



LETTER FROM THE
CHAIRMAN AND THE CHIEF
EXECUTIVE OFFICER



KEY PERFORMANCE
INDICATORS



01. THE COMPANY



02. STRATEGY



03. CORPORATE
GOVERNANCE



04. MANAGEMENT
APPROACH



05.
SUSTAINABLE
ENERGY



06. CREATION
OF VALUE



07. EMPLOYEES



08. SOCIETY



09. DIALOGUE
WITH
STAKEHOLDERS



10. THE
ENVIRONMENT

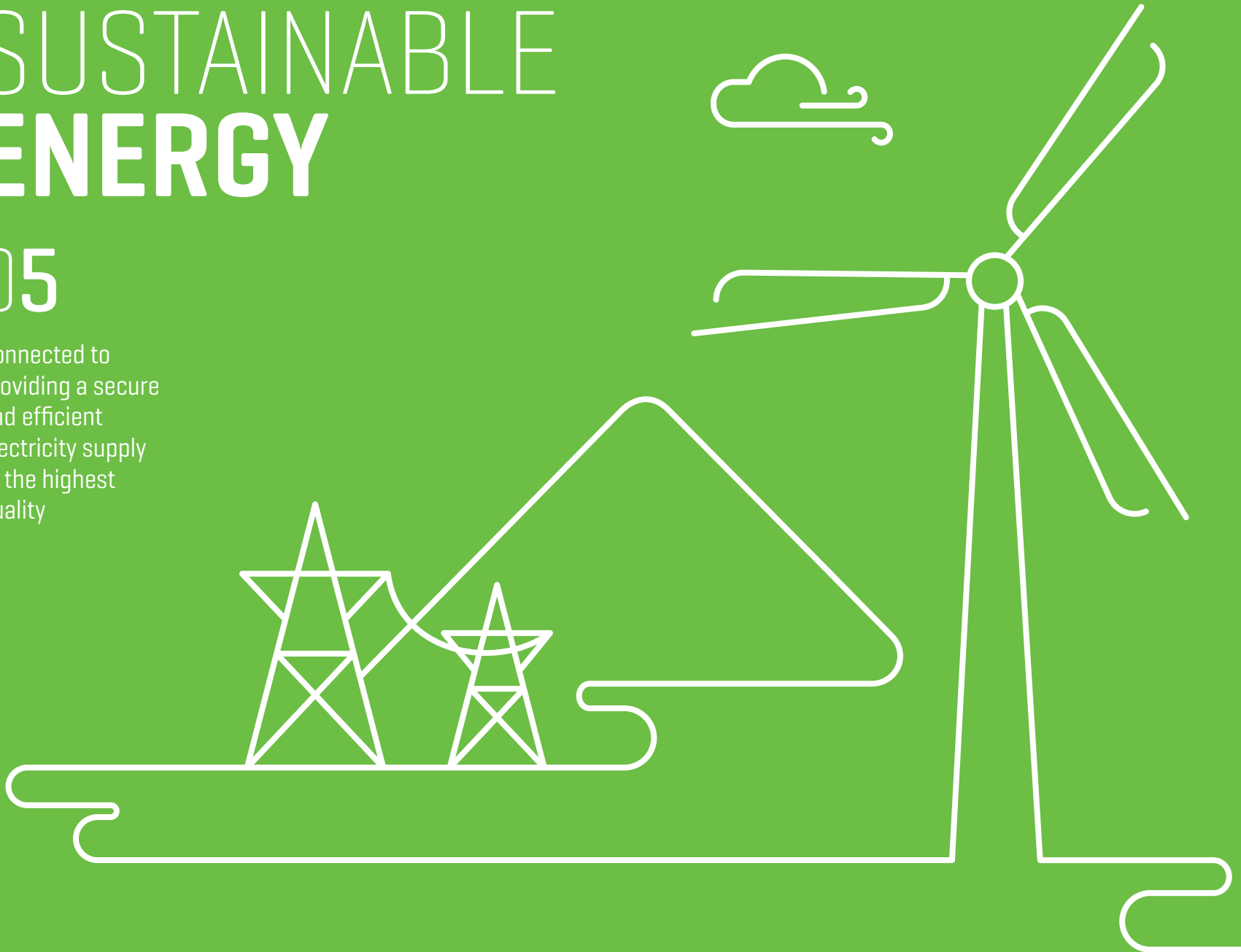


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SUSTAINABLE ENERGY

05

Connected to
providing a secure
and efficient
electricity supply
of the highest
quality





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CORNERSTONES FOR ACHIEVING SUSTAINABLE ENERGY

The value of a secure, efficient and sustainable energy supply



INTERCONNECTIONS BETWEEN SYSTEMS

Strengthening of interconnections to improve the guarantee and security of supply and achieve a greater integration of renewables.

Entry into operation of the Spain-France interconnection

Installation of the 1st cable of the Majorca-Ibiza link



INTEGRATION OF RENEWABLES

The safe integration of renewable energies to contribute to the reduction of air pollutant emissions, and to reduce Spain's dependence on foreign energy.

37% of the electricity demand covered with renewable energies



APPROVAL OF THE INFRASTRUCTURE PLANNING 2015-2020



ENERGY EFFICIENCY

Development of initiatives aimed at achieving a more efficient management of the electricity system in the fields of energy storage, smart grids or the involvement of consumers as an active player in the electricity system.

Projects: PRICE, PERFILEA and ALMACENA



SUSTAINABLE DEVELOPMENT OF THE TRANSMISSION GRID

Construction of new facilities in order to increase transmission capacity, improve grid meshing and facilitate connections between electricity systems.

414 km of new lines

136 new substation bays



TECHNOLOGICAL INNOVATION

Incorporation of new innovative technologies that increase the stability and efficiency of the system, and facilitate the integration of renewable energies.

76 technologically innovative projects
€9.6m in investment



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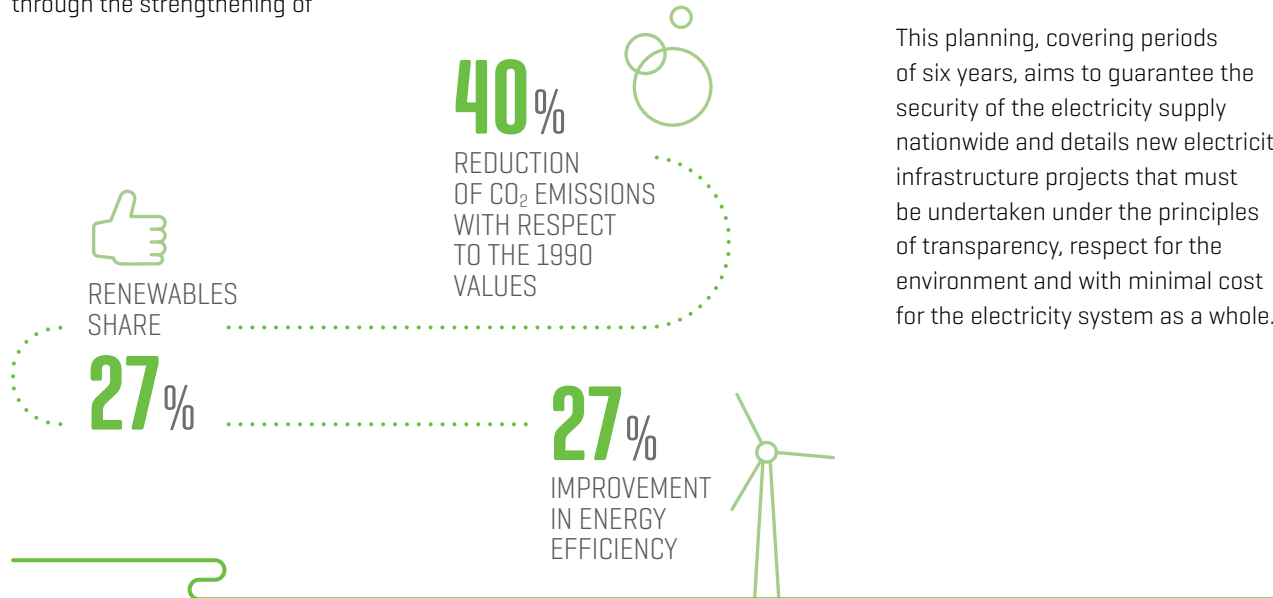
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Quality and security of supply [G4-DMA]

Red Eléctrica, as transmission agent and operator of the Spanish electricity system, is responsible for helping to make the objectives of the energy policy viable in regard to providing a secure, efficient and sustainable electricity supply.

Therefore, we are working on developing a transmission grid that is increasingly more meshed and robust and better interconnected through the strengthening of

international interconnections, and also those between the islands. We are also focusing on the safe integration of renewables, the development of initiatives aimed at energy efficiency and on incorporating innovative technologies to improve system efficiency. All this is geared towards achieving the new energy targets set by the European Council for 2030:



SUSTAINABLE DEVELOPMENT OF THE TRANSMISSION GRID

Electricity infrastructure planning [EU10]

In October 2015, the electricity transmission grid planning for 2015-2020 was approved by the Council of Ministers, after being submitted to the Congress of Deputies.

This planning, covering periods of six years, aims to guarantee the security of the electricity supply nationwide and details new electricity infrastructure projects that must be undertaken under the principles of transparency, respect for the environment and with minimal cost for the electricity system as a whole.

PLANNING 2015-2020



ESTIMATED INVESTMENT

€
4,554
m



In the 'Activities' section of the corporate website.



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A participatory process

The Ministry of Industry, Energy and Tourism, upon request from Red Eléctrica de España, as system operator, drafts the electricity planning, in conjunction with the autonomous communities and the Autonomous Cities of Ceuta and Melilla, as required under the National Commission of Markets and Competition report and after

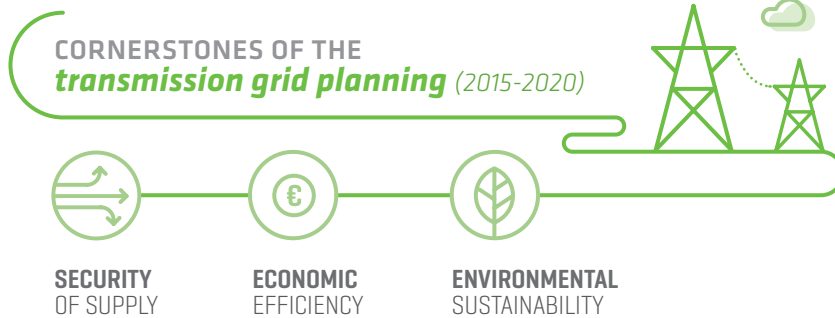
undergoing the due hearing process. In addition, the electricity planning undergoes a strategic environmental assessment process that culminates with the Environmental Report jointly endorsed by the Ministry of Industry, Energy and Tourism and the Ministry of Agriculture, Food and Environment.

Based on this planning, binding in nature, Red Eléctrica de España, in its capacity as transmission agent and operator of the system, has the responsibility to develop a safe, efficient and sustainable electricity transmission grid.

Interconnections between electricity systems

A fundamental aspect in this planning is the development of interconnections between electricity systems such as international interconnections, interconnections between island systems and the link between the Spanish Peninsula and non-peninsular systems.

Among these, noteworthy is the development of the **Spain-France interconnection**, due to its great influence on the quality and security of the electricity system and the integration of renewable energy plans. For the European Commission, the need to increase the capacity of this interconnection is one of the priorities regarding electricity when faced with achieving the energy objectives that allow access to a sustainable, competitive and secure energy.



General objectives of the planned infrastructures

STRUCTURAL ACTIONS

- Resolving technical constraints.
- Security of supply.
- Reliability.
- International interconnections.
- Connections between the Spanish Peninsula and non-peninsular systems.
- Interconnections between island systems.

OTHER ACTIONS

- Grid development associated with the high-speed train network.
- Support for distribution and new demand for large consumers, mainly industrial.
- Evacuation of generation.
- Connection of energy storage facilities.

GRID PLANNING



THE LINKS

BETWEEN ELECTRICITY SYSTEMS

are the most relevant projects



GRID PLANNING

As a new development, the planning 2015-2020 includes an annex, non-binding, for those facilities deemed necessary with a horizon for post 2020, so that it can begin its administrative permitting process.

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The new planned infrastructures guarantee the quality and security of supply nationwide.

In this regard, in 2013 the Infrastructure Package was approved, whose regulation sets the requirements and procedures for the identification of those projects known as European Projects of Common Interest (PCI). The categorisation as PCI is relevant because only projects that are identified in this way include measures which are applicable under the Infrastructure Package. These measures represent the Community contribution to the development of these projects and cover various areas, including notably the obligation for Member States to grant PCI projects the status of top priority at national level and to grant them the available economic and community financial support.

In the case of Spain, the need for investment in the strengthening of interconnections is very relevant, because we have a limited level of interconnection with Europe, which is well below the 10% of the installed capacity target set at the European summit in Barcelona in 2002. In October 2014, the European Council set a new target, increasing the interconnection capacity up to 15% by 2030.

Therefore, to improve the **interconnection between Spain and France** in the horizon 2015-2020, a phase-shifting transformer is included in the Arkale-Argia 220 kV line (PCI Project) for 2017. However, due to their large scale, the entire set of actions allow a significant increase in exchange capacity are included for the horizon beyond 2020:

GRID CONSTRUCTION



414
km
OF NEW LINE

136
new substation
bays

- A direct current submarine interconnection in the Bay of Biscay (PCI Project).
- Two more interconnections through Navarra and Aragón (PCI Projects).

Regarding the **interconnection with Portugal**, a new project is included in the area of Galicia, between Fontefría and Vilafria (PCI project) for 2017.

The Madrid Declaration of March 2015 gave impetus to these new interconnections with France to reach 8 GW of exchange capacity, specifically naming the aforementioned northern Spain-Portugal interconnection, as well as the project through the Bay of Biscay and two new interconnections via the central area of the Pyrenees. Therefore, national and European political support for these projects is evident, which must also represent an economic and financial support and that includes the creation of a high-level group as a facilitator of the same.



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As for the **interconnections from the Spanish Peninsula with non-peninsular systems**, planning includes a link to Ceuta planned for 2020 and a second Spanish Peninsula-Majorca link for some time after 2020. Both facilities will reduce generation costs and significantly improve the guarantee and security of supply in the systems of Ceuta and the Balearic Islands.

Finally, with regard to the **interconnections between island systems**, ten new links between islands are included for connecting isolated systems or strengthening existing connections, which represents, as in the previous case, the increased security of supply and the reduction of generation costs. Of the links indicated, eight correspond to the period 2015-2020 (five in the Balearic Islands and three in the Canary Islands).

TRANSMISSION GRID



OVERALL INVESTMENT 2015

€
410.7
m



INTERCONNECTIONS BETWEEN INSULAR SYSTEMS

The Planning includes ten new links between islands, of which eight are for the period 2015-2020 (five in the Balearic Islands and three in the Canary Islands).

Construction of the transmission grid [EU4]

In 2015, investments in the transmission grid have basically responded to the need to increase capacity and grid meshing to support distribution in various parts of the country, and the implementation of unique international interconnection projects and submarine interconnections between islands. In this fiscal year, 414 km of new line and 136 new substation bays have been brought into service, and also transformer capacity has been increased by 605 MVA, with a joint investment in the transmission grid of 410.7 million euros.

During 2015, the most significant actions undertaken regarding the development of the transmission grid were, by large axes, the following:

- **Asturias-Galicia axis:** in the northern region the construction of Asturias-Galicia axis continues, whose purpose is to guarantee the quality and security of supply throughout the northern axis, creating a 400 kV transmission infrastructure. The main objective is to connect northern Galicia and western Asturias in order to meet the foreseen consumption in this area, and facilitate the evacuation of new generation in the upcoming years. This axis will complete the Cantabrian axis, so that areas of surplus, such as Galicia and Asturias, can evacuate their energy into regions with a deficit. Much

INVESTMENT IN THE TRANSMISSION GRID

ME

2015	411
2014	493
2013	564
2012	672
2011	819

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of this axis was put into service before 2011 and in 2015, progress was made on the construction of the Boimente-Pesoz line after the completion of its permitting process.

- **Aragón-Levante axis:** This axis aims to strengthen the meshing of the transmission grid to allow the evacuation of wind energy from Aragón into Castellón. Specifically, the axis links the Aragón Fuendetodos, Muniesa, Mesquita, Morella and Mudéjar substations by means of a grid of 414 km of line. In 2015, the Mudéjar substation and the Morella-Mudéjar line were brought into service and the hanging of the Mezquita-Morella line began.

- **Torrent axis:** The purpose of this axis in the future is to increase the voltage in the transmission grid from 66 kV to 132 kV on the island of Ibiza. In 2015, the Torrent substation was brought into service, which is the connection point of the submarine link between Majorca and Ibiza. In addition, this axis includes the construction of the 132 kV Ibiza-Torrent 1-2 line, the 132 kV Ibiza-Torrent 3 line and the enlargement of the 132 kV Ibiza substation.

- **Bajo Llobregat axis:** This axis is to strengthen the meshing of the 220 kV network in the area of Bajo Llobregat in the province of Barcelona whereby the electricity supply to Barcelona will be improved and it will also help

feed the high-speed train in the Barcelona-French Border section. In 2015, the Nudo Viario-Zal line was brought into service.

- **Majorca-Ibiza interconnection:** The purpose of this link is to end the current electrical isolation of Ibiza, in addition to saving costs for the system and promoting competition in energy generation on the islands. In addition, this new link strengthens the process of electrical integration of the Balearic Islands with the Spanish Peninsula, and is essential for guaranteeing the reliability of supply throughout the archipelago.

Investment in the transmission grid is geared mainly towards strengthening grid meshing and the development of international interconnections and those between islands.

GRID DEVELOPMENT 2015



INCREASE IN
TRANSFORMER
CAPACITY

605
MVA



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The electricity connection consists of a high-voltage alternating current dual link of 100 MVA per circuit and 132 kV, with a total length of 126 km. The route of the cable consists of a land section on each island that runs underground (3 km in Majorca and 5 km in Ibiza) and a submarine stretch of 118 km, with a maximum depth of 800 m. In 2015, the installation of the first cable for the link took place, with the commissioning of the second cable scheduled to be brought in service in the first few months of 2016.

Other relevant projects in 2015:

Among those facilities brought into service in 2015, in addition to the infrastructure reflected in the principal axes, also included are the following: the Santa Águeda substation (Canary Islands) with 15 new substation bays, the Santa Águeda I/O (input/output) line for the Barranco-Jinámar 2 line 52.3 km in length, the Plasencia I/O line of 26.3 km, the Plasencia-Almaraz line of 43.7 km, the Penagos-Güeñes line of 21.9 km, the 132 kV switchyard of the Santa Ponsa substation, the Berja substation with 5 bays and the Berja I/O line of 31 km.

INTERCONNECTION

MAJORCA IBIZA



118
KM
OF SUBMARINE
CABLE



IN 2015

The Spain-France interconnection via the eastern Pyrenees came into operation. With this facility the electricity exchange capacity between the two countries has doubled reaching 2,800 MW.

The Majorca-Ibiza link will reduce system costs and will favour **competition in electricity generation** on the islands.

TRANSMISSION GRID PENINSULAR AND NON-PENINSULAR

(EU4)	2011	2012	2013	2014	2015
km of 400 kV line	19,671	20,109	20,639	21,094	21,179
km of 220 kV line	18,410	18,779	19,053	19,192	19,387
km of 150-132-110 kV line	272	272	272	272	398
km of <110 kV line	2,011	2,014	2,014	2,014	2,022
Total km of line	40,364	41,174	41,978	42,572	42,986
400 kV Substation bays	1,253	1,319	1,374	1,394	1,441
220 kV Substation bays	2,813	2,936	3,026	3,077	3,124
150-132-110 kV Substation bays	52	52	52	52	84
<110 kV Substation bays	743	743	745	769	779
Total substation bays	4,861	5,050	5,197	5,292	5,428
Transformer capacity (MVA)	72,869	78,629	81,289	83,939	84,544

TRANSMISSION GRID KM OF LINE

	Peninsula	Balearic Islands	Canary Islands	Total
Overhead lines [km]	39,245	1,061	1,075	41,381
Submarine cable [km]	265	423	30	718
Underground cable [km]	483	162	242	887
Total	39,994	1,646	1,347	42,986

Cumulative data as at 31 December 2015.



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TRANSMISSION GRID MAINTENANCE

Red Eléctrica's mission is to guarantee that the facilities of the transmission grid are always in optimum condition in terms of availability and reliability by establishing adequate maintenance, renovation and improvement policies. This is accomplished through the establishment of an annual programme that sets out all the activities and resources necessary to ensure energy efficiency and the continuity of the electricity supply. This programme

is established in line with the Company's Strategic Plan.

In addition to maintenance, renovation and improvement actions are undertaken which have become a key activity for the integration of our assets. These works are geared towards guaranteeing supply by improving transmission grid operating systems and are carried out, like maintenance, according to the current long-term plan.

During 2015, the following actions were noteworthy:

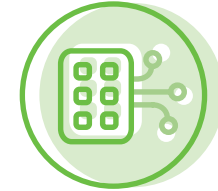
- **Establishment** of new tools to improve cybersecurity to improve secure access to electronic equipment of the transmission grid.

- **R&D+I projects**, which ensure the continual improvement of our activity.

In this area, noteworthy is the project for the monitoring of parameters regarding preventive maintenance and the control of the ageing of the elements of transmission lines, as well as the implementation of maintenance techniques for intelligent substations. The goal of both is to optimise processes. Also noteworthy is the project for the installation of remote control devices to detect fires near electricity lines and as an ultrasonic nesting deterrent.

Maintenance work tasks seek to **ensure the optimum availability and reliability** conditions of facilities.

TRANSMISSION GRID MAINTENANCE



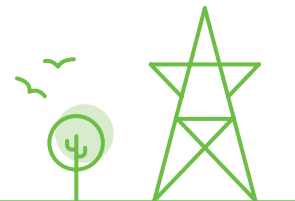
ANNUAL PROGRAMME

for the proper functioning of the network



R&D+i PROJECTS

During 2015, the project for the monitoring of parameters regarding preventive maintenance and the control of the ageing of grid elements was carried out.





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Finally, tools have been designed to optimise the treatment of vegetation and the use of drones for the inspection of overhead lines.

• **Commitment to excellence.**

In order to ensure the excellence of activities, the Company promotes the exchange of experiences with other national and international companies through participation in different working groups and benchmarking studies. In addition, steps have been taken to improve efficiency in maintenance activities through the implementation of intelligent maintenance techniques.

• **Responsible stakeholder management.**

To do so, a 24/7 shift has been implemented in order to provide a permanent service for external clients related to the telecommunications business.

ELECTRICITY TOWERS REPLACED



249

+60%

Compared to 2014



ENSURING EXCELLENCE

Red Eléctrica promotes actions such as the exchange of experience with national and international companies and the implementation of intelligent maintenance techniques to ensure the excellence of its activities.

• **Committed to society and sustainable activity.** In relation to this, a project was launched to analyse the resilience of the transmission facilities in order to design a plan to respond to unpredictable events which seriously affect the capacity of supply and the recovery of the facilities.

Similarly, there have been thermographic inspections of all facilities and monthly visual inspections in order to ensure the good condition of the substations, as well as the annual inspection of 100% of underground lines, to ensure that there are no negative impacts on the environment.

In addition to scheduled maintenance, a significant investment has been made to apply environmentally responsible coatings to 59 substation bays, recondition various transformer units and update the firmware for improvement in the processes related to telecontrol and protection equipment. A total of 249 towers have been replaced by more modern ones [60% more than the previous year], with the aim of increasing the reliability and quality of our facilities.

MAR PROJECT (Improvement of Grid Assets)

Within the maintenance activity, Red Eléctrica undertakes a significant programme for the integration of the assets acquired from the utility companies, especially in the island systems, raising them to the quality standards established by the Company. At year-end 2015, 73% of the acquired substation bays had been integrated. The objectives of the MAR project are:

- Adapt grid facilities/infrastructure in the insular systems to the quality standards of Red Eléctrica.
- Address the weaknesses of the existing transmission grid.
- Integrate acquired assets into Red Eléctrica's control systems.
- Adopt a specific maintenance plan for improving the transmission grid.
- Deployment and improvement of the telecommunications network on the islands.



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Service quality (EU28-EU29)

The service quality indicators highlight for yet another year the high level of security and quality of supply provided by Red Eléctrica's facilities, being well within the benchmark established in the current legislation which establishes average interruption time at 15

minutes/year. 2015 indicators show a significant decrease in the values of ENS and TIM compared to the previous year.

QUALITY OF SERVICE INDICATORS

Peninsular grid	2011	2012	2013	2014	2015 (1)
Grid availability [%]	97.72	97.78	98.20	98.20	97.93
Energy Not Supplied (ENS) [MWh]	259	113	1,126	204	52
Average Interruption Time (AIT) (minutes)	0.535	0.238	2.403	0.441	0.111

Balearic Islands' grid	2011	2012	2013	2014	2015 (1)
Grid availability [%]	98.21	98.07	97.96	98.00	96.87
Energy Not Supplied (ENS) [MWh]	35	7	80	13	7
Average Interruption Time (AIT) (minutes)	3.194	0.678	7.366	1.205	0.642

Canary Islands' grid	2011	2012	2013	2014	2015 (1)
Grid availability [%]	98.95	98.91	98.30	98.37	96.76
Energy Not Supplied (ENS) [MWh]	17	10	3	64	29
Average Interruption Time (AIT) (minutes)	1.023	0.613	0.177	3.938	1.763

[1] The 2014 values are pending external audit.

The total availability rate of the transmission grid does not include the non-availability due to causes of force majeure or third party actions.

The continuity of supply indicators presented do not include the potential impact of incidents that are pending classification due to currently being subject to administrative proceedings.

QUALITY OF SERVICE



SIGNIFICANT DECLINE IN THE VALUES OF ENS & AIT

With respect to 2014

CONTINGENCY MANAGEMENT (G4-DMA)

Planning and response when faced with emergencies and disasters

Red Eléctrica develops protocols and methodologies to efficiently manage the contingencies that may occur in the Company. These protocols are set out in a series of policy documents governing actions in the case of operational emergencies. Their application in crisis situations are complemented through mobile response equipment capable of responding immediately in any area of the country, aimed at guaranteeing the quality and continuity of supply.

These measures are complemented with action plans, called Service Restoration Plans, which detail the precise actions to be taken to restore the electricity supply, under safe conditions for the electricity system.

The Company also has a dedicated training centre called the Red Eléctrica Corporate School [ECRE], where staff from the electricity control centres is trained by means of system restoration and service recovery simulations. It also develops safety



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awareness campaigns for general dissemination and drafts specific training courses on safety for certain employees.

On 30 June 2014, at the request of the Secretary of State for Security, Red Eléctrica was designated Critical Operator according to the procedure 1/2014, instructed by the National Centre for Critical Infrastructure Protection (CNPIC). As a result, and to comply with Law 8/2011 on Critical Infrastructure Protection and its regulations to be implemented, the Company undertook the creation of the plans required by said Law:

- **Operator Security Plan (OSP)**, which sets the guidelines to be followed by the Company in the protection of these facilities.
- **Specific Protection Plan (SPP)**, developed by the Company for each of the facilities designated by the Secretary of State for Security.

The drafting of the Specific Protection Plans for each of the critical facilities is made without prejudice to the mandatory compliance of that set out in the Technical Construction Code, approved by Royal Decree 314/2006, of 17 March, Royal Decree 393/2007 of 23 March, which approves the Basic regulation for Automatic Protection of the centres, facilities and premises dedicated to activities that can be a cause of emergency situations, or any other specific regulation applicable to the sector. For this reason, and as an additional measure, the Corporate Security and Occupational Health and Safety department drafts other documents that complement the coverage of operational contingencies, and encompass the entire spectrum of possible contingencies such as those that affect people and / or the environment.

These other regulations contemplate actions when faced with situations caused by pandemics, the evacuation of buildings and facilities of the Company, as well as Automatic Protection plans for Company buildings, facilities and substations.

OPERATION
SCHOOL



TRAINING
CENTRE
FOR CONTROL
CENTRE
OPERATORS

Conducts system restoration and service recovery simulations

[1] Joule effect: the effect whereby, when an electrical current flows through a conductor, part of the kinetic energy of electrons is transformed into heat which thereby raises the temperature of the conductor. Joule effect losses are proportional to the intensity flowing through the conductor and the resistance thereof, the greater the length of the line the greater this resistance is. In view of this, it can be understood that the losses are mainly related to the distance between points of generation and consumption.

TRANSMISSION
GRID LOSSES
[G4-DMA, EU12]

The transmission of electricity inevitably entails a loss of energy in the grid. This means that in order to satisfy a given final consumption, it is necessary to have a higher level of generation. Therefore, losses in the transmission grid are the difference between the energy generated and the energy demanded for distribution.

There are several factors that generate losses: the Joule [1] effect, the corona effect and the own consumption of electricity substations required for their proper operation. Of these, the most important is undoubtedly the Joule effect associated with the flow of current through the conductors.

Losses in the electricity transmission grid depend on the distance between generation points and consumption points (primarily), the generation mix, the size of the transmission grid, voltage levels, international exchanges and the behaviour of the demand (amount of energy demanded and shape of the demand curve).



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Red Eléctrica works to improve aspects that depend on their management and that can have an influence in reducing these losses. Among them noteworthy are the following actions:

- **Development and meshing** of the transmission grid.
- **Increase** in the number of conductors per circuit.
- **Use of technologies** and systems with the best performance [conductors with lower resistance, efficient equipment ...].

• **Maintenance** of facilities in the best conditions to ensure their proper operation.

The first two measures seek to create parallel paths to circulate the same intensity, which reduces resistance and thereby the losses.

However, all these improvements have a greatly reduced impact in the evolution of losses, with other aspects, not controlled by Red Eléctrica, having the greatest influence.

Losses mainly increase with increasing distances between points of generation and consumption. The structure of electricity generation depends on the rules of the electricity market, regulated by an independent body. The role of

Red Eléctrica as electricity system operator should be performed according to specific and mandatory operating procedures. According to these procedures, it is not possible to operate the electricity system based on the criteria for reducing losses, so the Company has little capacity to act in relation to the reduction of said losses.

Moreover, it is important to note that in the case of the Spanish electricity system, the increase in losses is closely related to the share of renewable energies in the generation mix. Typically, increases in hydro and wind generation are related to an increase in transmission distances [this type of generation is located far from consumption points].

TRANSMISSION GRID
ENERGY LOSSES



IN 2015
1.22
%

With respect to the demand in 2015

PERCENTAGE OF TRANSMISSION GRID LOSSES
WITH RESPECT TO ANNUAL DEMAND



2015	1.22
2014	1.32
2013	1.26
2012	1.17
2011	1.13



LETTER FROM THE CHAIRMAN AND THE CHIEF EXECUTIVE OFFICER



KEY PERFORMANCE INDICATORS



01. THE COMPANY



02. STRATEGY



03. CORPORATE GOVERNANCE



04. MANAGEMENT APPROACH

05. SUSTAINABLE ENERGY



06. CREATION OF VALUE



07. EMPLOYEES



08. SOCIETY



09. DIALOGUE WITH STAKEHOLDERS



10. THE ENVIRONMENT



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ELECTRICITY SYSTEM OPERATION

The fundamental objective of the operation of the electricity system is to ensure the safety and quality of the electricity supply, while maximising the integration of renewable energies.

The most significant aspect of the Spanish electricity system balance report in 2015 was the growth in demand of 1.9% over the previous

year, after four consecutive years of decline. Regarding generation, most noteworthy was the fall in renewables, due mainly to lower hydroelectric generation. Meanwhile, the balance of electricity exchanges continued to be as an exporter, although a significant drop was recorded due to the substantial increase in imports from France.

Renewable energies continue to maintain a prominent role in the overall electricity generation mix, despite a fall of around 5 points compared to 2014, due mainly to the variability of hydro and wind power generation, which in 2015

fell 28.2% and 5.3% respectively. Despite this decline, it should be noted that wind power was the technology that most contributed to total energy production in the Spanish Peninsula in the months of February and May.

The safe integration of **the maximum amount of renewable generation** is one of the objectives of system operation.



PENINSULAR DEMAND 2015



248 TWh

+1.8%
Compared to 2014



ELECTRICITY CONSUMPTION IN SPAIN

recovered a positive growth rate in 2015, not seen since 2010.



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Energy production from renewable sources represented 37% of the total generated in the **Spanish Peninsula electricity system**.

For yet another year, noteworthy is the important role of wind power generation, whose contribution to the annual energy production reached 19%, which ranks this technology in third place in terms of participation of the different types of energy for demand coverage, just behind nuclear and coal.

In addition, in 2015 the maximum values of wind production registered in recent years were exceeded: yearly maximums for instantaneous wind power production [17,553 MW], hourly energy [17,436 MWh] and daily energy [357,741 MWh]. On 21 November at 4:50am a new all-time high was also registered in the contribution of wind power to demand coverage reaching a figure of 70.4%.

To enable the operation of an electricity system with such a high penetration of renewable energy under safe conditions, the role of CECRE (Control Centre of Renewable Energies) is essential.

RENEWABLE ENERGY

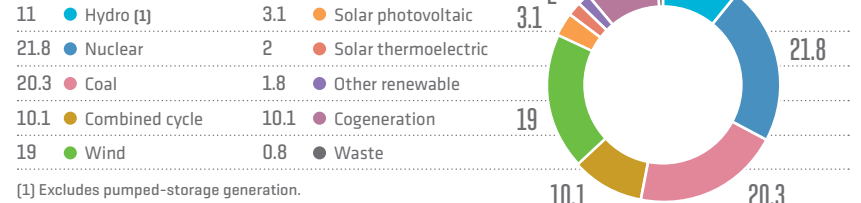


92.9 TWh

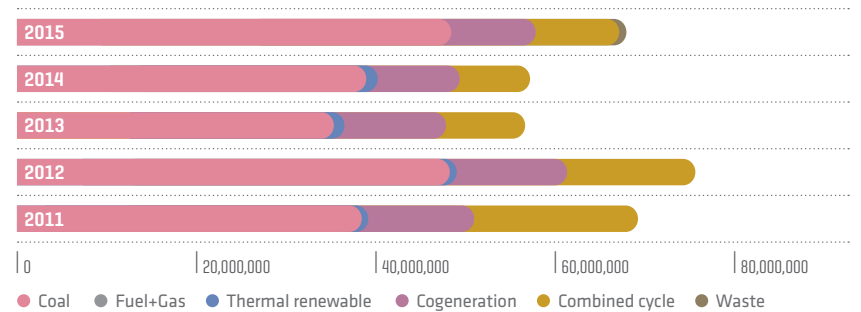
INTEGRATED IN 2015

[37%]
Of peninsular demand

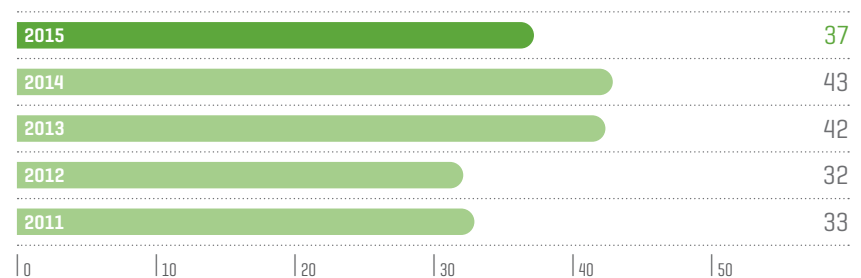
COVERAGE OF PENINSULAR DEMAND



CO₂ EMISSIONS ASSOCIATED TO GENERATION OF ELECTRICITY ON THE PENINSULA



PARTICIPATION OF RENEWABLE ENERGY IN THE COVERAGE OF THE PENINSULAR DEMAND





LETTER FROM THE CHAIRMAN AND THE CHIEF EXECUTIVE OFFICER



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CECRE is a control centre of worldwide reference regarding the integration of renewable energies.

In order to further advance the supervision and control of renewable energy, without the security and quality of the electricity supply being affected, the CECRE has begun to monitor the wind production in Portugal throughout this year and renewable generation from this country was incorporated into the calculations of the maximum permissible renewable generation that can be integrated into the peninsular electricity system without jeopardizing the interconnection with France. These actions keep CECRE at the forefront as a control centre of worldwide reference regarding the monitoring and control of renewable energies

Moreover, in 2015 the Spain-France direct current interconnection was brought into service which is capable of carrying 2,000 MW. This milestone represents a significant strengthening of the interconnection capacity between the two countries, resulting in an increased margin of renewable energy integration into the system, and an increased support with which to deal with any incidents in the Spanish electricity system in a safe manner.

As for the **Balearic Islands electricity system**, in 2015, work continued on the consolidation of the positive impacts of the operation of the interconnection linking the island of Majorca with the Spanish Peninsula electricity system. This link brings with it an improvement in terms of quality and security of electricity supply on the islands of Majorca and Menorca, avoiding

PENINSULA
BALEARIC
ISLANDS
LINK



14

%

SAVINGS
IN THE
COVERAGE
COSTS

*Of the
Balearic Islands'
system*

frequency deviations outside of safety limits and power disruptions caused by generation losses. The energy transferred from the Peninsula covered 23% of the demand on the Balearic Islands, reaching peaks of 38% of the hourly consumption. This represented an overall saving of 14% on the coverage costs of the Balearic Islands system and has prevented the emission into the atmosphere of approximately 350,000 tonnes of CO₂ in the territory of the Balearic Islands. It should also be noted that in the first quarter of 2016 the new link between Majorca and Ibiza will be brought into service, which will allow the consolidation of the electrical integration process of the entire archipelago with the Peninsula.

In the electricity **system of the Canary Islands**, renewable generation - wind and photovoltaic - represented 8% of the total generation in 2015, reaching values of 33% in Tenerife and 32% in La Palma throughout 2015, values that are especially challenging in small isolated electricity systems.



In the 'Activities' section of the corporate website.



LETTER FROM THE CHAIRMAN AND THE CHIEF EXECUTIVE OFFICER



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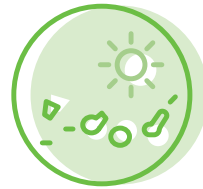
Similarly, since mid-2015, the hydro-wind power station Gorona del Viento has been increasing its production, thereby increasing the integration of renewable energy into the electricity system of El Hierro. Thus, 19% of the total annual generation of this system came from renewable energy sources and for the very first time on 9 August 2015, 100% of the demand was met through the integration of renewable energy.

Energy storage on the Canary Islands

In 2015, the creation of the subsidiary REINCAN responds to the need to promote energy storage projects on the Canary Islands, as tools for the system operator to guarantee supply, improve system security and optimise the integration of renewable energies in the archipelago.

To this end, the Company is carrying out the project for the Chira-Soria pumped-storage hydro power station on Gran Canaria, representing an investment of

ENERGY STORAGE IN THE CANARY ISLANDS



€
320
m
INVESTMENT

In the Chira-Soria pumped-storage hydro power station



REINCAN

Created in 2015 to boost energy storage projects on the Canary Islands, as tools for the system operator.

around 320 million euros. The project, which is in the permitting stage, includes the construction of a 200 MW pumped-storage power station to be used as a tool of the system operator to ensure stability and security of the electricity supply, and at the same time, shall constitute an essential infrastructure for the integration of renewables on the island. It will be one of the major projects of Red Eléctrica over the coming years, as it will represent an essential infrastructure for the integration of renewables in the island system and will contribute to a gradual change in the energy model on the Canary Islands making it more secure, efficient and sustainable.

Additionally, Red Eléctrica is undertaking a major investment plan to improve the efficiency and security of the insular electricity systems on the Canary Islands, in response to the following objectives:

1. Promote change in the energy model of the Canary Islands:

- Guarantee a more sustainable and efficient electricity supply.

- Improve the stability of the isolated systems.

- Facilitate the evacuation and integration of renewables.

2. Move towards more secure and robust electricity systems:

- Improve grid meshing.

- Resolve structural weaknesses in the network.

- Increase the quality of the existing infrastructure.

- Develop interconnections between islands.



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Energy efficiency [G4-DMA]

Red Eléctrica continues to work actively on the promotion, development and dissemination of demand-side management measures as necessary tools for the current and future electricity system. Among these, noteworthy on one hand are those measures aimed at achieving a more balanced

consumption profile and on the other, those aimed at providing greater flexibility to the operation of the system.

Main actions

Demand-side management initiatives undertaken by Red Eléctrica seek to address demand

in its entirety, carrying out specific actions for the residential sector and the industrial sector. Furthermore, other initiatives that have a global impact on all consumers in our country are also carried out.

Residential demand: active citizen

The electricity system is in a transition phase towards a new more-dynamic energy model in which the role of the citizen as a key part of the system operation is increasingly essential, and that is why Red Eléctrica promotes demand-side management initiatives geared towards making information available to the citizen about the status of the system, or disseminate recommendations on best practices for efficient consumption.

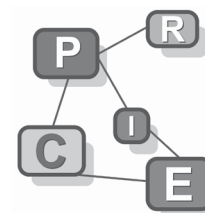
In this regard, Red Eléctrica has collaborated with the publisher 'Planeta' on the publishing of a book from the 'Dummies' collection which explains, in simple language, the concepts of electricity bills and advice on how to make savings.

The progressive electrification of our society, resulting from the ever-increasing importance of electricity in our lives, requires these kinds of initiatives that enable citizens to easily understand the functioning of the electricity system, helping them to change their consumption habits leading to a more efficient and responsible use of energy.

In field of residential demand, especially noteworthy is the 'PRICE' deployment project (Joint Smart Grid Project in the Corredor del Henares area of the Community of Madrid) in which Red Eléctrica has participated together with another 20 partners since its inception in 2011. Said project has funding from the Spanish Ministry of Economy and Competitiveness through the INNPACTO Programme, and has received the European Electricity Grid Initiative Core Label that

recognises the alignment of the project with the criteria and objectives defined in the European Electricity Grid Initiative.

This project, completed in 2015, has allowed Red Eléctrica to develop knowledge and technology regarding the implementation of mechanisms for demand-side management and new mechanisms based on providing information to citizens about the state of the system.



PRICE PROJECT 2011-2015



IMPLEMENTATION OF SMART GRIDS

In the 'Corredor del Henares'



IN THE RESIDENTIAL SECTOR

Red Eléctrica encourages consumer involvement as a key player in the new energy model.



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Industrial demand: interruptibility service

The industrial interruptibility service is a demand-side management tool provided by large consumers that aims to quickly and efficiently



respond to the needs of the electricity system in situations of imbalance between generation and demand. This service is activated in response to an order issued by Red Eléctrica to reduce power.

In this sense, industrial consumers that meet the requirements of the regulations and have signed a contract with the system operator, will reduce their consumption down to certain predetermined values at the operator's request.

Profiling service

Currently, most households in our country do not have smart meters and, therefore, do not have hourly metering. However, due to the fact that in the electricity market all energy is settled on an hourly basis, it is necessary to make an estimation based on how those consumers without hourly metering have behaved on an hourly basis. Said forecast is carried out through what are known as 'settlement profiles' that Red Eléctrica prepares and are assigned to each consumer based on a type of demand behaviour depending on their contracted power and voltage levels (access fees).

The goal is to improve the current profiling service and obtain a better understanding of the hourly consumption of households,

and an important part of small businesses and service providers. Since 2013, Red Eléctrica has spearheaded the PERFILA project, with the participation of the most important electricity distribution companies. This project is based on the analysis of the hourly information coming from a panel of 20,000 consumers who already have smart meters installed.



Order IET/2013/2013, of 31 October 2013 introduced, into the management of the demand-side interruptibility service, the challenge of providing a new interruptible resource allocation mechanism based on an auction procedure. This mechanism, first implemented in 2014, allowed an interruptible resource of 3,020 MW in 2015.

Almacena Project

The Almacena Project consists of the field installation, and subsequent operation, of an electrochemical energy storage system, specifically a lithium-ion prismatic battery with a power of 1 MW and a capacity of at least 3 MWh. During 2015, testing has been conducted on the future applications of this new technology in the field of renewable integration and for the improvement of operation services (modulation of the load curve and frequency-power regulation).

PERFILA PROJECT



ANALYSES OF HOURLY INFORMATION REGARDING **20,000** consumers with smart meters



IN THE INDUSTRIAL SECTOR

the demand-side management service of interruptible resource allocation via competitive mechanisms was consolidated.



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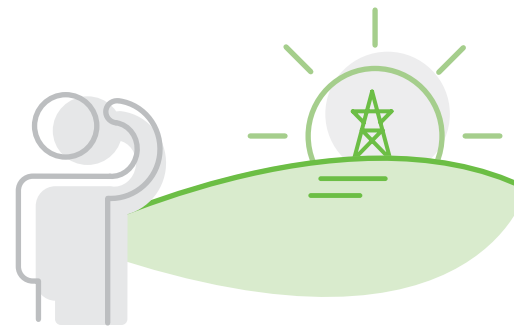
For 2016, Red Eléctrica, in its role as auction administrator, has managed the auctions conducted in 2015, placing special emphasis on communication, with the stakeholders involved, through informative sessions and a plenary session, held at Red Eléctrica facilities in late May, that brought together all candidates interested in providing the interruptibility service. In addition, as of 2015, the new e-sios website has a specific space for demand-side management where all information related to the interruptibility service is available.

Future outlook

Red Eléctrica will continue to promote actions in the field of the 'active citizen' enabling the consumer to assume a more important and active role in the electricity sector. Moreover, self-consumption is already a reality in our country following the adoption in 2015 of the legislation that regulates it. Therefore, Red Eléctrica prepares for this new reality by conducting forecasts and analysis studies in order to adjust system operation and to anticipate the impact of this new type of generation.

Another challenge to be addressed in the near future is the incorporation of new flexibility measures in the services sector via demand aggregation, developing specific mechanisms to take into account the specific nature of this type of demand.

The next challenge is the incorporation of **new flexibility measures** in the services sector through aggregation of demand.



ON THE WEB

e-sios



NEW SECTION ON **DEMAND SIDE MANAGEMENT**

of the interruptibility service in the industrial sector



On the e-sios website.



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ANNEXES

Technological innovation [G4-DMA]

In 2015, the Company approved the new Technological Development Plan 2016-2019, which, in line with the new Strategic Plan, has identified the objectives and technological priorities of the Company in the medium and long term. It should be noted that this Technological Development Plan will be one of the pillars of the global innovation strategy of Red Eléctrica to be presented in 2016.

For its part, Red Eléctrica has continued to make an active contribution to the drafting of different documents regarding R&D+i in the international arena:

- 'R&D Application Report 2014' of the ENTSO-E R&D+i Committee, a document that analyses the application by the TSOs of the results of the European R&D+i projects concluded in recent years.

- 'R&D Monitoring Report 2015', a report that evaluates compliance with the ENTSO-E R&D+i Plan.
- 'R&D+i Plan 2017-2022' document prepared in collaboration with the European GRID+Storage project.

Throughout 2015, work continued on **developing a total of 76 technologically innovative projects** geared towards achieving greater system efficiency and facilitating the integration of renewables.

R&D+i PROJECTS

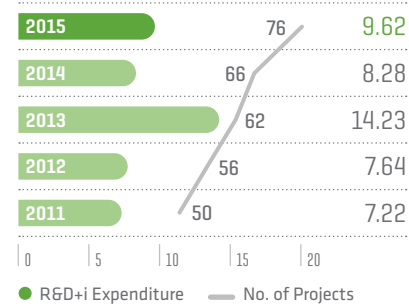


DURING 2015

€
9.6
m
WERE INVESTED

[+16%]
Compared to 2014

R&D+i EXPENDITURE (M€)





LETTER FROM THE CHAIRMAN AND THE CHIEF EXECUTIVE OFFICER



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• 'Implementation Plan 2016-2018'; reflects the technological measures to be undertaken in the next three years within the framework of the ENTSO-E R&D+i plan.

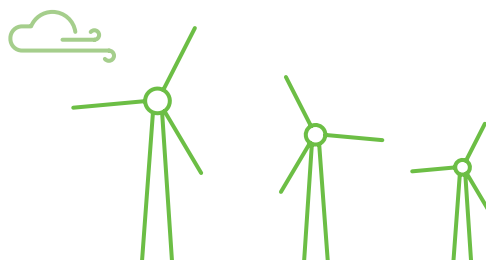
During 2015, a total of 9.6 million euros was dedicated to R&D+i, representing an increase of 16% over the previous year. A total of 362 employees collaborated on 76 R&D+i projects active during 2015 (21.4% of the workforce of Red Eléctrica de España), of which 13.8% [50] were women, investing a total of 46,308 hours, equivalent to 274 full-time personnel.

R&D+i projects undertaken in 2015

NATIONAL PROJECTS	PROJECT DESCRIPTION	EUROPEAN PROJECTS	PROJECT DESCRIPTION
ESP-LÍDER	Device for the redirection of current flows installed in Torres de Segre. <i>Completed in 2015.</i>	e-HIGHWAY 2050	New methodology for the planning of the Pan-European transmission system that includes the new model of the electricity system with a 2050 horizon. <i>Completed in 2015.</i>
PRICE	Set of smart grids in the 'Corredor del Henares' area of Madrid for the promotion of demand-side management in the residential sector. <i>Completed in 2015.</i>	MIGRATE	Improved understanding of the behaviour of the electricity system with a high penetration of power-electronics based devices.
SIMA	Intelligent Asset Maintenance System. <i>Completed in 2015.</i>	BEST PATHS	Analysis to overcome various technical barriers that the current Pan-European electricity network could encounter in order to integrate safely, efficiently and reliably, massive amounts of energy from renewable sources such as solar and offshore wind.
FIRE MONITORING	Automatic forest fires monitoring system for overhead electricity lines. <i>Completed in 2015.</i>	ENVIRONMENTAL PROJECTS	
SUBSTATION 61850	Digitalisation of facilities: development of an advanced model of a substation to undertake, with guarantees, its field deployment. <i>Completed in 2015.</i>	VISIBILITY OF ELECTRICITY LINES	Tool for the analysis of the visibility of high voltage electricity lines using a Digital Elevation Model (DEM) that takes into account all the elements that produce visual shields, such as vegetation, buildings and infrastructure.
AMCOS-STABILITY FACTS	A pilot device which controls the main parameters that provide stability to an isolated system (frequency control, continuous voltage control and damping of power oscillations).	ENERGY EFFICIENCY	Incorporation of Peltier cells for cooling substation racks and the development of a prototype power transformer that is more sustainable, safe and intelligent.
		POSIDONIA OCEANICA	Development of a technique for the recovery of 'Posidonia oceanica' sea meadows through the use of seeds germinated under laboratory-controlled conditions and fragments obtained via natural fragmentation.



In the 'Red 21' section of the corporate website.



06. CREATION OF VALUE



07. EMPLOYEES



08. SOCIETY



09. DIALOGUE WITH STAKEHOLDERS



10. THE ENVIRONMENT



ANNEXES