has unique capabilities for the management of its own assets under concession. It covers the entire value chain, from promotion, financing, design and engineering, to the supply of equipment, manufacture of metal structures, construction, establishment, operation and maintenance of systems.

These unique capabilities allow the company to transport power, not only to big cities and industrial hubs, but also to remote locations and under extreme conditions. The company faces the future challenge of assuming the concession of Brazil's highest direct current transmission line, and a transmission line in Peru that will reach a height of up to 3,000 m above sea level. Both projects are currently under construction.

06.2 Infrastructures under Concession

Abengoa has set up various corporate social responsibility projects related to concessions to benefit the communities in the vicinity of the transmission line concessions and to protect the environment.

Brazil

Abengoa continues to grow in this country's power transmission market. The following lines were brought into operation in 2013:

- **Manaus, 500 kV and 586 km, connecting the municipalities of Oriximiná-Silves-Lechuga.** Located in northern Brazil, it is one of the first power transmission lines to cross the Amazon. The towers used in this project are some of the tallest in Brazil, at 190 m. This transmission line supplies electricity to the city of Manaus, with a population of 1.9 M.

Aerial view of the Manaus transmission line in the Amazon.



- **Itacayunas-Carajás (ATE VIII), 130 km and 230 kV.** Located in the state of Pará in northern Brazil, it supplies the 150,000 inhabitants of Parauapebas. The transmission line provides greater reliability to local industries, in a region with some of the highest levels of mining activity in Brazil. Abengoa has a 30-year concession.

In addition, the company has been operating **the following transmission lines and 230 kV electrical substations in southern Brazil** for Aneel, since 2009. These transmission lines have contributed toward the increased reliability of the region's electricity system. Abengoa has a 30-year concession for operation and maintenance of these transmission lines.

- **Curitiba – Bateias (ATE IV), 85 km,** supplying the 3.3 M population of Grande Curitiba.
- **Londrina – Maringá (ATE V), 140 km,** benefiting some 900,000 people.
- **Campos Novos – Videira (ATE VI), 131 km,** supplying electricity to 50,000 inhabitants of Videira.
- **Foz do Iguaçu Norte-Cascavel Oeste (ATE VII), 115 km,** located in southern Brazil on the border with Argentina and Paraguay. It supplies electricity to 260,000 inhabitants of the famed city of Foz do Iguaçu.

06.2 Infrastructures under Concession

Peru

- Having completed the engineering and construction works, Abengoa began operating **the 872 km and 500 kV Chilca-Marcona-Ocoña-Montalvo (ATS) transmission line**, which included the construction of three electrical substations. The concession includes operation and maintenance for a 30-year term. This transmission line, together with the one located in La Libertad, will permit the connection of almost the entire coast of Peru, stretching some 1,600 km, thus contributing to the development of this region of Peru.

ATS transmission line in Peru.



- **Operation of the 572 km and 220 kV high-voltage Carhuamayo–Cajamarca and Cerro Corona-Carhuaquero (ATN) transmission line** and two new electrical substations and extensions to five existing electrical substations, is ongoing. Abengoa has a 30-year operation and maintenance contract.

Chile

- Having completed the engineering and construction phase, Abengoa began **the operation of two transmission lines, 50 and 79 km** respectively, for Minera Quadra to supply power to the Sierra Gorda mine, crossing the Atacama Desert in northern Chile from north to south. Abengoa will operate this transmission line for 20 years.
- Operation of **the 10 km transmission line in Palmucho**, for which Abengoa has a 10-year plus concession, is ongoing.

New concessions under construction

- In **Brazil**, the company will operate the concession of **seven major electricity transmission projects, totaling 5,800 km in length**. The transmission lines will pass through the municipalities of Pernambuco, Ceará, Maranhao, Pará, Tocantins, Rio Grande do Norte, Minas Gerais and Sao Paulo, among others.
- The construction is ongoing of **one of the world's largest power lines, spanning 2,412 km**. It is located between the cities of Porto Velho and Araraquara. Abengoa will also operate the concession of the assets.
- In **Peru**, the company will operate the **354-km and 220-kV transmission line between Machupicchu and Tintaya**. Also in Peru, Abengoa will operate the 18-year concession of the **130-Km and 220-kV Las Bambas-Cotaruse transmission line**.

06.2 Infrastructures under Concession

Solar Business

Abengoa has secured its position of global leadership in the field of solar infrastructures under concession through the construction and bringing into operation of new plants, its ever-increasing participation in new markets worldwide and the promotion of new projects with innovative technologies never before commercially implemented.

Abengoa has global presence, distributing its solar business in the following countries:

- Europe: Spain and Italy
- America: The United States, Mexico, Brazil and Chile
- Africa: The main countries of North Africa and South Africa
- Asia: The Middle East, India and China
- Oceania: Australia

In the field of solar technology, 2013 ended with significant growth in geographical diversification of Abengoa's solar business thanks to commencement of operation of solar thermal plants such as Solana and Shams-1 in such diverse locations as the Arizona desert in the United States and the Abu Dhabi desert in the United Arab Emirates, respectively. Sustainability of this growth is ensured thanks to next year's completion of projects of paramount importance, including the 280 MW Mojave Solar parabolic trough plant in California. This significant growth has served to drive the continued opening of new markets, as evidenced by this year's concession of a 110 MW plant in Israel.

Abengoa's solar infrastructure concessions are divided into the following lines of activity:

- **Promotion of solar and hybrid power plants:**

This line of activity consists of prospecting ideal locations for solar plants, carrying out the necessary administrative formalities to begin construction, negotiating project financing and construction agreements and identifying potential partners and reaching agreements with them. All these activities are carried out for solar plants that generate electricity, for hybrid plants that harness sunlight along with a conventional energy source and for industrial plants that generate heat for commercial and industrial uses.

- **Commercial operation of solar and hybrid power plants:**

The solar power plants developed by Abengoa sell their electricity under long-term concession agreements. Optimal operation of Abengoa's plants is key to securing and increasing the projected returns and its experience in carrying out these crucial tasks enables it to make technological improvements. Moreover, thanks to the sheer number of commercial plants in operation, Abengoa is able to harness synergies between the different facilities, thus improving their operational efficiency.

06.2

Infrastructures under Concession

Promotion of solar power plants

Important milestones were reached throughout 2013 in the promotion of plants, serving to secure the company's position. Among the year's achievements it is fitting to highlight the commencement of operation of Solana, the world's largest plant using parabolic trough technology with 280 MW, which is also equipped with a molten salt thermal energy storage system, one of its kind in the United States, to permit production after sunset or during cloudy spells. This year, Abengoa added Liberty Interactive Corporation as an investor in the limited company that manages the plant, with an investment of \$300 M. Abengoa is still in charge of management, operation and maintenance. Solana has taken an important step to consolidate its position and gain the trust of the US market in Abengoa, in addition to its technological progress in the manageability of solar power.

Abengoa also completed two major projects this year, with the financing and establishment of two new parabolic trough plants in Spain with an installed capacity of 50 MW each. These two new plants, together with another two with the same characteristics already up and running, make the Extremadura solar platform Europe's biggest solar facility. Also, operations have begun at Shams-1, the first parabolic trough plant in the Middle East.

In addition, Abengoa has signed a long-term power supply agreement with Israel for a 110 MW parabolic trough plant together with a local partner, namely Shikun & Binui, a global company in the infrastructure and construction sector. The company has also increased its project portfolio in South Africa where it was awarded the contract for a new 100-MW parabolic trough plant with five hours storage, namely Xina Solar One.

The completion of these projects and the endorsement of other previously mentioned innovative projects have made this an unparalleled year for the positioning of Abengoa in new markets, thus securing the company's continued medium and long-term growth.

Operation of plants

The operation of plants that Abengoa developed in previous years is, without doubt, the driving force behind the company's exponential growth this year. The operation of 23 plants using both solar thermal and photovoltaic technologies with a total installed capacity of 1.2 GW has permitted Abengoa to gain valuable experience in plant operation and maintenance. This know-how is becoming one of our main lines of business given that Abengoa is one of the most experienced companies in the operation of plants of the entire solar power sector. It is without doubt the foundation on which all growth of the company's solar business is built, and is a solid foundation to achieve the goals set for the coming years.

Solana

Solana began operating in 2013, gaining the status of the world's largest parabolic trough plant with an installed capacity of 280 MW. The power generated at this plant is sold through a 30-year sale-purchase agreement signed by Abengoa with Arizona Public Service (APS), Arizona's largest electric utility.

Located some 100 km southwest of Phoenix, Arizona, this plant has a solar field with 32,000 collectors and a six-hour molten salt thermal energy storage system, the only one of its kind in the United States. This system permits the generation and distribution of electricity during cloudy spells and after sunset, meeting the peak demand for electricity.

From an environmental perspective, Solana offers clean, contamination and greenhouse gas-free energy, equal to the energy demand of 70,000 homes, curbing annual CO₂ emissions by almost 500,000 t.

06.2 Infrastructures under Concession

Solucar Complex

The Solucar Complex features a series of plants dedicated to commercial operation and technological innovation. The complex boasts the world's first two commercially operated towers, three parabolic trough and two photovoltaic plants, as well as numerous research, development and innovation facilities, including two pilot tower plants, all of which were constructed and operate independently. In 2013, PS10 celebrated six years in commercial operation, and PS20 four years, surpassing the first year's operation of the complex's four towers combined.

The experience gained through operation and maintenance of the seven commercial plants at the Solucar Complex makes Abengoa a leader in solar plant management. Moreover, the first molten salt solar tower has achieved extremely high levels of efficiency, making this technology commercially available in situations where it is necessary to offer clean solutions with very long storage periods.

Solucar complex.



Extremadura Solar Complex

In 2013, commercial operations began at Solaben 1 and Solaben 6, two of the four independently constructed and operated 50 MW parabolic trough plants that make up the Extremadura Solar Complex. The commencement of operation of both these plants makes this facility the largest solar complex in Europe and one of the largest in the world, with a total production of clean energy meeting the supply needs of some 105,000 homes and curbing annual CO₂ emissions by approximately 126,000 t.

Abengoa has a 70 % stake in the Solaben 2 and Solaben 3 plants, while ITOCHU, a global Japanese company, controls the remaining 30 % of these two plants. Abengoa has a 100 % ownership stake in Solaben 1 and Solaben 6.

06.2 Infrastructures under Concession

The construction and operation of the solar complex has created important socio-economic benefits for the region. Its construction required an average of 400 workers per day, and at times up to 1,000. The economic activity generated around the solar complex has also led to growth of the region's business network, while boosting the services sector.

Ecija Solar Complex

This complex has two 50 MW parabolic trough plants. The independently constructed and operated Helioenergy 1 and Helioenergy 2 plants are jointly operated by Abengoa's solar business and E.ON.

Aerial view of Helioenergy 1 and Helioenergy 2, two 50-MW parabolic trough plants.



Castilla-La Mancha Solar Complex

The complex, located between the municipalities of Arenas de San Juan, Villarta de San Juan and Puerto Lápice in the province of Ciudad Real, has two identical 50 MW parabolic trough plants, each independently constructed and operated.

06.2

Infrastructures under Concession

El Carpio Solar Complex

The complex has a total of 121,000 mirrors that concentrate sunlight to generate steam at temperatures of up to 400° C.

50-MW parabolic trough collectors of Solacor 1. In the background, a view of the municipality of El Carpio (Cordoba).



The facility consists of two independently constructed and operated parabolic trough plants. Both plants are jointly owned by Abengoa and the Japanese conglomerate JGC. Abengoa operates both plants and has a 74 % stake.

Shams-1

Shams-1, the first solar thermal plant in the Middle East, with 100 MW capacity, represents the final step to position Abengoa in a region with enormous potential in the solar power sector. This parabolic trough plant became operational in 2013, with an installed capacity equal to the energy demand of 20,000 homes. Abengoa has a 20% ownership of this plant.

View of Shams-1. First solar thermal plant in the Middle East, with 100 MW of power.



06.2 Infrastructures under Concession

Hassi R'Mel

The hybrid integrated solar combined cycle plant operated by Abengoa in Hassi R'Mel, Algeria, continues to satisfactorily meet the operational objectives. This plant has 150 MW capacity, of which 20 MW come from a field of parabolic trough collectors. It is one of the first plants of its kind to be constructed in the world, making Abengoa a pioneering company in the construction and operation of solar plants in North Africa. Abengoa shares ownership of this plant with a strategic partner, namely NEAL (New Energy Algeria).

The hybridization of solar thermal combined cycle plants is an extremely interesting solution at locations with abundant sunlight and low gas prices.

Hassi R'Mel, the 150-MW integrated solar combined cycle (ISCC) plant with parabolic trough solar field is located in Algeria.



New concessions under construction

In 2014, operations are expected to get underway at the Mojave and Khi Solar One plants, in California, USA, and South Africa, respectively; both of which will form part of Abengoa's concession-based business, being yet another example of the company's drive toward the diversification and internationalization of its business.

In the coming years, it will continue with the expansion of its concession-based business in the international arena.

View of KaXu Solar One. One of the first two solar thermal plants in South Africa, with parabolic trough technology and a capacity of 100 MW and 2.5 hours of thermal storage, located near Pofadder (Northern Cape).



06.2 Infrastructures under Concession

Desalination business

Desalination is the process of removing salt and other minerals from water. Desalination is one of the most rapidly growing solutions to water shortages. This growth reflects the fact that much of the growing demand for water comes from coastal regions and the sharp drop in costs of this technology over the last decade. The installed global capacity for desalination in 2012 (industrial and municipal) was 75 million m³/day, with a market value of \$3,938.3 M. Growth in this market is expected to reach \$15,188.4 M by 2018. In particular, the annual growth rate of capital investment in seawater desalination is expected to reach around 19.2 %. The following are predicted to become the main desalination markets in the coming years, in order of size: The United States, Saudi Arabia, the United Arab Emirates, Kuwait, China and India.

Our mission is to promote, develop and operate water treatment plants, with innovation and technological development as the drivers of growth.

Abengoa's vision is to consolidate its position as the international market leader in desalination plants, managing proprietary assets while expanding its water treatment and reuse business, including water treatment in the industrial sector.

The desalination division divides its lines of business into:

- _ Concessions
- _ Services
- _ Processes and systems
- _ Technology

Projects by territory

Desalination plants under concession:

Algeria

- _ Skikda: The purpose of this desalination plant is to produce drinking water from seawater to supply the city of Skikda, a Mediterranean coastal port located 80 km west of Annaba, Algeria. It is the first project developed under the concession scheme in Algeria. The plant supplies a population of 500,000. It has a capacity of 100,000 m³/day and has been operating since 2009.

Desalination plant in Skikda (Algeria) with a capacity of 100,000 m³/day, in operation since 2009.



06.2 Infrastructures under Concession

- Honaine: The purpose of this desalination plant is to produce drinking water from seawater to supply the city of Honaine, Tlemcen. The plant supplies a population of almost one million. It has a capacity of 200,000 m³/day and has been operating since 2011.

India

- Chennai: The purpose of this desalination plant is to produce drinking water from seawater to supply the city of Chennai located in the state of Tamil Nadu in India. It has a capacity of 100,000 m³/day and has been operating since 2010.

China

- Qingdao: The purpose of this desalination plant is to produce drinking water from seawater for industrial use and human consumption in the city of Qingdao. It has a capacity of 100,000 m³/day and has been operating since 2013.

Desalination plant in Qingdao, with a capacity of 100,000 m³/day, in operation since 2013.



New concessions under construction

Construction of the Ténès desalination plant in Algeria is ongoing, which will supply half a million inhabitants and have a capacity of 200,000 m³/day.

Construction is underway of a desalination plant in Ghana, with a capacity of 60,000 m³/day, which will supply drinking water to localities in the metropolitan area of Accra, Theshe, Nungua and Tema.

The desalination plant under construction in Accra (Ghana) will have a capacity of 60,000 m³/day.



06.2 Infrastructures under Concession

Other concession activities

This section looks at Abengoa's concession activities in electric and thermal energy (cogeneration), mini hydro plants, specific buildings and other non-standard concessions.

- Cogeneration: cogeneration generates electricity and high-temperature heat simultaneously. Its main advantage over other generation systems is its greater energy efficiency, making use of both heat and mechanical or electric energy in just one process, as opposed to using a conventional electric plant and boiler. In addition, it permits the generation of electricity close to the point of consumption, thus preventing voltage fluctuations and long-distance transmission, which tends to result in a loss of energy.
- Mini hydro plants and other infrastructures: this section looks at the operation of some small hydroelectric plants and the concession of an irrigation zone in Navarra (Spain).
- Specific buildings: this covers the operation of a variety of properties such as hospitals, courthouses and cultural centers.

Spain

- **Cogeneración Villaricos** in the province of Almeria, and **Aprovechamientos Energéticos Furesa** in Murcia. Both these cogeneration plants specialize in the generation of electricity and the use of heat to produce water or steam. The electricity is then sold, while the heat is used by the host industry.
- Abengoa operates the concession of the **irrigation zone of the Navarra canal**, levying an irrigation charge for this activity.
- For over 10 years, Abengoa has managed the **Cerrato hydroelectric power station** on the Pisuerga river and the **mini plants on the Aragon and Catalonia Canal**.
- Abengoa has a 30-year concession for **Hospital del Tajo**, covering 58,000 m².
- The company owns the surface rights for construction, maintenance and operation, through a lease to the Autonomous Government of Catalonia, of the **courthouses at Olot, Cerdanyola and Santa Coloma de Gramanet**.

06.2 Infrastructures under Concession

Mexico

- Commencement of operation of **the largest cogeneration plant in Mexico, with 300 MW**, located at the facilities of the state-owned company Petróleos Mexicanos (Pemex) in Tabasco. Comprising two gas turbo generators with their respective electric generators and two heat recovery steam generators, it generates up to 800 t/h of steam to supply electricity to the Nuevo Pemex gas processing complex, feeding surplus power to the Mexican power grid. Abengoa will undertake operation and maintenance of this plant for 20 years.

With the construction now having been completed, Abengoa will operate the plant for 20 years.



- Abengoa continues with the concession of the **Centro Cultural Mexiquense de Oriente (CCMO)**; the company's first project of the "specific building" category in Mexico. The complex, with an operational term of 20 years, sits on 17 ha of land and boasts 35,000 m² of museums, libraries and workshop modules with over 60 classrooms, an administrative building, auditoriums, an open-air theater, a concert hall with seating for 1,200 people, cafeteria, restaurant and parking spaces for over 1,000 vehicles.

06.2 Infrastructures under Concession

New concessions under construction

Abengoa is working on different projects under concession:

- In **Mexico**, Abengoa will operate the 25-year concession of the **El Zapotillo aqueduct**, in the construction phase, for the National Water Board (Conagua).
- In **Uruguay**, Abengoa is building **three wind farms for the state electric utility (UTE) that will operate for 20 years**, with capacities of 50 MW (in Cuchilla de Peralta, Tacuarembó), 50 MW (in the outskirts of Trinidad, Flores) and 70 MW.
- In **Brazil**, Abengoa will operate the 18-year concession of the future **Hospital of the northern zone of Manaus**, of 30,000 m².
- In **Spain**, Abengoa will operate the 40-year concession of the **Costa del Sol Hospital** located in Malaga. The company will be in charge of operating the 31,000-m² hospital area and managing the 25,000-m² parking lot (960 spaces).



06.3 Industrial Production

06.3 Industrial Production

Abengoa uses this line of business to group together its technology-heavy businesses, such as biofuels, industrial waste recycling, hydrogen technologies, marine power, energy crops and the development of solar technology. In these businesses, the company enjoys a strong position of leadership in the geographic markets where it operates.

Key financial figures	2013	2012	2011	Var. 13-12 (%)
Revenue (€ M)	2,029	2,138	2,225	-5.1
Ebitda (€ M)	241	91	152	165
Ebitda margin (%)	12	4,3	6,9	179

Key figures - bioenergy	2013	2012	2011	Var. 13-12 (%)
Installed capacity (ML)	3,175	3,175	3,175	0
Annual production (ML)	2,357	2,516	2,750	-6.3

Bioenergy business

Abengoa's bioenergy business carries out industrial production activities in the energy sector. It produces transport biofuels, bioethanol and chemical bioproducts that use biomass (cereal grains, sugarcane, cellulosic biomass, oleaginous seeds and solid waste) as feedstock. Biofuels, bioethanol and biodiesel, among others, are used in the production of gasoline additives (ETBE) or in direct blends with gasoline or gasoil, and they significantly reduce greenhouse gas (GHG) emissions and the emission of other polluting gases into the environment. The chemical bioproducts are identical to those produced by the petrochemical industry in terms of functionality, and, in turn, they are more sustainable and are appropriate for immediate replacement in current markets.

Bioethanol plant in Rotterdam, Europoort, Netherlands.



06.3 Industrial Production

The biofuel market is currently undergoing an important transformation, in which Abengoa finds itself as the leader in biotechnology, broadening its activities and diversifying the production of bioproducts. The company faces the challenge of reducing its exposure to market instability. The success and differentiation of Abengoa Bioenergía's business is based on proprietary technology and a solid portfolio of products made from natural resources.

In 2013, market behavior was unstable, as reflected in profit margins across-the-board. In the United States and Europe, good results in cereal harvests led to a drop in feedstock costs and thus in production costs, in turn leading to increased sales and revenue. Markets behaved favorably in Brazil, in spite of lower sales prices due to more products on the market, and thanks to changes to the tax system and increased gasoline prices in comparison with bioethanol.

The record sugar harvest worldwide led to a slight price drop, which later stabilized. Co-product animal feed markets have behaved similarly in recent years, showing a tendency to rise during the last months of the year.

Rally car running on E85 supplied by Abengoa.



06.3 Industrial Production

In this area, the corporate mission of Abengoa's bioenergy business is to engage in the following activities with a view to reaping the greatest returns for its stakeholders, industry and society at large:

- Fostering the sustainable development of the transport biofuel market while developing biochemical products through the use of renewable raw materials and environmentally-friendly technologies that help curb GHG emissions and cushion the environmental impact.
- Developing innovative technology solutions through continuous investment in R&D, leading to more efficient production processes, diversification of raw materials and the manufacture of new products.
- Creating value for shareholders by focusing business on the creation of profitable and sustainable technology solutions.
- Promoting the personal and professional development of its employees through continuous training and setting up and overseeing customized development objectives and plans.

Bioethanol plant in York, USA.



With this approach, it is the aim of Abengoa:

- To cement its position as one of the world's leading companies in the production and sale of biofuels and chemical bioproducts manufactured from renewable raw materials.
- To be recognized as a global leader in research and development, renowned for its technological innovation in converting biomass into fermentable sugars and then into bioethanol, biodiesel, kerosene-type jet fuel and chemical bioproducts, and in upgrading first-generation assets so as to diversify its product portfolio.
- To provide an unrivalled working environment to attract the finest human talent and maintain its excellent levels of business.
- To attract the interest and gain the respect of the financial community through sustained growth and technological innovation.

06.3 Industrial Production

Lines of business

Abengoa is Europe's leading biofuel producer (with a production capacity of 1,500 ML) and one of the main producers in the United States (1,440 ML) and Brazil (235 ML), with a grand total of 3,175 ML of installed production capacity distributed among 14 plants, operating in five different countries, spanning three continents. In addition, the first commercial 2G (second-generation) plant has been completed. Abengoa's bioenergy business Biomass of Kansas will have an annual production capacity of 100 ML of bioethanol produced from wheat, corn and herbaceous crops. These plants cater to the demands of global biofuel markets from practically any corner of the globe.

Bioethanol rail cars at the Abengoa's bioenergy business of Nebraska plant in the US.



Abengoa develops innovative technology solutions through continuous R&D investment. These solutions are put into practice in production processes, allowing the company to enjoy the same production costs as for conventional fossil fuels and to move into new chemical bioproducts.

With a view to using new raw materials as sources of carbon, the company's efforts focus on enzymatic hydrolysis and catalysis processes, with a view to diversifying the range of feedstocks from which biofuels and bioproducts can be produced. The main objective being pursued is to produce bioethanol from lignocellulosic inputs, chiefly different kinds of cereal straw and herbaceous crops.

The biotechnology sector uses genetically engineered microorganisms, leading to progress in the production of cellulase enzymes, biologically-based chemical substances and hi-tech fuels.

In addition, Abengoa offers a wide range of services, including technology licensing, project development, biomass supply and logistics, agricultural management of biomass/energy crops, construction management, operations management, product marketing, raw materials coverage and contribution margins.

06.3 Industrial Production

Projects by territory

In 2013, Abengoa developed its business in the projects of the commercial biomass-to-ethanol biorefinery (2G) in Hugoton (Kansas, USA) and the waste-to-biofuels (W2B) facility, in the pilot phase at the plant in Salamanca for the management of municipal solid waste (MSW). In addition, the company is working on the research and definition of the technology to produce n-biobutanol, which will diversify and add value at the first-generation plants.

The Abengoa's bioenergy business Biomass of Kansas 2G biomass-to-ethanol biorefinery, in Hugoton KS, USA.



06.3 Industrial Production

W2B project

The creation of municipal solid waste (MSW) is an inevitable result of human activity and its efficient management is a global need and one of the main challenges faced by modern society. The increasing global population and its consumption habits translate into the ever-increasing creation of waste, year upon year. In addition, the currently available solutions are all based on dumping, which does nothing to eliminate MSW, but merely confines it, or incineration, with its considerable environmental impact.

Moreover, approximately 60 % of MSW is of organic origin, while 15 % is plastic. The organic matter content may be as high as 80 % in Latin America and, added to the negative costs of MSW in comparison to other raw materials such as biomass, MSW therefore seems to be an area of opportunity.

The aim of the waste-to-biofuels (W2B) project is to develop a comprehensive solution for MSW management, permitting, on the one hand, the optimal use of its components through conversion to biofuels and energy and, on the other hand, providing a more sustainable and efficient alternative to the final disposal of waste at landfill sites.

W2B technology demonstration plant at Biocarburantes de Castilla y León, Spain.



The W2B project is currently in the demonstration phase, for which purpose the biomass biorefinery located in Babilafuente (Salamanca) has been modified to be able to also process MSW and thus validate the complete ethanol from organic waste production chain. The operation of the demonstration plant provides valuable information for the design and subsequent operation of the commercial plant, thereby permitting the industrialization of this technology.

The use of W2B technology is not only limited to the organic part of MSW. The remaining recyclable components (metals, aluminum, plastics) and non-recyclable components are also treated. Using the appropriate technology it is possible to obtain biodiesel, and generate steam and electricity from these components.

06.3 Industrial Production

It is an innovative process that will revolutionize MSW management. Through the use of MSW technology, it is possible to evaluate the output and production costs derived from the different processes from which second-generation bioethanol is produced.

At the same time, laboratory work serves to gain further knowledge on waste at different sites, following the company's strategy to provide a global solution at the locations where the company operates.

Catalysis: n-biobutanol

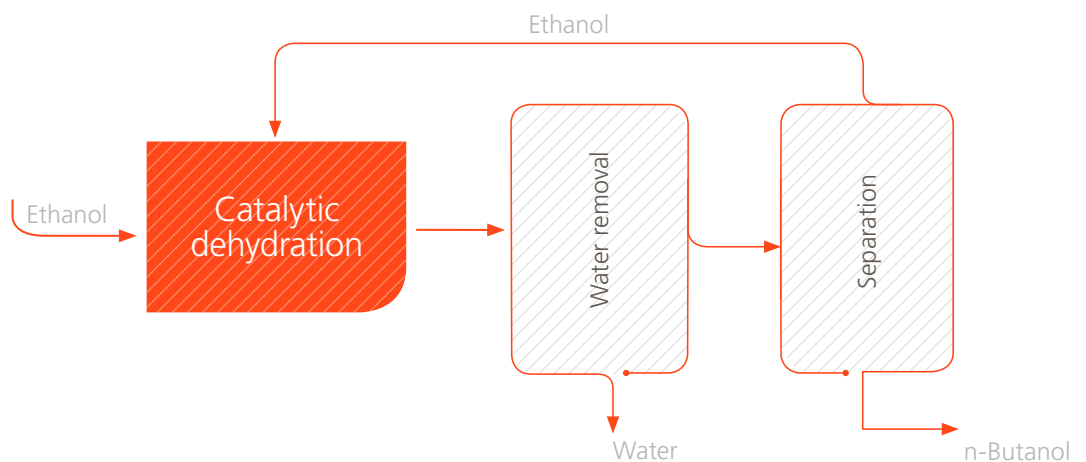
In order to diversify and add value at the first-generation plants, Abengoa focuses its efforts on the research and definition of technology for the production of n-biobutanol, which is a product widely used in the chemical market. The main application of n-butanol is as an acrylate for coatings, lacquers and enamel paints, as acetate and glycerol ester, and as a direct solvent.

N-butanol was first produced by ABE fermentation (~1920) until it was surpassed by the petrochemical route, with this being the most important route from 1950 until now. Several companies have recently shown interest in improving the ABE process to make it competitive. Abengoa Bioenergía is committed to using the company's existing assets for the catalytic production of n-biobutanol from bioethanol, which is a brand-new and more efficient process. This solution therefore permits the construction of an adjacent plant, affording flexibility in obtaining ethanol, butanol or a combination of both.

Petrochemical butanol is generally produced using the oxo process, where propylene reacts with carbon monoxide and hydrogen, forming a mixture of normal and iso-butylaldehyde, whose ratios depend on the catalyst and operating conditions. Both these isomers are then separated and hydrogenated to form normal and iso-butanol, as the main products.

The ABE process uses simple sugars as the raw material, used for fermentation in two stages, using a bacteria, which has significant disadvantages in comparison to other methods.

Abengoa's bioenergy business's biobutanol production process.



06.3 Industrial Production

The solution proposed by Abengoa for the production of n-biobutanol by catalysis affords significant advantages. The main element is the reactor where the bioethanol passes through the catalytic bed, forming n-biobutanol and other co-products. A separation process is used to separate the n-biobutanol from the other co-products, upon which it is purified to meet commercial specifications.

Having synthesized and patented the catalyst with a high degree of selectivity and conversion, the bench and pilot-scale technology has been successfully scaled, while managing to demonstrate the catalyst's stability.

Applying the knowledge gained in previous developments, a work methodology has been defined for analysis and quantification of the reaction products, leading to reliable results throughout all the different tests it has undergone. The obtained results afford the necessary knowledge to tackle the next phases of the project and to achieve the goal of industrial butanol production by 2015.

The production of biobutanol will create a renewable alternative to butanol produced from fossil fuels, reducing the CO₂ footprint to end users while opening the door for Abengoa's bioenergy business to the bioproducts market, mostly comprising chemical products of high added value.

Hydrogen

The European Parliament recently approved the proposal for a directive on the use of alternative fuels. This proposal includes the use of hydrogen as fuel for highway transport, and it calls on the EU member states to define strategies and set up hydrogen fueling stations. Abengoa's hydrogen area, whose purpose is the sustainable production of hydrogen and its use as a fuel, is ready to face the challenge, with new renewable hydrogen production systems and the use of fuel cells and hydrogen engines to convert this fuel into electric, thermal and mechanical energy.

The aim of Abengoa is to develop sustainable hydrogen production plants and systems, using different technologies (electrolysis, reforming, cracking, etc.), and to store this gas and use it as a fuel in high and low-temperature fuel cells, engines and turbines. The final application will vary in terms of customer needs, from stationary systems (cogeneration plants) to the naval and aerospace sectors. For such purpose it is developing technology in the areas in which it operates, through continuous investment in innovation, giving the company its own know-how portfolio with which it can offer custom-made solutions.

Abengoa's hydrogen area operates out of its headquarters in Seville and carries out projects in different countries. Its strategy is based on growth of sustained and continuous investment in innovation (close to €15 M in 2013), enabling it to develop a technological product portfolio to meet the demand of its customers.

In 2013, Abengoa completed the engineering of the last of the three systems developed for the S-80 submarine air-independent propulsion (AIP) system, being built by Navantia for the Spanish Navy. Construction of the bioethanol processing system (BPS) to supply hydrogen to the submarine's AIP is scheduled for completion next year. This BPS system will be connected to other already developed systems: the power adjustment system (PAS) and the AIP control system (AIPCS).

06.3 Industrial Production

Work has also been completed on the engineering of the molten carbonate fuel cell cogeneration plant to be installed at Abengoa's facilities in Torrecuellar (Seville). The construction of this plant will be completed in 2014. It will have a high-temperature fuel cell, using this technology and will supply 300 kW of electric energy and the same amount of thermal energy at the aforementioned facilities.



Energy Crops business

Abengoa uses this line of business to group together its technology-heavy businesses, such as biofuels, industrial waste recycling, hydrogen technologies, marine power, energy crops and the development of solar technology. In these businesses, the company enjoys a strong position of leadership in the geographic markets where it operates.

In terms of consequential changes, on an international level, to the energy matrices of countries dependant on fuel imports, mainly in Europe, and with the growing need for energy produced from renewable sources, the production of biomass is fast becoming an efficient alternative due to its cost-benefit ratio. Sources in the sector affirm that, by 2020, Europe will triple biomass imports from the Americas and Africa.

Abengoa's energy crops area is involved in the development, promotion and operation of sustainable projects in forestry services, production, transformation and marketing of forest biomass, creating value for the company's, employees, customers and other stakeholders, based on experience gained, research and innovation, and continuous improvement of its management system. The company's vertical integration business model covers the entire production chain, from biotechnology right up to the sale of the end product, and it enjoys the support and experience of Abengoa in engineering and construction, operation and maintenance, and forest logistics, enabling it to offer a reliable and sustainable service to the international market.

06.3 Industrial Production

In 2013, the company completed the first pilot plantation project for energy purposes and two research projects in Uruguay with results that can be extrapolated in other regions around the world. The company is developing projects for the production of wood pellets in southern Brazil and the southeast of the United States, and operations are expected to be replicated in other countries, which, given their geographic, climatic, water and infrastructure characteristics, have favorable conditions for this type of plantations.

Since 2011, Abengoa has invested over \$8 M in the development of energy crops, mainly in R&D and equipment, to provide forestry services in Uruguay. Abengoa aspires to become the world's leading company in terms of biomass procurement, handling and marketing for energy purposes, through innovative biotechnological, industrial and logistics solutions, contributing toward sustainable development.

Abengoa carries out three activities in the area of energy crops:

1. Research and development.
 - Biotechnology applied to energy crop plantations.
 - Innovations in industry and logistics for energy crop plantations.

Abengoa offers custom-made and sustainable biotechnological solutions, which maximize the amount of harvested energy crops per hectare and facilitate productive and commercial integration. The company's program focuses on the selection, propagation, planting, production handling and harvesting of dendroenergy crops, geared toward the development of innovative technologies that support the planning and specialized management of forest plantations as a cost-effective and sustainable source of biofuels.

2. Production and marketing of biomass for energy, worldwide.
 - Planting of energy crops with species selected by the R&D area.
 - Development of pellet production projects, using existing biomass and energy crop plantations at different locations.

Abengoa has detected and developed business options related to the supply of biomass for energy purposes, including access to land, engineering, production and marketing of biomass in different forms. Wood pellet power generation projects are underway, using biomass, marketed at energy crop plantations, with projected uses for the production of solid biofuels, bioethanol and other energy bioproducts.

3. Forestry services and marketing of biomass in Uruguay: Since 1996, the company has provided services to the Uruguayan forestry sector and it sells biomass as an industrial energy source. The services include the harvesting, extraction and loading of wood with its own equipment, and in accordance with the parameters of an integrated management system (quality, environment, safety), certified since 2001. Forestry activities began in the same year on a national level.

In the area of R&D, in the coming years, the company will impulse the use of biotechnological tools applied in the selection and scaling up of tests, at locations such as Brazil and the US, to demonstrate the productive merits of the species selected for biomass used for combustion. Plans are also underway for the evaluation of the agricultural merit of candidate species for the production of second-generation bioethanol production.

In the industrial area of biomass production and transformation, the goal for 2014 is to structure the projects, including aspects ranging from financing to the signing of offtake agreements for the sale of wood pellets in Brazil and the US.

06.3 Industrial Production

Abengoa's main energy crop projects in 2013 were as follows:

- In Uruguay, the drive continues with the biotechnology R&D project, focused on energy crop plantations, where the company is working on agreements with academic institutions with the support of the National Research and Innovation Agency of Uruguay (Agencia Nacional de Investigación e Innovación de Uruguay, or ANII) and the National Institute for Agricultural Research (Instituto Nacional de Investigación Agropecuaria, or INIA). Plans are underway, in the short-term, to carry out demonstration testing.
- Since 2012, Abengoa has successfully provided services for the receipt, storage and supply of wood for one of the main cellulose companies in Uruguay, namely "Montes del Plata." In 2013, operations began at wood storage yards with an annual capacity of 4 MT, and harvesting and forestry agreements were renewed for a term of five years.
- Other projects in Uruguay, in the area of biotechnology applied to energy crop plantations, include:
 - The development of biotechnologies applied to clonal propagation and genetic selection of forest species.
 - Testing for the evaluation of forest species and clones, in three experimental areas.
 - The pilot-scale planting (50 ha) of different forest species, representing real conditions of the short rotation energy crop plantation model.
- On an international level, conceptual engineering has been developed, and estimates have been made for the works for the first pellet plants in the US and Brazil, in line with the company's progress in finalizing negotiations for three industrial pellet production projects and offtake agreements. Negotiations and financing will be finalized in 2014.





07

Abengoa and Innovation

07 Abengoa and Innovation

Summary	2013	2012	2011	Var. 13-12 (%)
Patent applications (cumulative)	261	200	151	31
Number of doctorate holders	85	49	36	73

Technological innovation: Source of sustainable development

The continuous growth of the world population, which is expected to reach 9 billion by the middle of this century¹, will mean a significant increase in the level of exploitation of resources such as water and fossil fuels as well as an increase in the creation of municipal and industrial waste. Environmental challenges posed by human activity, such as climate change², the exhaustion of resources and contamination of the biosphere, call for a change toward a more sustainable model.

To achieve sustainable growth implies tough technological challenges where Abengoa provides solutions through its R&D in the areas of energy and the environment.

In a bid to tackle the scarcity of water resources, Abengoa has developed technologies for the production of drinking water through desalination, potabilization and the reuse of industrial and household waters. This is made possible thanks to know-how and the development of different technologies based on improvements to operating conditions of filtration membranes, which are essential in order to achieve high levels of purity and quality in treated water.

Meeting these tough energy challenges head on, and considering that 80 % of the global energy system is based on fossil fuels, Abengoa offers solutions both for renewable electricity generation and for the substitution of fossil fuels for plant or organic fuels.

Since the 80s, Abengoa has been researching and developing technologies for the generation of electric energy from renewable sources. The development of solar power has made Abengoa a global driving force in the two main existing solar thermal technologies, namely the parabolic trough and tower systems. At the Solúcar Complex, the world's largest mixed R&D center located in Seville (Spain), there is an ongoing demonstration of solar technologies, enabling us to be increasingly more efficient in order to achieve competitive costs with fossil fuels, such as Solugás, which is a concept that combines solar generation with a Brayton cycle using air as the heat transfer fluid, or DSG (direct steam generation) technology that permits the elimination of the intermediate heat transfer fluid in the solar field. Technologies, now commonplace on the market, have been demonstrated at this laboratory, such as the superheated steam tower technology, as applied at the Khi Solar One plant in South Africa or the TES (thermal storage system) in use at Solana, the world's largest solar plant with 280 MW and 6 hours storage, making this technology manageable from a network point of view.

Note 1 National Institute for Demographic Studies.

Note 2 IPCC Fifth Assessment Report Climate Change 2013.

07 Abengoa and Innovation

Solugas demonstration plant in Solucar platform, Seville.



In the area of biofuels, in 2013 in Hugoton, Abengoa began operating a biorefinery with a production capacity of 95 ML of ethanol per year from 350,000 t of biomass. The technology used at this plant has been developed and tested by Abengoa over the last 10 years at the 2G demonstration plant located in Salamanca, Spain.

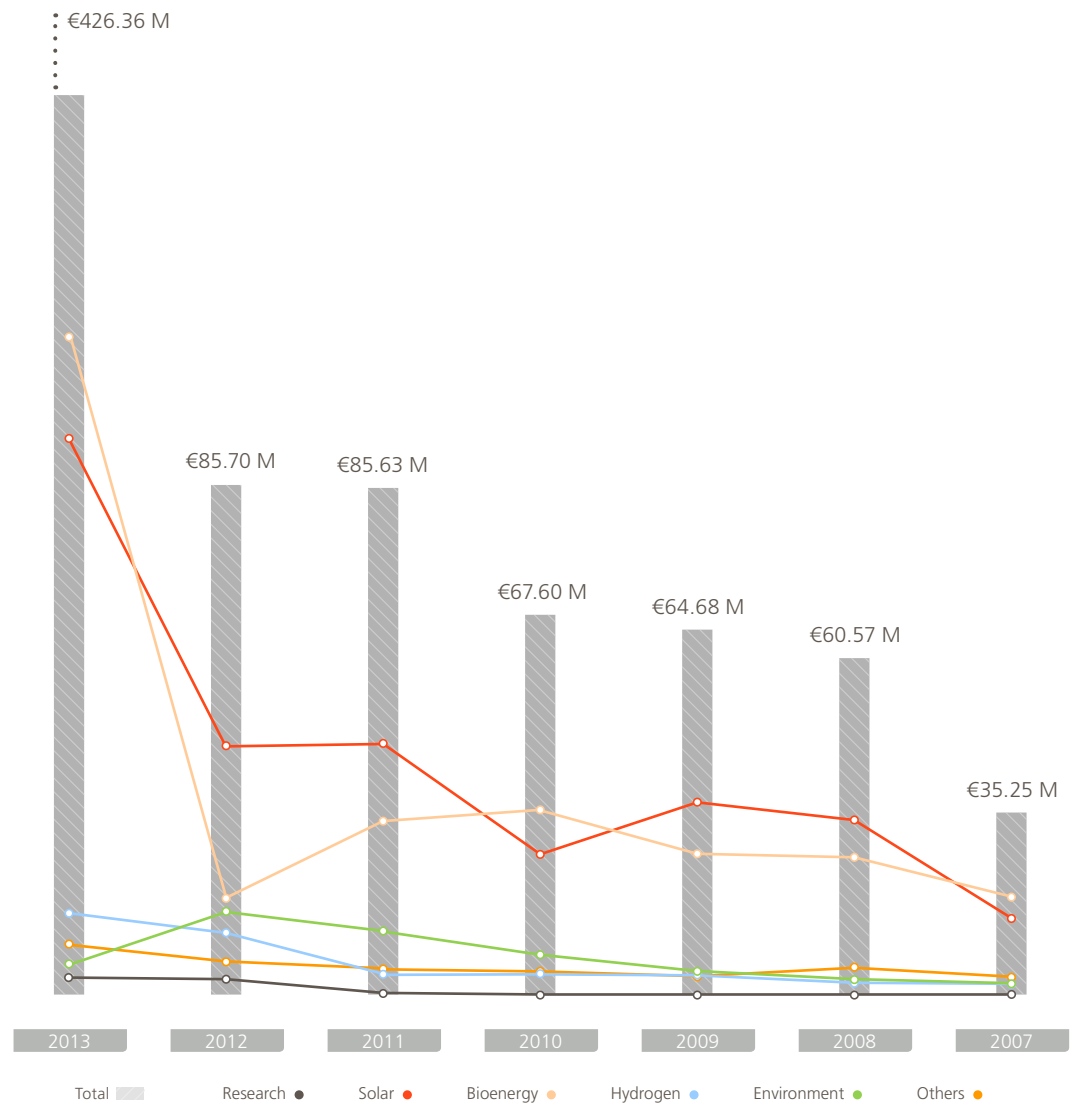
Abengoa is exploring the bio-refining concept with research in different processes to produce high value-added bioproducts from biomass. Thanks to R&D in this area, Abengoa will be able to produce n-butanol from biomass with the further advantage of being able to use the same facilities used for conventional biofuels. This means that the products of conventional plants are diversified while avoiding market volatility.

Another tough environmental challenge is the increase in municipal solid waste generated by densely populated urban areas together with stricter landfill laws. Abengoa, making use of its technological development in the area of biofuels, is researching the valorization of municipal solid waste (MSW). By combining hydrolysis- and fermentation-based treatments of organic matter found in waste for the production of ethanol and the recycling of materials for subsequent reuse, Abengoa will manage to significantly reduce the volume of landfill waste while lessening the reliance on petrol for the production of ethanol.

07 Abengoa and Innovation

Abengoa's technological development has been possible thanks to its continued commitment to R&D as the driving force behind growth. This is why Abengoa continues to invest in R&D and innovation. In 2013, Abengoa invested €426.36 M, representing approximately 5.8 % of its sales. This figure does not factor in investment in innovation, which, though not readily quantifiable, is a key element of Abengoa's strategy.

Abengoa remains committed to R&D and innovation, ramping up its investment year after year.



07 Abengoa and Innovation

Technology as the foundation for growth

Abengoa's business strategy and technology strategy nurture each other. The business strategy identifies new market needs and opportunities that require technological development, while the technology strategy provides the necessary know-how for the development of new products and services, reaching new markets. Thus, thanks to technology, Abengoa is able to boost its competitive advantage in its lines of business.

Technology is the driver of growth enabling Abengoa to offer more high-tech and competitive products and services. Research, development and innovation are conceived as the main source of competitiveness. These activities are geared towards the creation of competitive advantages that build barriers preventing the entry of the Abengoa's competitors, affording technological leadership in its products and services, and in the company's future businesses. The organization of R&D at Abengoa is headed by Abengoa Research together with the technology groups of the company's different areas. Abengoa Research is in charge of defining and managing the company's technology strategy, centralizing the research and development of all Abengoa's technologies, thus making good use of synergies and affording scientific and technical capabilities to all areas of activity in which the company operates.

In order to achieve the continued alignment the technology strategy with the business strategy, R&D&Innovation projects are under constant review through an efficient management system that uses systematic tools known and developed by all members of the organization. The main tools include:

- TechValue: a tool that serves to evaluate the contribution of R&D towards the creation of competitive advantage by measuring the effects of R&D on cost reduction of Abengoa's products and services.
- R&D Value: economic valuation of technological research and development, taking into account the markets and their progress, obtaining the value of each R&D program and the portfolio as a whole.
- Stage-gate: tool for the management of R&D projects, where decisions are made in each phase on whether to continue, suspend or abandon projects.

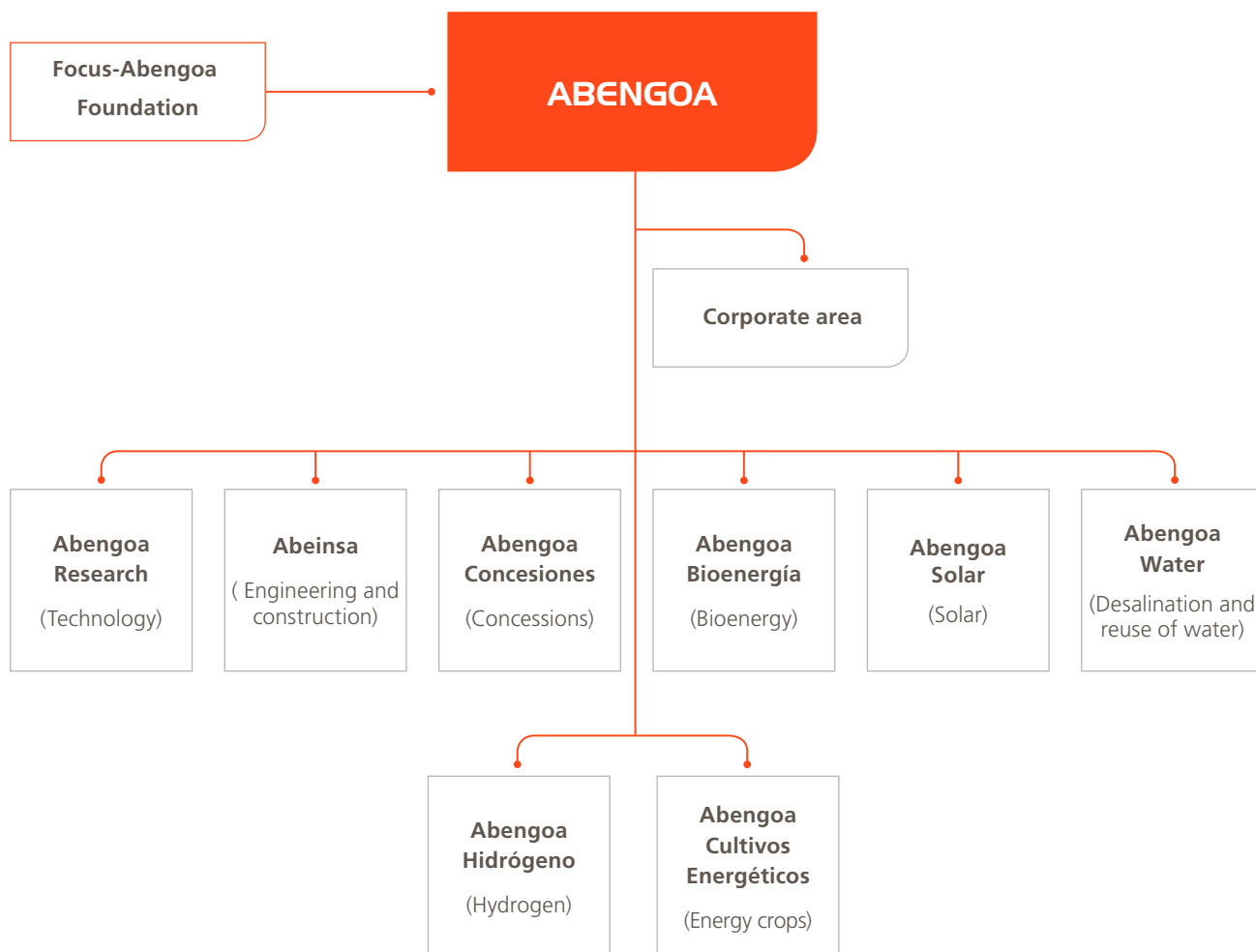
This serves to improve the decision-making process through a portfolio of ongoing projects and with resources earmarked for the most attractive projects.



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Management Structure

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Presidency

Executive Chairman	Felipe Benjumea Llorente	Campus Palmas Altas, Energía Solar, 1 (Palmas Altas) 41014 Seville (Spain)	T. +34 954 93 71 11 T. +34 954 93 71 12
Executive Vice-Chairman	José B. Terceiro	Campus Palmas Altas, Energía Solar, 1 (Palmas Altas) 41014 Seville (Spain)	T. +34 954 93 71 11 F. + 34 954 93 70 05
Chief Executive Officer	Manuel Sánchez Ortega	Paseo de la Castellana 43, 28046, Madrid (Spain)	T. +34 954 93 71 11 F. +34 91 448 78 20
Chief Technical Officer	José Domínguez Abascal	Campus Palmas Altas, Energía Solar, 1 (Palmas Altas) 41014 Seville (Spain)	T. +34 954 93 71 11 F. +34 955 41 33 71

Corporate area

Institutional Relations, Assistant to the Chairman	Germán Bejarano García	Campus Palmas Altas, Energía Solar, 1 (Palmas Altas) 41014 Seville (Spain)	T. +34 954 93 71 11 F. +34 914 48 65 64
Chief Financial Officer	Jesús Ángel García-Quílez Gómez	Paseo de la Castellana 43, 28046, Madrid (Spain)	T. +34 954 93 71 11 F. +34 91 448 78 20
Executive Vice President Capital Markets and Investor Relations	Bárbara Zubiría Furest	Paseo de la Castellana 43, 28046, Madrid (Spain)	T. +34 954 93 71 11 F. +34 91 448 40 25
Consolidation	Enrique Borrajo Lovera	Campus Palmas Altas, Energía Solar, 1 (Palmas Altas) 41014 Seville (Spain)	T. +34 954 93 71 11 F. +34 955 41 33 71
Internal Audit	L. Enrique Pizarro Maqueda	Campus Palmas Altas, Energía Solar, 1 (Palmas Altas) 41014 Seville (Spain)	T. +34 954 93 71 11 F. +34 955 41 33 71
Planning and Control	Juan Carlos Jiménez Lora	Campus Palmas Altas, Energía Solar, 1 (Palmas Altas) 41014 Seville (Spain)	T. +34 954 93 71 11 F. +34 955 41 33 71
Legal Services	José Fernando Cerro Redondo	Paseo de la Castellana 43, 28046, Madrid (Spain)	T. +34 954 93 71 11 F. + 34 914 48 40 25
Strategic Development	Izaskun Artucha Corta	Paseo de la Castellana 43, 28046, Madrid (Spain)	T. +34 954 93 71 11 F. + 34 914 48 40 25
Appointments and Remunerations	José Marcos Romero	Campus Palmas Altas, Energía Solar, 1 (Palmas Altas) 41014 Seville (Spain)	T. +34 954 93 71 11 F. +34 955 41 33 71
Human Resources	Álvaro Polo Guerrero	Campus Palmas Altas, Energía Solar, 1 (Palmas Altas) 41014 Seville (Spain)	T. +34 954 93 71 11 F. +34 955 41 33 71
Organization and Budgets	Luis Fernández Mateo	Campus Palmas Altas, Energía Solar, 1 (Palmas Altas) 41014 Seville (Spain)	T. +34 954 93 71 11 F. +34 955 41 33 71
Information Systems	Enrique Aroca Moreno	Campus Palmas Altas, Energía Solar, 1 (Palmas Altas) 41014 Seville (Spain)	T. +34 954 93 71 11 F. +34 955 41 33 73
Marketing	Ana Arderius Carbajal	Paseo de la Castellana 43, 28046, Madrid (Spain)	T. +34 954 93 71 11 F. + 34 914 48 40 25
General Secretary's Office	Miguel Ángel Jiménez-Velasco Mazarío	Campus Palmas Altas, Energía Solar, 1 (Palmas Altas) 41014 Seville (Spain)	T. +34 954 93 71 11 F. +34 955 41 33 71
Communication	Patricia Malo de Molina Meléndez	Paseo de la Castellana 43, 28046, Madrid (Spain)	T. +34 954 93 71 11 F. + 34 914 48 40 25
Risk Management	Rogelio Bautista Guardado	Campus Palmas Altas, Energía Solar, 1 (Palmas Altas) 41014 Seville (Spain)	T. +34 954 93 71 11 F. +34 955 41 33 71
Corporate Social Responsibility	María Victoria Sánchez Jiménez	Paseo de la Castellana 43, 28046, Madrid (Spain)	T. +34 954 93 71 11 F. + 34 914 48 40 25
Quality and Environment	José Manuel Delgado Rufino	Campus Palmas Altas, Energía Solar, 1 (Palmas Altas) 41014 Seville (Spain)	T. +34 954 93 71 11 F. +34 955 41 33 71
General Secretary's Office for Sustainability	Fernando Martínez Salcedo	Campus Palmas Altas, Energía Solar, 1 (Palmas Altas) 41014 Seville (Spain)	T. +34 954 93 71 11 F. +34 955 41 33 71

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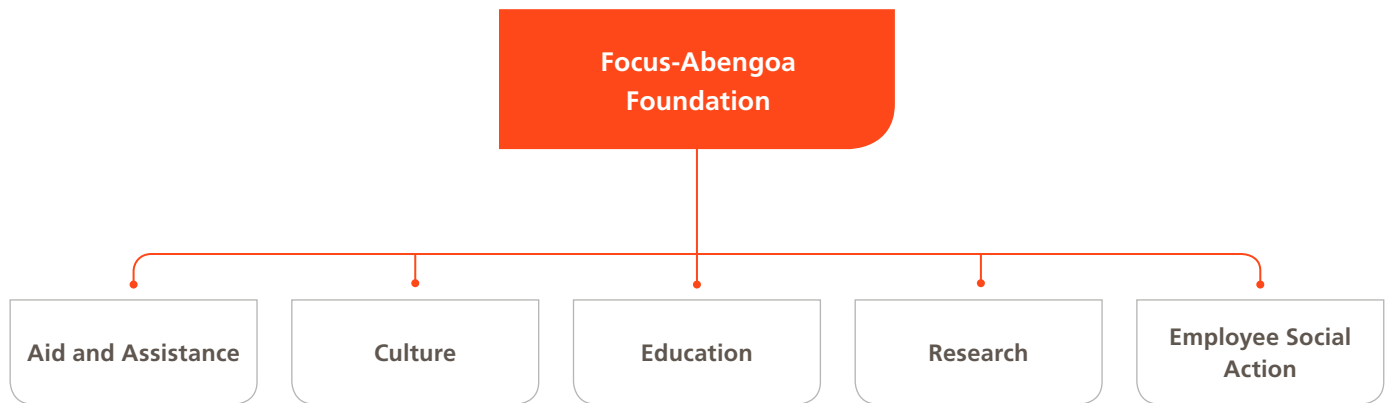
Technology

Abengoa Research	Manuel Doblare Castellano	Campus Palmas Altas, Energía Solar, 1 (Palmas Altas) 41014 Seville (Spain)	T. +34 954 93 71 11 T. +34 954 41 33 71
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Business areas

Engineering and Construction	Alfonso González Domínguez	Campus Palmas Altas, Energía Solar, 1 (Palmas Altas) 41014 Seville (Spain)	T. +34 954 93 71 11 T. +34 954 93 70 05
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Bioenergy	Javier Garoz Neira	16150 Main Circle Drive, Suite 300 Chesterfield, St. Louis, MO 63017-4689 (US)	T. +1 636 728 0508 T. +1 636 728 1148
Solar	Armando Zuluaga Zilbermann	11500 W 13th Ave, Lakewood, CO 80215 (US)	T. +1 202 857 7812 T. +1 303 928 8510
Desalination and Reuse of Water	Carlos Cosín Fernández	Paseo de la Castellana 43, 28046, Madrid (Spain)	T. +34 954 93 71 11 T. +34 91 528 43 17
Hydrogen	Javier Brey Sánchez	Campus Palmas Altas, Energía Solar, 1 (Palmas Altas) 41014 Seville (Spain)	T. +34 954 93 71 11 F. +34 955 41 33 73
Energy Crops	Alejandro Fynn	Avenida Uruguay, 1283, 11100 Montevideo (Uruguay)	T. +59 829 02 21 20 F. +59 829 02 09 19

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Abengoa's governing boards represented by:			
Chairman	Felipe Benjumea Llorente	Campus Palmas Altas, Energía Solar, 1 (Palmas Altas) 41014 Seville (Spain)	T. +34 954 93 71 11 F. +34 954 93 70 05
	José B. Terceiro	Campus Palmas Altas, Energía Solar, 1 (Palmas Altas) 41014 Seville (Spain)	T. +34 954 93 71 11 F. +34 954 93 70 05
Vice-Chairman	José Borrell Fontelles	Campus Palmas Altas, Energía Solar, 1 (Palmas Altas) 41014 Seville (Spain)	T. +34 954 56 26 96 F. +34 954 93 70 05
Managing Director	Anabel Morillo León	Plaza de los Venerables, 8 41004 Seville (Spain)	T. +34 954 93 71 11 F. +34 954 56 45 95
Director	Juan Carlos Jiménez Lora	Campus Palmas Altas, Energía Solar, 1 (Palmas Altas) 41014 Seville (Spain)	T. +34 954 93 71 11 F. +34 955 41 33 71
Secretary	Miguel Ángel Jiménez-Velasco Mazarío	Campus Palmas Altas, Energía Solar, 1 (Palmas Altas) 41014 Seville (Spain)	T. +34 954 93 71 11 F. +34 955 41 33 71