

ENVIRONMENTAL
COMMITMENT
/ 2015



RED
ELÉCTRICA
DE ESPAÑA

THIS DOCUMENT IS A SUMMARY OF RED ELÉCTRICA'S ENVIRONMENTAL PERFORMANCE AND COMMITMENT DURING 2015

In order to make its environmental commitment known, Red Eléctrica drafts an annual Corporate Responsibility Report as a means to disseminate the Company's performance and results regarding corporate responsibility in the economic, social and environmental aspects.

Moreover, every year, Red Eléctrica publishes an annual Environmental Statement in which the Company discloses information regarding its environmental performance, and the ongoing improvement of its actions and activities related to the environment, in accordance with the requirements of the Community Eco-Management and Audit Scheme [EMAS].

This publication contains a summary of the main environmental aspects included in both the aforementioned documents.



MORE DETAILED INFORMATION

may be accessed
by using
the symbol



+ INFORMATION

In The Corporate
Responsibility Report 2015

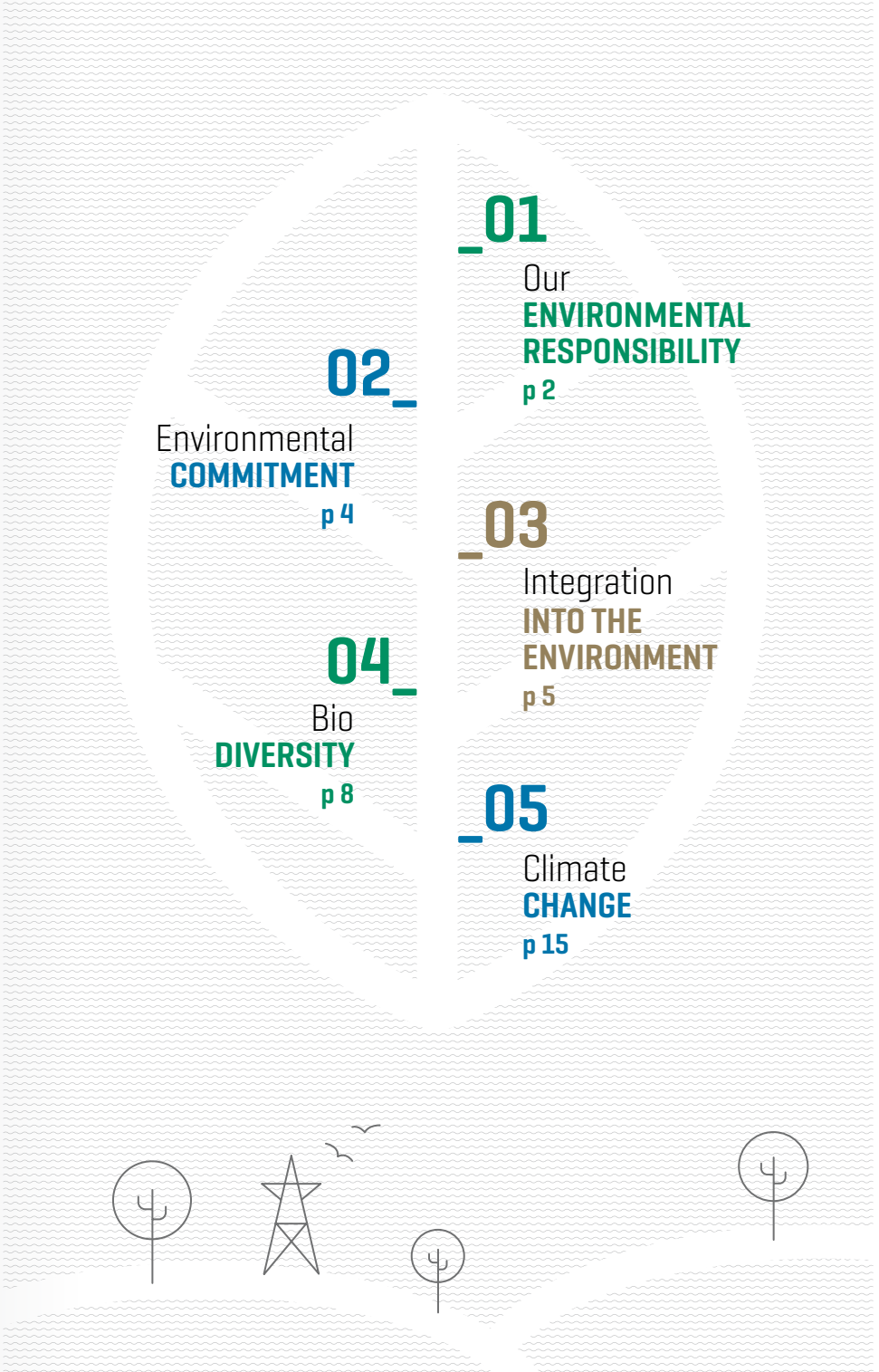


+ INFORMATION

In The EMAS Environmental
Statement 2015

MEMBER OF
**Dow Jones
Sustainability Indices**
In Collaboration with RobecoSAM





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Our ENVIRONMENTAL RESPONSIBILITY



Respect for the natural environment, biodiversity conservation and the commitment to the fight against climate change are key elements of our environmental responsibility.

CORNERSTONES OF OUR ENVIRONMENTAL COMMITMENT



ENVIRONMENTAL MANAGEMENT

Red Eléctrica carries out all its activities in accordance with strict environmental criteria, according to the principles adopted in its environmental policy.

- ✓ ISO 14001 Certification and EMAS Register.



INTEGRATION INTO THE ENVIRONMENT

We make our facilities compatible with the environment, through dialogue with stakeholders and through the implementation of preventive and corrective measures to minimise potential impacts on the environment.

- ✓ Environmental assessment of all projects.



BIODIVERSITY

Biodiversity conservation has always been an essential principle in our environmental policy and business strategy.

- ✓ 'Mapping of bird flight paths', EFQM's best practices award-winning project



CLIMATE CHANGE

Red Eléctrica contributes to the fight against climate change by providing solutions in the execution of its business activities, and through its commitment to the efficient use of energy.

- ✓ 40% of demand covered using renewable energy [average over the last three years].



+ INFORMATION
in the 'Environmental'
section of the
corporate website.

KEY ENVIRONMENTAL PERFORMANCE INDICATORS

| | 2013 | 2014 | 2015 |
|--|---------|---------|---------|
| Km of line in Red Natura/total km of line [%] | 15.6 | 15.5 | 15.5 |
| Km of line marked with bird-saving devices | 2,585 | 2,776 | 2,950 |
| Km of line marked in SPAs marked with bird-saving devices | 564 | 578 | 603 |
| Direct emissions [1] [t of CO₂ equivalent] | 74,980 | 83,125 | 33,662 |
| Indirect emissions [2] [t of CO₂ equivalent] | 735,590 | 771,774 | 808,347 |
| Non-hazardous waste [t] | 3,694.0 | 4,133.5 | 3,333.8 |
| Hazardous waste [t] | 2,170.3 | 2,375.0 | 1,184.7 |
| Environmental expenditure [€ million] | 23.4 | 22.4 | 22.7 |
| Fulfilment of the environmental programme [%] | 85 | 78 | 84 |

[1] The decrease in direct emissions is due to the change in methodology for calculating emissions of SF₆ gas. In 2013 and 2014 the calculation was based on the application of theoretical emission factors on installed gas, while in 2015 the calculation is based on data registered regarding actual leakage. [2] The main indirect emissions are those derived from energy losses in transmission, which increased in 2015 despite the fact that losses were reduced by 6% compared to the previous year. This is due to the increase in the emission factor associated with the generation mix, as in 2015 there was a decline in renewable energy generation and a significant increase in coal-fired generation.



Awards and Recognitions 2015

Inclusion in the **Dow Jones Sustainability World and Dow Jones Sustainability Europe** indices with a score of 88 out of 100.

EMAS Commemorative Silver Certificate: to mark the 20th anniversary of the establishment of EMAS, in 2015 the European Commission awarded Red Eléctrica the Commemorative Silver Certificate for having been registered in EMAS for over 10 years and for complying with the requirements of the EMAS registry.

Good Practice Competition (EFQM):

The 'Mapping of bird flight paths' project has been recognised as a highly distinguished project in the good practices competition of the EFQM (European Foundation for Quality Management).

Red Eléctrica received the **'Gold Class' distinction of the 'Sustainability Yearbook 2016'** in the evaluation performed by RobecoSAM (Sustainable Asset Management).



Environmental MANAGEMENT

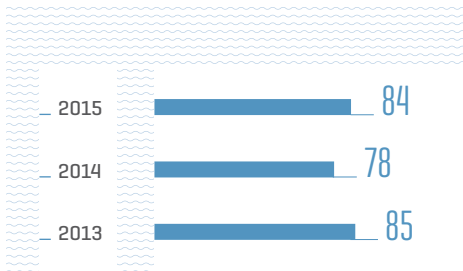
All activities of Red Eléctrica are carried out following strict environmental criteria in accordance with the principles undertaken in its environmental policy.

Red Eléctrica's environmental commitment is focused mainly on making the presence of its electricity facilities in the territory compatible with the environment, taking into account their entire life cycle and paying particular attention to biodiversity conservation. In addition, Red Eléctrica has decided to undertake a specific commitment to the fight against climate change and the promotion of energy efficiency, with the aim of helping contribute to achievement of the European climate targets.

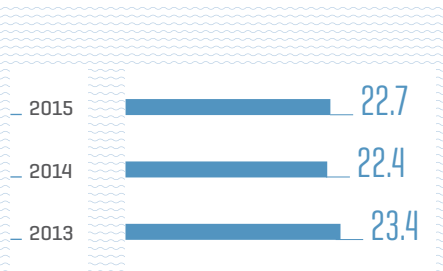
Environmental Management System

In order to continuously improve its environmental performance and processes, Red Eléctrica has an environmental management system certified in accordance with ISO 14001 and which has been registered, since October 2001, under the Community Eco-management and Audit Scheme (EMAS). Moreover, an environmental programme is defined annually that sets out the various objectives derived from the strategies of the Company.

FULFILMENT OF THE ENVIRONMENTAL PROGRAMME | %



ENVIRONMENTAL EXPENDITURE | € million



Integration into the ENVIRONMENT

_03



All projects for new facilities are assessed environmentally and work is carried out in consensus with all affected parties so that the facilities have minimal impact on the territory.

Red Eléctrica conducts a detailed study of the territory, and works in coordination with the public administration and key stakeholders in the definition of the siting (location) of substations and the routes the electricity lines will follow, as their adequate siting is crucial to reduce and even avoid undesired impacts on the environment and on the local communities.

All projects for new facilities are assessed from an environmental point of view and, once siting of the facilities are defined, the preventive and corrective measures to be applied are established in order to reduce or avoid the possible impacts. Additionally, the environmental monitoring programmes ensure that the defined measures are implemented and that their effectiveness is assessed.

Most relevant data during 2015

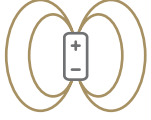
PROJECT PHASE: environmental permitting process initiated for 22 projects and environmental authorisation was obtained for another 17 projects.

CONSTRUCTION PHASE: environmental monitoring was carried out on 100% of the work performed on substations and lines.

MAINTENANCE PHASE: a total of 164 environmental monitoring visits were conducted on 158 substations. Of the total substations in service, over 87% have been visited at least once in the last 6 years.

THE PRESENCE OF ELECTRICITY INFRASTRUCTURE IN NO CASE REPRESENT A SIGNIFICANT ALTERNATION IN THE WAY OF LIFE OF THE COMMUNITIES AFFECTED.





**EMF LEVELS
2015**

ARE KEPT BELOW
EUROPEAN
RECOMMENDATIONS

*Compliance is
verified through
the use of a specific
measurement tool*



Among the preventive measures undertaken in 2015, noteworthy was the hoisting and hanging work by helicopter of the Boimente-Pesoz line, the stoppage of work on the Majorca-Ibiza interconnection to avoid impacts on the fishing and tourism industries, and the recovery of forest trails in municipalities affected by the installation of facilities.

**Minimising impacts on the
socio-economic environment**

Of all the infrastructure constructed and managed by Red Eléctrica, only substations represent a total and irreversible occupation of land, since it is not possible to make their presence compatible with other uses. Nonetheless, farming and livestock activities are compatible with the overhead lines allowing all types of agricultural activities to be carried out beneath them.

In any case, the socio-economic aspects are taken into account during the project design phase; the resulting analysis is integrated into the environmental impact study, and the suitable measures to minimise the impact on the affected land are defined.

Blending facilities into the landscape

To reduce the visual impact of electricity facilities it is essential to apply different measures for blending facilities into the landscape.

Red Eléctrica also works to improve the tools used to assess the visual impact. To do this, very innovative projects are being developed based on the use of geographic information systems that will enable sensitive line sections to be identified and as a result define the best options for the route of the line as well as the distribution and height of the towers in each case.



IN 2015

A PROJECT WAS LAUNCHED FOR THE ENVIRONMENTAL RISK ASSESSMENT AND IDENTIFICATION OF ENVIRONMENTAL LIABILITIES REGARDING SUBSTATION FACILITIES, WITH THE AIM OF DRAFTING A FACILITIES RISK MAP THAT ENABLES THE IMPLEMENTATION OF PREVENTIVE RESOURCES TO BE PRIORITISED.

Protection of archaeological and ethnological heritage

The protection of archaeological and ethnological heritage is an important factor in the design and construction of facilities.

In 2014, work began on the 'Arqueored project', which aims to provide digital mapping of catalogued heritage for its consultation prior to the planning of works. In this way, potential impacts can be avoided and the necessary measures, where appropriate, can be provided in advance.

Red Eléctrica already has information regarding eight autonomous communities, having therefore completed 50% of the work for this project which is scheduled to be completed in 2016.

Moreover, before carrying out any earthworks, an archaeological survey is conducted whose intensity and scope are based on the likelihood of material of interest being present in the area. According to the results, the need for the continued presence of an archaeologist during the works is determined.

Electric and magnetic fields

Thanks to the criteria applied in the design of facilities, the levels of electric and magnetic fields [EMFs] stay below those recommended by the Council of the European Union. Nonetheless, the Company remains abreast of all the new scientific innovations and developments in this field. During 2015 no incidents were reported arising from the non-compliance of the regulation regarding this aspect.

Main preventive measures implemented in the design of facilities

Construction of double circuits and transposition of phases in lines.

Increasing the height of towers, thus increasing the safety distances.

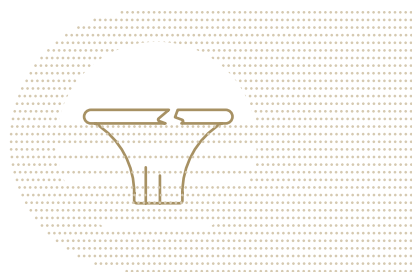
Establishing the minimum distance of electricity lines from population nuclei and isolated houses.

MAIN ACTIONS FOR LANDSCAPE INTEGRATION OF FACILITIES

Restoration of areas affected by construction and maintenance work.

Creating plant barriers and green areas in substations.

Blending substation buildings into the landscape.



ARCHAEOLOGICAL MONITORING 2015

Archaeological surveys are conducted before starting any construction work for facilities. In 2015, the monitoring was applied in the case of 22 lines (in 14 of them -63.6%- had the permanent presence of an archaeologist during the earthworks stage in the entire or significant part of the route) and 4 substations (all with the permanent presence of an archaeologist during the earthworks).

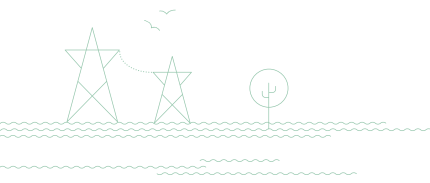


+ INFORMATION
in the 'Environmental' section of the corporate website.

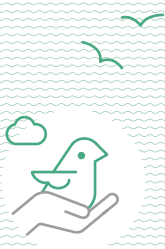


Bio DIVERSITY

Red Eléctrica has a biodiversity strategy and a specific plan of action that encompasses all the activities regarding the development and maintenance of facilities.



CORNERSONES OF THE BIODIVERSITY STRATEGY



Integrate conservation and the sustainable use of biodiversity in the development of the transmission grid.



Establish mechanisms to ensure the protection and conservation of environmental values in the activities carried out by the Company, especially in sensitive natural environments.



Contribute and promote the development of applied research projects aimed at blending the transmission grid into the environment.



Promote a communication and collaboration framework with stakeholders, increasing the visibility of the Company's commitment to biodiversity conservation.

Due to the fact that the main potential impacts of the facilities are related to biodiversity, its conservation has always been an essential principle in Red Eléctrica's environmental policy and business strategy.

To this end, the Company has a biodiversity strategy and a specific plan of action that encompasses all the activities regarding the development of facilities. Moreover, Red Eléctrica is part of the Spanish Business and Biodiversity Initiative promoted by the Ministry of Agriculture, Food and Environment.



Electricity grids and biodiversity

The interaction of electricity facilities with biodiversity is mainly associated with their presence in the territory, the impacts associated with their construction and maintenance, the risk of fire and the impact on birdlife due to collisions.

In this regard, avoiding areas rich in biodiversity is a priority criteria taken into account in the grid planning phase as well as in the definition of each project. However, considering that 25% of the area of Spain has some form of environmental protection, it is inevitable that in some cases infrastructure cross, or be located in protected areas or areas with species of interest.

On these occasions, Red Eléctrica implements all the preventive and corrective measures required to minimise



OF ALL THE RED ELÉCTRICA INFRASTRUCTURE, ONLY 15% OF THE LINES AND 6% OF THE SUBSTATIONS ARE LOCATED IN PROTECTED AREAS, AND OCCUPY ONLY 0.08% OF RED NATURA SPAIN.





HÁBITAT PROJECT

Improve knowledge regarding the interaction of

FACILITIES IN NATURAL HABITATS OF COMMUNITY INTEREST

2015-2017



the possible impacts on habitats and species, supplementing these with environmental improvement actions to enhance biodiversity.

Protection of habitats and species

Regarding works for the construction of lines or the modification of facilities, the main effects to be avoided are the alteration of the habitat of certain species of fauna and flora, and also the impact on vegetation due to the

Measures for the protection of the most relevant habitats and species 2015

- Use of helicopter for the concreting works of 6 towers, the hoisting of 5 towers and the hanging of the 400 kV Boimente-Pesoz line.
- Use of a drone for the hanging of two spans of the 220 kV Solórzano-Cicero line.
- Biological stoppages on 12 lines of varying lengths (periods between 16 and 30 weeks) to avoid impacts on different species, among which are: Egyptian vulture, Golden eagle, Bonelli's eagle, Dupont's lark, black stork, Houbara bustard, Western capercaillie and European mink.
- Transplanting of several specimens of oaks, Holm oaks, wild olive and common dogwood and carob, which were in areas affected by the works.
- Construction of a special building for Kestrels to nest safely in the municipality of Ayora, and the planting of trees.
- Collection of seeds and the planting of fragments and seeds in Ibiza and Majorca under the project 'Experimental technique or the recovery of Posidonia oceanica meadows'.

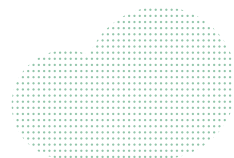




opening up of safety corridors; necessary to prevent fires while the electricity lines are in service.

Birdlife protection

The main effect on birdlife is the risk of birds colliding with grounding cables that protect the lines from electrical discharges during storms. The most effective measure to reduce this risk is to mark the grounding cables with devices that increase their visibility.

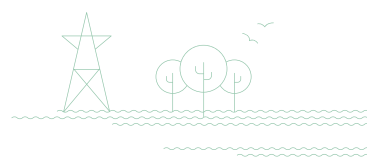
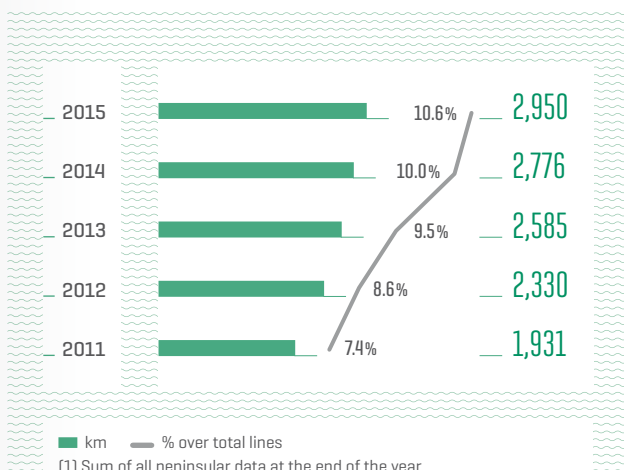


THE PROJECT

'MAPPING OF BIRD FLIGHT PATHS' ENABLES BIRD COLLISION RISK MAPS TO BE DRAFTED AND TO BE USED TO DESIGN THE MOST APPROPRIATE LINE MARKING PLANS NATIONWIDE.

MARKING OF LINES WITH BIRD-SAVING DEVICES [1]

km



+ INFORMATION in the 'Sustainability' section of the corporate website



MAIN CONSERVATION PROJECTS IN CONNECTION WITH ENDANGERED SPECIES

- Reintroduction of the Bonelli's eagle (*Hieraetus fasciatus*) in Majorca.
- Nesting platforms for the Osprey (*Pandion haliaetus*) in Andalusia.
- Programme for the reintroduction of the Black Vulture (*Aegypius monachus*) in Catalonia.
- Conservation of the Lesser Grey Shrike (*Lanius minor*) in Spain.
- Monitoring and analysis of the factors driving the expansion of Egyptian vulture (*Neophron percnocterus*) in Catalonia.
- Actual impact of supplementary feeding on the spatial and reproductive ecology of the Bonelli's eagle in Valencia (*Hieraetus fasciatus*).
- Monitoring, conservation and recovery of the population of the Spanish Imperial eagle (*Aquila adalberti*) in Doñana.



Fire prevention

To minimise the risk of fire associated with the presence of transmission lines, strict compliance with the safety distances between flora and the facilities is critical. Therefore, as part of the management of safety corridors, all facilities are reviewed annually and the necessary pruning and felling work is carried out regularly.

Moreover, Red Eléctrica has as an objective the signing of collaboration agreements for the prevention and fighting of forest fires with the different competent administrations in forestry management.

Contribution to biodiversity conservation

Red Eléctrica actively contributes to the conservation of biodiversity in Spain spearheading or participating in various conservation projects in all autonomous communities. In 2015, the Company collaborated on projects related to biodiversity in ten autonomous communities. Most of these projects are linked to birdlife conservation, although work is also being carried out on other flora and fauna. Also relevant are the actions aimed at restoring degraded habitats and that are encompassed within the 'Red Eléctrica Forest' project.

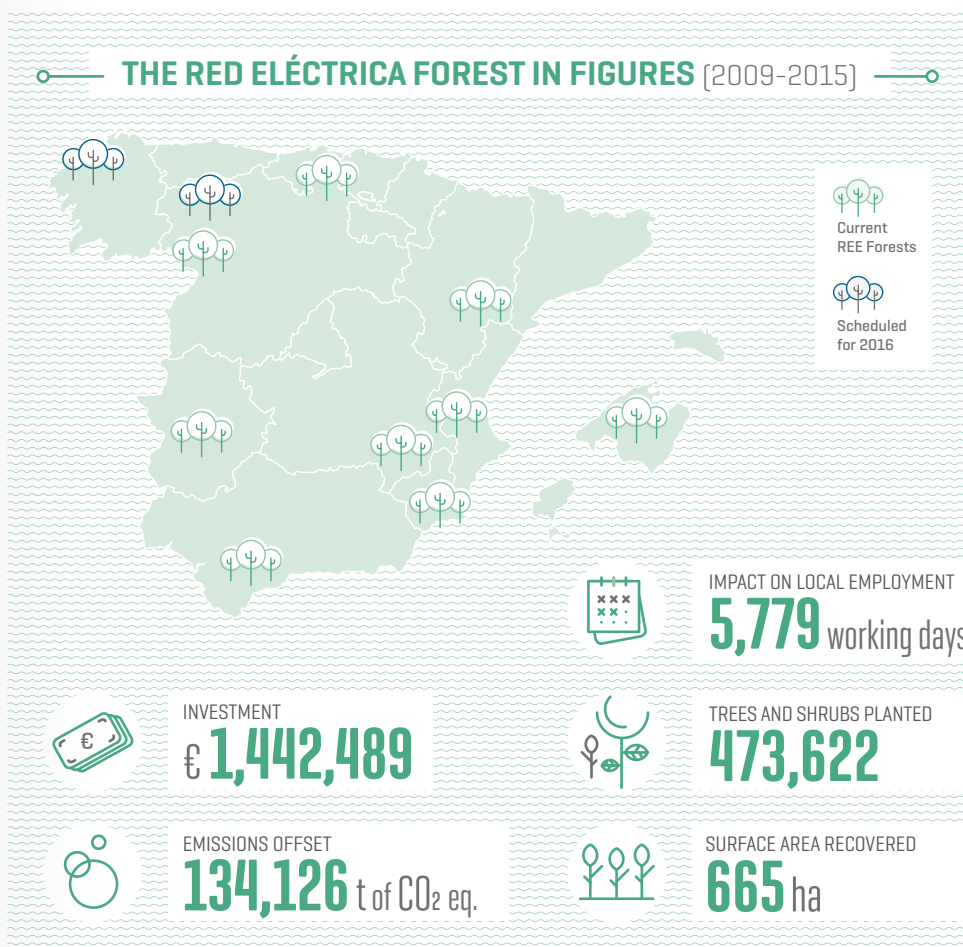
The red eléctrica forest

Started in 2009 and of an ongoing nature, this project is twofold: to offset part of Red Eléctrica's emissions by planting trees and the recovery of degraded natural areas of public common land, thus contributing to the conservation of biodiversity.

This initiative also seeks to contribute to the development of local economies by contracting work to companies or groups in the area, and also raise awareness and involve the local population and Company employees. In 2015 two new agreements were established for the recovery of 55 and 41 hectares of public highlands in Zamora and La Coruña, respectively.



+ INFORMATION
in the Red Eléctrica
Forest video



Environmental research & Development + Innovation projects

Red Eléctrica carries out diverse R&D+i projects geared towards the conservation of the natural environment. In 2015, the following are noteworthy:

- **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.
- **Energy efficiency:** Incorporation of Peltier cells for cooling substation racks and the development of a prototype power transformer that is more sustainable, safe and smart.
- **Posidonia Oceanica:** Development and validation of an experimental 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. The aim is to restore areas affected by submarine electricity cables.
- **'Vegeta' Project:** Optimisation of the vegetation treatment cycles so that maintenance tasks of safety corridors become more efficient, always ensuring the automatic compliance of all environmental conditioning factors.
- **On-site emptying of oil collection pits:** Development of a methodology that enables the emptying of oil collection pits and tanks in substations where there is water/oil mix, therefore minimising the amount of hazardous waste that needs to be managed and transported.
- **Fast geographic data gathering via RPAS (Remotely Piloted Aircraft),** in order to optimise the environmental activities to be carried out.



**RED ELÉCTRICA
DEVELOPS VARIOUS
ENVIRONMENTAL
RESEARCH AND
INNOVATION PROJECTS
TARGETED AT
MINIMISING THE
POSSIBLE IMPACTS OF
ELECTRICITY FACILITIES
ON THE ENVIRONMENT
AND ACHIEVING THEIR
MAXIMUM INTEGRATION
INTO THE TERRITORY.**



Climate CHANGE

_05



INTEGRATION OF RENEWABLES

40%

OF DEMAND
WAS COVERED
BY RENEWABLE
ENERGY

*On average over the
last three years*



Red Eléctrica, as transmission agent and operator of the electricity system (TSO) in Spain, is a key player in the progress towards achieving greater levels of sustainability in our energy model.

The development of transmission infrastructure and the implementation of solutions for system operation aimed at integrating and making the most of renewable energy are essential developments in order to make progress towards achieving the European targets regarding the fight against climate change.

Aware of this, in 2011 the Company decided to formalise their commitment to the fight against climate change through the definition of a specific strategy. In 2015 a new Action Plan on climate change was launched which is divided into four main lines of work.

Climate change action plan

Contribution to a sustainable energy model

The following actions/projects are contemplated within this scope:

- Construction of infrastructure that contribute to reducing emissions of the electricity system as a whole, such as

connections for the evacuation of renewable energy, support for supplying electricity to the rail transport network and the improvement of interconnections between electricity systems.

- Projects that promote the integration of renewable energy and the integration of energy storage systems.
- Activities targeted at contributing to the efficiency of the electricity system: demand-side management measures, development of projects related to smart grids and electric mobility (boosting rail transport and the implementation of the electric vehicle).

Reducing the carbon footprint

The target for 2020 is the reduction or offsetting of 21% of the Company's emissions compared to 2010. To achieve this, the activities are grouped into four broad areas:

- Improved calculation and knowledge of the carbon footprint.
- Reduction of SF₆ gas.
- Greater efficiency in electricity consumption
- Reduction of fuel consumption of fleet vehicles and the reduction of business trips.

The Sustainable Mobility Plan was launched in 2015 with the aim of incorporating a new culture of mobility into the Company based on energy efficiency (progressive incorporation of fuel-efficient vehicles, reduction of emissions associated to business trips, rationalisation of the use of private vehicles in work commutes, promoting the use of efficient vehicles among employees).

Involvement of stakeholders

The objective is to get stakeholders involved in the Company's commitment to the fight against climate change. In this regard, a specific course of action has been defined in order to extend this commitment to suppliers.

Adapting to climate change

In addition to working on mitigating actions, the Company is aware of the need to work on the process related to adapting to climate change. For this reason, both the risks and opportunities arising from climate change have been identified and assessed.



EMISSIONS 2020 TARGET

REDUCTION OF

21%

*Of the emissions of
the Company*





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Red Eléctrica works on selecting the most legible typographical font for their publications. The typographical font Geogrotesque and Klavika have been used for the texts and graphics in this report.



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