

# ACCIONA ENERGY'S COMMITMENT

ACCIONA Energy is the largest global operator dedicated to the production of electricity exclusively from renewable sources.



## ACCIONA ENERGY IN 2017

<b>1,631</b> EMPLOYEES	<b>9,022 MW</b> RENEWABLE INSTALLED POWER	<b>20,431 GWh</b> PRODUCED
WITH ASSETS IN <b>15</b> COUNTRIES ON FIVE CONTINENTS	<b>EUR 1,737 million</b> REVENUE	<b>EUR 726 million</b> EBITDA

## ACCIONA ENERGY'S SUSTAINABILITY PERFORMANCE

Below are the main aspects identified in 2017 as the most relevant to ACCIONA Energy's stakeholders. Each aspect describes the sustainability performance of the division during the year.



(1). Performance in Human Labour Rights and Ethics and Anti-corruption are described in the chapter 'Corporate governance'.

## HIGHLIGHTS OF 2017 IN THE THREE DIMENSIONS

### ECONOMIC

- The customer satisfaction rate is 100 %.
- 94 % of local suppliers.
- A total innovation figure of EUR 66.3 million.

### SOCIAL

- Implementation of Social Impact Management in 13 projects.
- Employee severity and accident frequency rates have been reduced.
- More than 265,000 beneficiaries of the social initiatives carried out in projects.

### ENVIRONMENTAL

- Production of renewable energy for the equivalent of 6 million homes.
- Avoided 14.4 million tonnes of CO<sub>2</sub> emissions into the atmosphere.
- 8 projects registered for Clean Development Mechanisms (CDM).

## INVESTING EXCLUSIVELY IN RENEWABLE ENERGIES

### FIGHT CLIMATE CHANGE WITH RENEWABLE ENERGIES

The most remarkable characteristic of ACCIONA Energy is its firm and, convinced choice to produce energy only from renewable sources. This is the basis of the business model, a fact that produces a positive impact and provides an intrinsic value in the fight against climate change.

Investment in renewable energies, thanks to its technical and economic competitiveness, contributes to reducing CO<sub>2</sub> emissions that cause climate change, and is presented as the best sustainable energy solution in the long term. It should be noted that ACCIONA Energy, which due to the nature of its activity is not a relevant emitter, participates in achieving the carbon neutrality objective for the whole group, offsetting 100 % of its generated emissions (48,508 t CO<sub>2</sub>e in 2017) .

TABLE 1

### Emissions avoided by country through the generation of renewable electricity in 2017

COUNTRIES WITH PROPRIETARY ASSETS	INSTALLED CAPACITY (MW)	PRODUCTION (GWh)	EMISSIONS AVOIDED (t CO <sub>2</sub> )
United States	785	2,236	1,506,582
Australia	303	889	777,022
Canada	181	467	334,921
Croatia	30	78	54,720
Italy	156	252	138,802
Hungary	24	53	38,723
India	164	304	285,975
Costa Rica	50	225	149,243
Chile	291	390	303,083
South Africa	232	577	615,865
Portugal	166	386	252,253
Mexico	641	1,835	1,042,420
Poland	101	210	178,017
Spain	5,901	12,529	8,682,101
<b>TOTAL</b>	<b>9,022</b>	<b>20,431</b>	<b>14,359,725</b>

ACCIONA Energy produces and sells renewable energy only, helping to displace fossil fuels in national electricity mixes. Within the framework of the 2020 Sustainability Master Plan, ACCIONA Energy committed to investing \$2,500 million in the 2016-2020 period in renewable generation to reach a total capacity of 10,500 MW in order to avoid the emission of more than 20 million tonnes of CO<sub>2</sub> per year. In 2017, ACCIONA reached 9,022 MW of installed capacity and avoided the emission to the atmosphere of a total of 14.4 million tonnes of CO<sub>2</sub>.

The production of clean and emission-free energy that supplies the equivalent of some six million homes across the planet is achieved in an increasingly competitive manner, thanks to a permanent commitment to continuous improvement and innovation focused on enhancing the efficiency of its processes and the excellence of its technological solutions.

With more than 20 years of experience in the sector, it is present in the main renewable technologies, covering activities that comprise the entire value chain: development, engineering and construction; exploitation, operation and maintenance, and energy commercialisation.

### REGULATORY MECHANISMS: TRADING OF CO<sub>2</sub> EMISSION RIGHTS

During 2017, ACCIONA Energy had five solar thermal facilities<sup>28</sup> subject to the EU emission trading scheme, the only ACCIONA centres subject to such regulations. These facilities, which, although renewable, can use natural gas to support some of their processes, such as rapid preheating, have the best techniques available to minimise their CO<sub>2</sub> emissions into the atmosphere.

TABLE 2

#### Facilities subject to European Emissions Trading System (EU ETS) in 2017

FACILITY	EMISSIONS VERIFIED IN 2017 (t CO <sub>2</sub> )
Termosolar Alvarado	2,243
Termosolar Palma del Rio I	333
Termosolar Palma del Rio II	383
Termosolar Majadas	2,529
Termosolar Orellana	1,028

Note: in 2017, it has not been necessary to acquire emission credits.

Moreover, ACCIONA actively participates in the development of projects associated with the fight against climate change, and supports the transfer of clean technologies through the use of flexible mechanisms, such as the Clean Development Mechanism (CDM). In 2017, ACCIONA undertook 8 CDM projects in Mexico, India, Chile and Costa Rica, for a total of almost 750 MW of renewable power installed. The company also plays a role in the voluntary carbon market through the Verified Carbon Standard (VCS) programme, with 2 wind power projects in the US with a joint capacity of 255 MW.

### SAFETY AND QUALITY OF SUPPLY AS A MATTER OF CONFIDENCE WITH CUSTOMERS

Safety and quality of supply is a priority for ACCIONA Energy. Through its control, supervision and permanent operation (24 hours a day, 365 days a year), the Energy Renewable Energy Control Centre (CECOER) guarantees the maximum availability and quality of energy, in a predictable form and in compliance with the current legislation in each of the countries in which it operates.

(28) At the end of February 2018, ACCIONA reached an agreement for the sale of its five thermosolar plants in Spain to CotourGlobal plc.



### Punta Palmeras wind farm. ACCIONA Energy Chile

Two plans have been implemented to manage the demand of this contract, consisting of the supply of wind power to a client:

- Internally: implementation in the wind turbines that have the 'pitch controlled' system (change of pitch angle), which generates a greater degree of control of power injections to the network, as well as better managing the reductions requested by the system coordinator.
- Externally: the park has been incorporated into the Generation Reduction/ Disconnection Scheme, which has protected it from any unforeseen disconnections but it has received reduction orders.

## ACCIONA ENERGY CERTIFICATES

- 100 % MW installed certified in ISO 9001 and ISO 14001<sup>1,2</sup>.
- 100 % commercialisation and sale of renewable energy with guarantee of origin accredited by the National Markets and Competition Commission (CNMC, as per its Spanish acronym).

### NEW DEVELOPMENTS IN 2017

- Adaptation and certification of Quality and Environment management systems in ISO 9001: 2015 and ISO 14001: 2015 in all countries, with the exception of Australia (scheduled for 2018).

Note 1: Certifiable MW is understood to be any installation in the O&M phase one year after its start-up and owned by ACCIONA Energy.

Note 2: kW Tarifa wind farm is in the repowering phase, so its MW are not counted as 'certifiable MW'. In Mexico this year, the certifications of Ventika I and Ventika II wind farms (third-party facilities) have been dispensed with.

## LONG-TERM AGREEMENTS

The competitiveness of renewable technologies, the interest of companies to ensure an energy supply at a stable price over time and corporate policies against climate change have come together in a virtuous circle that makes the corporate purchase of green energy a powerful lever in the transition to the decarbonised economy.

In this sense, the company has continued to reinforce its strategy of selling renewable energy to large corporate clients that want to reduce their carbon footprint. In 2017, through the PPA (power purchase agreement) modality, ACCIONA Energy reached agreements with Google and Falabella, among others, to which it will sell long-term renewable energy, in a business segment in which it expects to register significant growth in the coming years.

#### RELATIONSHIP WITH THE CUSTOMER AND SERVICES AT THEIR DISPOSAL

ACCIONA Energy, through its subsidiary ACCIONA Green Energy Developments, manages the sale of energy, of 100 % renewable origin, produced by the group's facilities, as well as that of other producers of the Special Regime, who benefit from the technical capacity and group experience, adapted to the customer's needs.

ACCIONA's marketing activity also provides its customers with support and assistance that goes beyond the mere sale of electricity, in a bid to offer them the most appropriate contracting method and optimise their electricity bill. The main associated services include the consultation of the consumption history or the price forecast; downloading of invoices and information related to avoided CO<sub>2</sub> emissions or 24/7 telephone service. These online services are available to all customers, of whom 90 % make active use of them.

In this regard, the company has developed several initiatives focused on helping its customers improve their load factor, which are included in the offers:

- For all the contracts of the commercialisation activity, ACCIONA uses the same tariff structure, with periods of six hours, which encourage the management of the demand.
- There are agreements with large customers to grant discounts when they modify their regular demand habits within a tariff period.

#### Customer satisfaction and loyalty

The overall customer satisfaction rate of the division is 100 %. Some indicators to be mentioned in respect to customer satisfaction include:

- ACCIONA Green Energy: annually selects the most representative customers and holds an individual meeting with them to address the perceived quality. In 2017 it set the objective of obtaining a 7.5 (out of 10) in the average rating of its customers and it achieved a 7.75; thanks to measures such as: proactive offers to current customers, superior flexibility to the competition in offering new products, personalised advice to close variable-price products and conversion to a fixed price.
- 86 % of ACCIONA Green Energy 2016 customers renewed their contract for 2017, representing an increase compared to the previous year.
- Objectives regarding satisfaction in the countries: in Mexico, 100 % customer satisfaction was achieved, higher than the proposed target of 85 %. And in Costa Rica worked was carried out to improve customer feedback in the satisfaction survey, having achieved 100 %.

#### CONTINUOUS IMPROVEMENT

In 2017, ACCIONA Energy created the Business Excellence unit with the aim of improving quality and customer orientation. It also launched 20 improvement groups with the aim of identifying and implementing innovative solutions that also work on managing risks.

ACCIONA SETS  
QUANTIFIABLE  
OBJECTIVES AS  
PART OF ITS  
COMMITMENT  
TO ONGOING  
IMPROVEMENT  
AND CUSTOMER  
SATISFACTION

For all projects under construction, a system for capturing events has been implemented; these are analysed individually and can lead to lessons learned, if approved by the Improvement Committee. In 2017, more than 300 events were identified.

### PROJECT FOR THE IMPROVEMENT OF WIND OPERATIONS

Developed with the objective of making a diagnosis of the business operating model and the organisational structure of the wind production area and, based on the results, producing a model proposal that allows an improvement from an organisational point of view, as well as that of processes and tools.

As a result, 10 lessons have been identified that will be implemented as good practices in 2018, in the following areas: planning, standardisation of work, material kits, stock improvement .

## HEALTH AND SAFETY

At ACCIONA Energy, the main risks for health and safety derive from its two main activities, construction, and the operation of renewable energy facilities.

The business has an Integrated Management System for the entire division, with guidelines that set out the minimum health and safety requirements to be met by all its companies and countries. This system is certified in compliance with the OHSAS 18001 standard.

Within Energy there is a Health and Safety Commission, which offers support to all employees in Spain, with the equal participation of company management and employee representatives. The commitment of the division to health and safety applies to all levels and has a direct impact on the performance of employees.

Since 2015, the strategy has been strengthened in terms of the commitment and leadership of the company's management in matters of health and safety, consolidating the QESIP (Quality, Environment and Safety Improvement Plan) programme in the area of Engineering and Construction. Some of the actions highlighted within the QESIP programme are:

- 5 minutes of Safety: a daily practice at the beginning of the day in which the head of the work centre conveys a series of guidelines to be taken into account.
- Preventive observations: practice of inspection and control of safety conditions in a work centre, carried out by the command line, beyond the personnel dedicated exclusively to the OHS.
- Pre-Job Briefing: practice of planning and prior control to perform a job by the people who are going to execute it.

THE PERMANENT  
CONCERN  
FOR HEALTH  
AND SAFETY  
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FOR EVERYDAY  
ACTIVITY

## THINK SAFE: INCREASING HEALTH AND SAFETY AWARENESS

The THINK SAFE programme, launched in 2017, aims to improve the preventive culture and health and safety awareness of all workers operating in an ACCIONA Energy facility.

The programme is based on the following pillars: safety is the first priority, all accidents are avoidable and safety is everyone's responsibility.

For each of these pillars, an action plan is established that includes:

- The attendance of the entire staff to awareness sessions in groups of 10 people. Videos are shown recreating a simulated accident and analyse the following concepts: presentation of the accident, initial consequences, family drama, causes and conclusion.

After the initial session, the employee receives a reminder after three months and after six months.

- The promotion of the report of near-miss accidents that contribute to the greatest number of unsafe conditions and allow the proper corrective actions to be established.
- Access by all stakeholders to 'safe practices', based on knowledge and experience. Includes the publication on the ACCIONA Energy website of short videos with good practices or Safety Alerts after an incident.

All initiatives carried out ultimately aim to reduce the division accident rates. ACCIONA Energy's own employee frequency rate has been reduced slightly compared to the previous year. It should also be noted that the severity rate has been reduced considerably. However, absenteeism has increased, from 0.07 to 0.84. Also, in 2017, regrettably there was a fatal accident at ACCIONA Energy Mexico.

TABLE 3

### Evolution of accident rate indicators for ACCIONA Energy employees

	SEVERITY RATE <sup>1</sup>				FREQUENCY RATE <sup>2</sup>			
	2014	2015	2016	2017	2014	2015	2016	2017
Energy	17.6	39.8	17.1	7.9	1.3	1.6	0.5	0.4

(1) OHS - SR: (No. days lost due to work accidents/hours worked) x 200,000.

(2) OHS - FR: (No. accidents with loss of work/hours worked) x 200,000.

TABLE 4

### Evolution of the rate of employee absenteeism at ACCIONA Energy

	2014	2015	2016	2017
Energy	0.10	0.16	0.07	0.84

Absenteeism rate: (number of days lost due to absenteeism/number of days worked) x 100

In ACCIONA Energy, the following challenges have been defined for 2018:

- Decrease the accident frequency rate with the loss of company and subcontracted employees by 5 %, and increase the report of near-misses in the application of QSE by 5 %.
- THINK SAFE: improve the preventive culture of all employees of the company, through participation in an awareness session, reaching 100 % of the workforce in 2018 in Spain and 30 % in the international staff working in wind and photovoltaic production.
- THINK SAFE: develop actions in Operational Control. Close all Priority actions in the task forces of India and Mexico, implement the Pre-Job Briefing programme, and develop a Health and Safety Excellence Audit model.

As of the date of this report, ACCIONA Energy holds the chairmanship of the Management Committee of the Global Wind Organisation (GWO), which has developed a standard for basic security training that covers the following modules: First Aid, Load Handling, Fire Extinction, Working at Heights and Survival on the Sea. ACCIONA Energy is a member of the Safety Committee of the European Wind Association and the American Wind Energy Association.

The Energy division prepares and publishes security alerts on its website regarding incidents from which lessons have been learned that may be of interest to the sector (<http://www.accion-energy.com/sustainability-innovation/health-and-safety/>).

#### HEALTH AND SAFETY IN ACCIONA'S ENERGY SUPPLY CHAIN

Due to the nature of the division's activities, the commitment to health and safety extends to its supply chain.

Every supplier of ACCIONA Energy is subject to a health and safety performance assessment before being hired. If the result is poor, it is urged to carry out an audit to analyse any shortcomings and it must present an action plan that corrects them. Depending on the commitment of this action plan, the OHS department can refuse to hire this new provider.

The business requires all employees to have a minimum level of training. In addition, a company computer tool has been developed for the management and control of health and safety training needs, as well as for its implementation.

ACCIONA Energy's work safety policy establishes that the requirements to prevent risks are the same for employees who work for subcontractors. For this purpose, the business managers carry out regular and close monitoring of the accident rate of the contractors, requiring immediate measures to be taken if the performance worsens.

The accident rate indicators for Energy contractors have decreased showing the efforts made by the business in terms of prevention.

CULTURE GEARED  
TOWARDS THE  
EFFECTIVE  
IMPLEMENTATION  
OF THE  
MORE STRINGENT  
AND RIGOROUS  
PREVENTION  
MEASURES  
ALWAYS UNDER  
THE PERSPECTIVE  
OF A 'ZERO  
INCIDENTS'  
TARGET

TABLE 5  
Evolution of accident indicators for ACCIONA Energy contractors

	SEVERITY RATE <sup>1</sup>				FREQUENCY RATE <sup>2</sup>			
	2014	2015	2016	2017	2014	2015	2016	2017
Energy	30.5	55	46.7	3.6	1.8	1.6	1.9	1.1

(1) OHS - SR: (No. days lost due to work accidents/hours worked) x 200,000.  
 (2) OHS - FR: (No. accidents with loss of work/hours worked) x 200,000.



**MORE INFORMATION**  
 on the methodology and implementation of SIM in the section "ACCIONA Social Impact Management" in the chapter 'Society'

### CONTRIBUTION TO SOCIETY

ACCIONA Energy contributes to the improvement of society with its projects. The impacts generated include different dimensions: effects on people, in community life or in the generation of wealth and employment in the region.

In 2017, there are three types of actions that manage and measure these impacts through Social Impact Management, the measurement of the socioeconomic and environmental impact and the social investment associated with the projects.

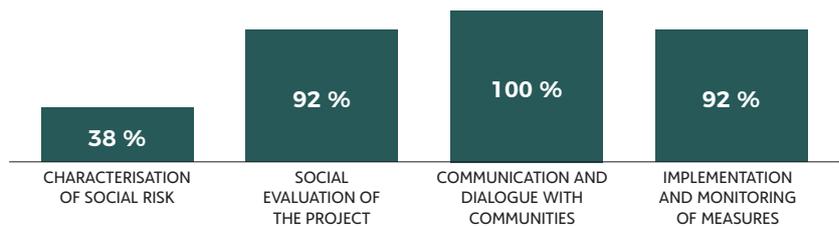
#### SOCIAL IMPACT MANAGEMENT

ACCIONA applies its own methodology of Social Impact Management (SIM) by which it knows, from the bidding or design phase, the social risks of its projects, operations or service provision could cause in the areas of influence of its projects, with the objective of generating positive impacts and minimising the negative impacts on local communities and the environments in which it operates. In 2017, ACCIONA Energy developed social impact management in 13 wind farm projects and photovoltaic plants in 9 countries.

TABLE 6  
Evolution of the implementation of the SIM methodology in ACCIONA Energy

	2014	2015	2016	2017
No. of projects	2	2	18	13
No. of countries	1	2	8	9

FIGURE 1.  
Status of the implementation of the phases of the Social Impact Management methodology in ACCIONA Energy  
 (% of total Energy projects with SIM in 2017)



In order to evaluate the degree of implementation of the SIM methodology, external audits have been carried out on two Energy projects.

MORE THAN  
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 PROJECTS  
 IN 2017

In addition, as a tool for dialogue with stakeholders, ACCIONA Energy assumes the Equator Principles, where the sixth principle establishes the need to establish a Complaint Mechanism so that different stakeholders express their concerns about a specific project. ACCIONA Energy, in response to this commitment, makes a public form available to the people or groups that are considered affected, through which they can send queries and/or suggestions regarding any project promoted by the company (<http://www.accion-energy.com/sustainability-innovation/queries-or-suggestions/>).

### SOCIOECONOMIC IMPACT OF THE PROJECTS

Since 2015, ACCIONA has been working to measure the socioeconomic and environmental impact that its projects produce in a given country, obtaining quantitative results of the impact of the company's activity in terms of job creation (direct, indirect and induced) and contribution to the country's GDP, in addition to other positive effects on the environment and communities.

In previous years, the socioeconomic impact of different Energy projects in Mexico has been measured (Oaxaca II, III and IV, EURUS, Ventika I, II, Ingenio wind farms), South Africa (Gouda wind farm and photovoltaic plant in Sishen) and Chile (El Romero Solar photovoltaic plant). In 2017, the main advances have been:

- New socio-economic footprint calculations for the entire life cycle of the wind farms of San Roman in the United States and Mount Gellibrand in Australia.
- Joint measurement of all Australian assets.
- Continuation of comparisons with non-renewable technologies.

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#### Mount Gellibrand wind farm (Australia)

After its entry into operation, scheduled for 2018, the Mt. Gellibrand wind farm will produce energy equivalent to the electricity consumption of some 60,000 Australian households. This project is a good example to show the implementation of two actions described in this section: Social Impact Management methodology and the calculation of the socio-economic impact of the activity.

### SOCIAL IMPACT MANAGEMENT (SIM)

The wind farm develops and maintains a positive relationship with stakeholders from the earliest phases of the project. Some of the measures implemented during the construction phase are:

- Creation of the community reference group formed by neighbours, land owners and local businesses, the town hall and local contractors.
- Visits to the wind farm carried out with local school groups, land owners and media.
- Establishment of a Community Benefit Fund during the operational life of the wind farm for dissemination activities and knowledge of renewable energy in the area.



#### MORE INFORMATION

*about the methodology in the chapter on 'Society'*

### SOCIOECONOMIC IMPACT

The socioeconomic impacts of Mount Gellibrand are focused on the contribution to GDP and the generation of employment in Australia, as well as the impact on other environmental externalities, highlighting:

- Contribution to the GDP throughout its useful life (35 years): EUR 153 million.
- Creation of employment throughout its useful life (35 years): 1,352 job-years\*.
- Emissions avoided: 388,625 t of CO<sub>2</sub> per year.
- Water saved: 729,117 m<sup>3</sup> water per year.
- Improvement of air quality: 3,230 t of SO<sub>2</sub> and NO<sub>x</sub> avoided per year.

\*Job-years: full-time equivalent jobs for one year.



#### San Roman wind farm (USA)

The San Roman wind farm is located in Cameron County, Texas, and is the eighth ACCIONA wind farm in the United States. Its 31 wind turbines with 3 MW turbines allow it to reach a power of 93 MW. The estimated electricity production guarantees electricity supply to about 28,000 North American homes.

### SOCIOECONOMIC IMPACT

- Contribution to the GDP throughout its useful life (35 years): EUR 179 million.
- Creation of employment throughout its useful life (35 years): 1,634 job-years\*.
- Emissions avoided: 237,103 t of CO<sub>2</sub> per year.
- Water saved: 465,500 m<sup>3</sup> water per year.
- Air quality: 1,762 t of SO<sub>2</sub> and NO<sub>x</sub> avoided per year.

\*Job-years: full-time equivalent jobs for one year.

### SOCIAL INVESTMENT ASSOCIATED WITH THE PROJECTS

ACCIONA Energy maintains a firm commitment to the socioeconomic development of the communities in which it operates. To this end, it performs specific social initiatives in each country where it operates. Among others, in 2017 it is worth highlighting:



#### Bannur wind farm (India)

The facility, located in the state of Karnataka, generates an estimated annual average of 242 GWh, equivalent to the consumption of more than 224,000 Indian households. This project shows the implementation of both the SIM methodology and social initiatives.

## SOCIAL IMPACT MANAGEMENT (SIM)

Based on the delimitation of the geographical area of influence of the project and the main impacts, a series of consultations were carried out to identify the stakeholders and needs of the area. These focused on the satisfaction of basic needs (water and sanitation, health and education) and infrastructure (paving of roads, markets and bus shelters).

In collaboration with the NGO Patham and its Read India project, social measures were implemented with the aim of improving the learning capacities of boys and girls. The scope of the project was 30 schools in the area of influence and approximately 1,500 boys and girls.

## SOCIAL ACTION INITIATIVES

In 2017, the following initiatives were carried out, directly or indirectly benefiting more than 43,400 people:

- Sessions on social security.
- Improvements in the infrastructure of a temple in Kakamari with the construction of an arch.
- Distribution of emergency kits to schools near the park.
- Blood donation campaigns.
- Improvements in rural roads and roads adjacent to the wind farm.
- Promotion of local employment.



### Las Oaxacas Complex (Mexico)

ACCIONA Energy has continued to develop social initiatives derived from the needs of the wind farm environment of Eurus, Oaxacas II, III and IV. In 2017, approximately 21,340 people benefited from different initiatives, some of which were:

- The launch of educational projects in schools (ÚNETE and Aula de Sostenibilidad [Sustainability Classroom]) and the delivery of 27 study grants.
- Improvement of the infrastructures of a school (Accionando mi Escuela [Activating my School]) and renovation of a water well for drinking water.



### MORE INFORMATION

*in the section 'Humanitarian aid' of the chapter 'Society'*



#### MORE INFORMATION

in the 'Humanitarian aid' section of the 'Society' chapter

- Self-employment training with styling, embroidery and weaving workshops.
- Food aid and provision of equipment for the victims of the September 2017 earthquake, as well as other donation campaigns for the vulnerable population.



#### Punta Palmeras wind farm (Chile)

Located in the district of Canela, Coquimbo region, the electricity produced by the park is equivalent to the consumption of more than 60,000 Chilean homes. In 2017, more than 20,000 people benefited from different initiatives, some of which were:

- Talks about sustainability to children as well as support for cultural events in the community.
- Training course for Canela firefighters.
- Donation to the Asunción de Canela radio station of 45 photovoltaic panels with a 100 % renewable energy supply and backup system.



#### Sishen photovoltaic plant (South Africa)

The social initiatives carried out in the Sishen photovoltaic power plant, located in the municipality of Dibeng, have benefited more than 8,000 people, some of which were:

- Scholarships at the University of North West and scholarships for future technicians of wind farms and mining companies.
- Rehabilitation activities for students with developmental problems (Kinderkinetics Programme), special spelling and reading programme for students (Spell It Tutoring).
- 10 small businesses have been selected for a *mentoring and coaching programme*, as well as given access to financing for their start-up or improvement.



#### Wind farms in Poland

ACCIONA Energy is developing a series of social actions aimed at communities located in the vicinity of the Poniec, Golice, Krobia and Gostyn wind farms. Through the agreement with the municipalities, ACCIONA Energy Poland supports communities in various areas with the aim of providing updated project information, relevant documentation and establishing a communication channel between the company and the players involved. More than 19,000 people have benefited from different initiatives, some of which were:

- Scholarships for students.
- Provision of material for a local community college.
- Support for sporting events.
- Educational talks on sustainability issues such as energy, or on the operation of wind farms.

## ENVIRONMENTAL IMPACT MANAGEMENT

ACCIONA Energy's environmental management is hinged on the principle of improving environmental performance. Having strong management systems and a structure of responsibilities adapted to the reality of each country in which it operates is essential in order to perform with the highest environmental management quality standards.

With this purpose, specific targets are set by the various areas to reduce the environmental impact.

### PROTECTION AND CONSERVATION OF BIODIVERSITY

The Energy division has its own wildlife and flora conservation initiatives, including some examples being carried out in 2017:

- Radio tracking by satellite of the Golden Eagle in Navarra, a species classified as vulnerable. The main objective of this action was to know the species' home range and use its space to analyse its habits and thus improve its management in the region. The results have allowed the most frequented areas to be determined, as well as the birds' habitual perching and roosting areas, and to check the scope of their movement, including seasonal variations in the use of the territory.
- Biological Management Plan for Flora and Vegetation in Chile, in the construction of the interconnection line between two photovoltaic projects. The objective is the propagation of protected species in the area of influence of the project. Initially, the density of shrubs, herbaceous and cacti present in the study area was determined, establishing the specimens to be rescued and relocated, and the collection of seeds and propagation in the nursery. Both the rescued species and the plants produced in the nursery will be planted in a previously determined area.

## WATER USE

At ACCIONA Energy, water needs to be collected for the production of renewable electricity via its hydraulic plants. The water collected then flows through the plant before being returned to the source without any change to its composition. To minimise possible impacts, work is carried out by applying the system of environmental flows established by the company or water administration. It is also important to mention the example below of one of the biomass plants:



### Water saving in the biomass plant of Briviesca (Spain)

In 2017, ACCIONA Energy, in order to contribute to the goal of saving water in large facilities collected in the SMP 2020, successfully implemented an optimised cooling system in the Briviesca biomass plant. By installing frequency inverters in the cooling tower fans, the system allows the speed of the fans to be adjusted to the temperature and humidity requirements, which translates into a reduction in the volume of evaporated water. This improvement has allowed a saving of around 12,700 m<sup>3</sup> of water this year.

## MANAGING RISKS RELATED TO SUSTAINABILITY

ACCIONA Energy ensures the adequate management of risks in terms of sustainability through a series of activities that are part of the continuous process of risk control and management. These activities include:

### General project risk management procedure

It begins at the time of evaluation of new opportunities for project development. This procedure considers the main risk scenarios in environmental, social and good governance (ESG) in more than 30 subcategories. In 2017, an initiative has been introduced to extend this process throughout the life of the asset.

### Specific rating of the project's social risk

In parallel, a specific evaluation of social risks is carried out, which leads to qualification of the project based on different parameters, as a preliminary step to the design of a social action plan.

### Specific analysis of environmental risks

In 2017, a thorough analysis of the environmental risks of the assets that are in operation has been carried out, which allows for validation of the adequacy of the risk management carried out, and the identification of mitigation actions. For example, the wind farm protocols aimed at reducing the impact on the flying fauna have been improved, and the determination of internal criteria for the prevention of forest fires in operating facilities has begun.

### Annual risk assessment ESG

More generally, an annual assessment of ESG risks is carried out. This evaluation allows us to assess the level of exposure to the different risk scenarios (considering approximately 30 types), distinguishing the particularities of the different regions in which it operates. The methodology to carry out this process was developed in 2017 and executed for the first time in 2018.

### Consolidated risk map

In 2017, the development of this new map was launched, which includes the main risks of the division, regardless of the nature and origin. This map will also cover, at a high level, those risks that affect the sustainability of our activity.

## INNOVATION, A FACTOR OF DEVELOPMENT AND PROGRESS

At ACCIONA Energy, innovation is an essential cornerstone through which to maintain a leading position in an increasingly competitive sector. In this regard, the business' innovation figure in 2017 reached EUR 66.4 million. Likewise, the savings verified by operational improvements in the processes have totalled EUR 12.6 million.

TABLE 7

### Evolution of the R&D&I figure by business in ACCIONA Energy (EUR millions)

	2015	2016	2017
Figure in Energy R&D&I (€M)	63	73.3	66.4

### TECHNOLOGICAL CENTRE OF PAMPLONA (SPAIN): INNOVATION IN RENEWABLE ENERGIES

ACCIONA has a Technological Centre for Renewable Energies in Pamplona (Spain), where most of the research lines are developed: wind, solar, biomass, hydropower, and electrical storage. The company tests, characterises and integrates the best technologies available on the market and collaborates with different manufacturers in new products to improve the cost and reliability of the energy generated.

Of the various lines of innovation by technology, several projects of strategic relevance during 2017 stand out:

#### ELECTRICAL STORAGE AREA

With the aim of maximising the integration capacity of renewable energies in the electricity system, guaranteeing their quality and optimising their management, ACCIONA Energy works in two lines: storage in photovoltaic plants and storage in wind farms. In 2017, the first hybrid battery storage facility integrated into a wind farm connected to the grid in Spain was launched in Barásoain.

In 2017, it is also worth mentioning the Energy Storage Project, in which two pieces of software were developed:

- ADOSA: a simulation tool that allows the storage systems to be dimensioned and optimised in integration with variable generation renewable plants, analysing the needs and requirements of each of the projects and offering customised, optimised and contrasted solutions.
- Global Energy Management Systems (GEMS): control software developed by ACCIONA Energy and integrated in CECOER (Renewable Energy Control Centre), which incorporates advanced control strategies for the management of the storage system and various operating strategies.

## HYBRID WIND ENERGY STORAGE PLANT WITH BATTERIES

In Barásoain in Navarra (Spain), ACCIONA Energy has launched the first hybrid battery storage facility integrated into a wind farm connected to the grid in Spain. The company has developed and integrated into its control centre (CECOER) the control and management to be used in the plant. In this plant, the storage systems design and optimisation tool has been applied, winning the 2017 Eolo Innovation Prize, awarded by the Asociación Empresarial Eólica (Wind Business Association).

- The plant is equipped with a hybrid storage system consisting of two batteries: a fast response battery capable of maintaining 1 MW of power for 20 minutes, and another battery of slower response power and greater autonomy, capable of maintaining 0.7 MW for 1 hour.

This project has received funding from the European Regional Development Fund (ERDF), which manages the Centre for Industrial Technological Development (CDTI) in Spain within the framework of the EUREKA/EUROGIA 2020 Programme.



### ON-SHORE WIND AREA

- Focus Life Extension Project: change of the maintenance model to a smart model based on the knowledge of the state of the wind turbines and the anticipation of the occurrence of failure. This allows the life of the wind turbines to be extended, as well as a reduction in maintenance costs.
- Craneless Project: optimisation of wind farm construction processes and maintenance of wind turbines. Technical-Economic solutions of Wind Turbine Construction and Maintenance systems are evaluated to be faster/more economical while allowing operation in higher wind conditions than conventional main cranes.

## REMOTE CONTROL PROJECT FOR THE WIND FARMS

In the wind farms operated by ACCIONA Energy, 37 % of the incidents detected in the wind turbines required local intervention, and in the case of the Nordex-ACCIONA Windpower wind turbines, 11 % of the alarms also required local intervention for their resolution.

Through remote control of the wind farms, the following benefits, among others, have been achieved:

- Reduction of the costs of operation and maintenance of wind turbines due to a reduced need for local operational staff compared with a remote operation.
- Increase in the availability of the wind fleet due to a shorter downtime of the wind assets when remotely rearming local alarms in the absence of local personnel in the wind farm.
- Increase in power generation due to greater availability of wind turbines.
- Reduction of CO<sub>2</sub> emissions due to a reduced need for personnel displacement as well as reduction of personnel risk due to a reduced need for on-site presence.



### SOLAR PHOTOVOLTAIC AREA

In 2017, it is important to mention the Lean Project carried out through the Engineering and Construction area in the Puerto Libertad photovoltaic plant (Mexico), with the aim of reducing costs and deadlines in the construction of new photovoltaic plants, as well as the reduction of risks and variability of processes and designs without compromising quality or safety.

In the Solar Photovoltaic area, ACCIONA Energy has continued the development of new automatic systems of operation, management and maintenance of large photovoltaic plants that allow the advanced management of these assets through advanced analysis tools and big data, automated thermography analysis systems and module cleaning methods using robots.



### SOLAR THERMOELECTRIC AREA

Through the CSP-IMP project, the efficiency of the turbines of the operative solar thermoelectric plants has been improved. By optimising the design, the control system, the start-up procedures and the maintenance protocols, the steam turbine performance increases, improving the overall efficiency of the plants.

In 2017, it is worth highlighting the Risk Control and New Heat Transfer Fluids project, which aims to optimise control and eliminate environmental risk. With this initiative, ACCIONA Energy seeks to improve energy efficiency and sustainability in all its projects.



### BIOMASS AREA

ACCIONA Energy continues to focus on improving the efficiency of electricity production plants that operate from the combustion of biomass waste. To this end, it focuses on the lines for improving the efficiency of combustion in boilers, optimising the useful life of equipment against corrosion, and the recovery of slag and ash produced through the combustion of different biomasses.



### HYDROPOWER AREA

In 2017, the CANALES project continued with the development of a control system to monitor the behaviour of hydraulic elements (channels, forced tubes and pressurised tunnels) in real time in hydropower plants.