ENVIRONMENT

10

Connected to the natural environment, biodiversity and the fight against climate change

CORNERSTONES OF OUR ENVIRONMENTAL COMMITMENT

Maximum respect and protection of the natural environment

INTEGRATION INTO THE ENVIRONMENT

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

Environmental assessment of all projects

ENVIRONMENTAL MANAGEMENT

Red Eléctrica undertakes all its activities following strict environmental criteria in accordance with the principles adopted in its environmental policy.

ISO 14001 Certification and EMAS Register

ENVIRONMENTAL

EXPENDITURE 2015

23

MILLION EUROS

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)

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

Our environmental commitment [G4-DMA]

Red Eléctrica undertakes all its activities taking into account environmental protection, in accordance with the principles set out in its environmental policy, among which are included the commitment to the prevention of pollution and the principle of caution. [G4-14]

The main environmental impacts of Red Eléctrica are those derived from the presence of facilities in the territory, therefore the Company works hard to make them compatible with the environment, considering their entire life cycle and paying particular attention to biodiversity conservation.

In addition, Red Eléctrica is committed to a sustainable energy model, thus acquiring a specific commitment to climate change and energy efficiency.

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).** An environmental programme is defined annually that sets out the various objectives derived from the strategies of the Company and that establishes the specific actions required for its fulfilment.

ORGANISATIONAL STRUCTURE

Red Eléctrica's commitment to the environment, stems from senior management, who establish the environmental policy and implement the measures for compliance with environmental requirements, with the Chairman being the persons who assumes the maximum environmental responsibility.

The involvement of all organisational units and the commitment of the entire workforce are fundamental in environmental management. To provide technical support, there is a specific environment department which has 35 experts located at the head offices and in the territories where the facilities are located.

FULFILMENT OF THE ENVIRONMENTAL **PROGRAMME** (%)

ENVIRONMENTAL MANAGEMENT **SYSTEM**

REGISTERED SINCE 2001

In the Community Eco-management and Audit Scheme (EMAS)

ALL ACTIVITIES

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

ENVIRONMENTAL EXPENDITURE

Red Eléctrica allocates important financial resources for environmental protection. In 2015, a total of 22.7 million euros was earmarked for environmental management. Of this, 3.9 million corresponded to activities associated with the implementation of new projects (investment): environmental impact studies, preventive and corrective measures, works supervision and environmental improvement measures. The remaining 18.8 million was allocated to environmental improvements associated with facilities in service, biodiversity protection and conservation projects, activities related to climate change and energy efficiency, communication, training, R&D+i projects and other expenses.

ENVIRONMENTAL
EXPENDITURE

€m

2015	22.7
2014	22.4
2013	23.4

SUPPLY CHAIN (G4-DMA, G4-EN33)

The environmental requirements regarding training and specifications for the execution of work, form part of the contractual documentation for those services where it has been identified as necessary. In the case of the activities with the greatest potential impact, such as construction, renovation of facilities and some maintenance activities, a part of the cost of the work is dependent on the result of the environmental certification of the work, which involves extensive monitoring of the established environmental requirements.

In addition, Red Eléctrica demands having an environmental management system documented or certified by a third party for those suppliers with greater environmental impact (service providers that can generate direct impacts on the environment and equipment suppliers whose production is intensive in the use of resources).

During 2015, work continued on improving the identification of environmental impacts associated with each of the contracted services and the definition of specific requirements that providers will be required to comply with depending on the type and relevance of said impacts (potential and real). During 2016, these requirements will be included in the supplier qualification process.

In addition, the Company has begun to assess the environmental performance of suppliers and whose result is taken into account in its overall assessment, but which may also be grounds for their disqualification.

Moreover, since 2011 Red Eléctrica has worked on calculating the water and carbon footprint of all its suppliers.

ENVIRONMENTAL
PROTECTION
EXPENDITURE

23
MILLION
EUROS
In 2015

During 2015, the **identification of the environmental impacts of contracted services** was improved, establishing the specific requirements that suppliers will be required to fulfil according to said impacts.

Integration of facilities into the environment (G4-DMA)

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.

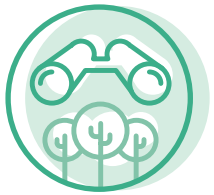
In addition, Red Eléctrica establishes appropriate preventive and corrective measures before undertaking the various tasks (whether it be the construction of new facilities or the modification of existing facilities) to minimise, to the highest degree possible, the potential impacts that its activities may have on the territory.

The best tool to carry out this process is the Environmental Impact Assessment procedure, which by law the majority of Red Eléctrica's projects are submitted to. However, when the law does not require a regulated procedure, the Company conducts an assessment of an environmental nature and establishes a voluntary communication with the competent authorities. In addition, environmental monitoring programmes ensure the implementation of measures agreed, the evaluation of their effectiveness and the definition of new measures if necessary.

The presence of **electricity infrastructure in no case represent** a significant alteration in the way of life of the communities affected.

ENVIRONMENTAL

MONITORING PROGRAMME



PREVENTIVE AND CORRECTIVE

MEASURES

Assessment of their effectiveness

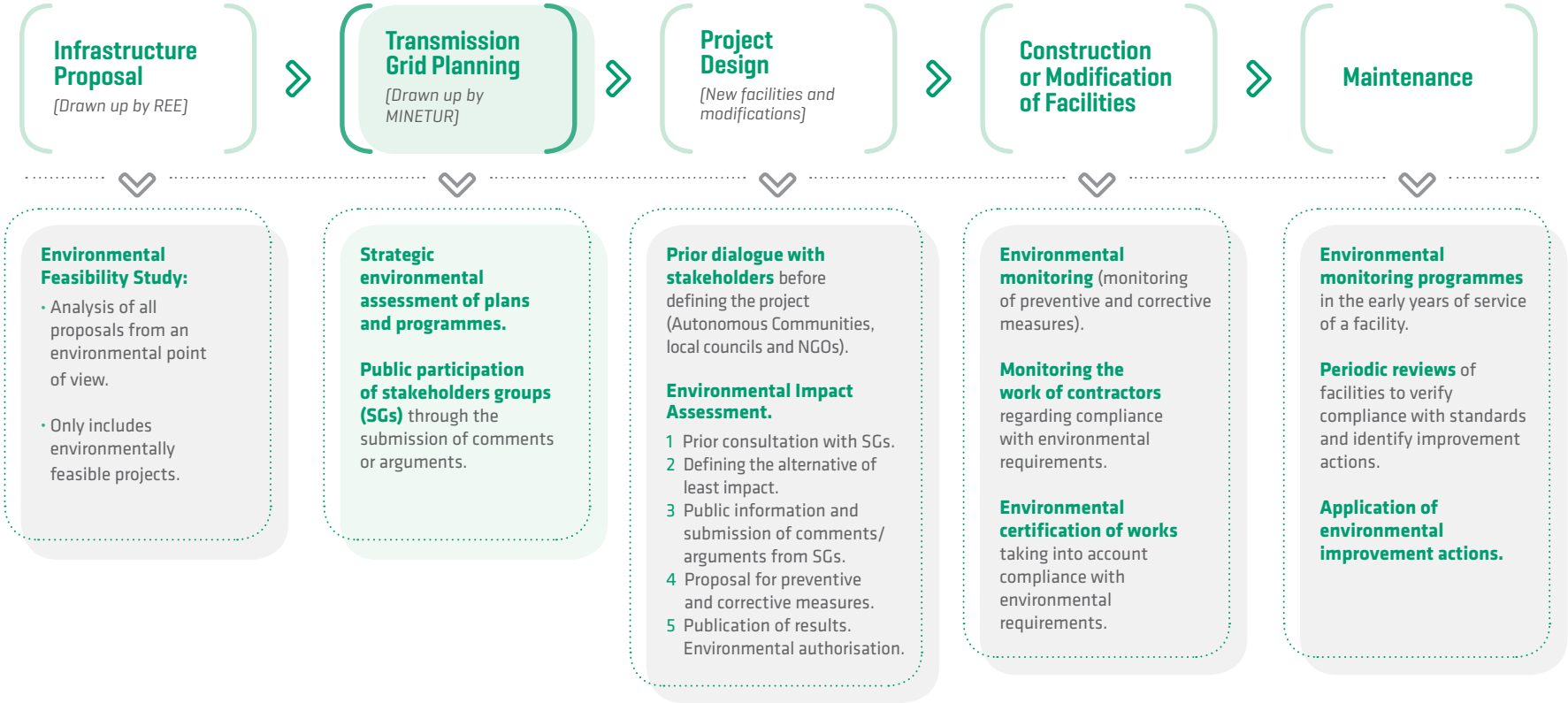
IN 2015

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.

As a complement to this, Red Eléctrica conducts periodic reviews of its in-service facilities, to verify compliance with environmental standards and identify possible improvement actions. In this regard, in 2015, a specific project was launched called the **Environmental Risk Assessment and identification of environmental liabilities regarding substation facilities** project, which aims to develop a homogeneous map of risks of the facilities that allows the implementation of preventive resources to be prioritised. Among the aspects valued, in addition to the potential risk of having an impact on the soil and water associated with the various elements of substations, is the taking into account of the risks linked to traditional activities in the area and which are adjacent to the facilities, as well as the environmental value of the environment and its vulnerability.

DEVELOPMENT AND IMPLEMENTATION

PHASES OF TRANSMISSION GRID INFRASTRUCTURE (G4-SO1)



FACILITIES AND BIODIVERSITY

One of the relevant aspects regarding the integration of facilities into the environment is related to biodiversity. Hence Red Eléctrica, in addition to minimising the impacts derived from its actions, has undertaken a special commitment to biodiversity conservation. Because of its importance, the strategy and the many actions undertaken by the Company in this area are dealt with in detail within this chapter of the report.

MINIMISATION OF IMPACTS ON THE SOCIO-ECONOMIC ENVIRONMENT (G4-SO2)

The presence of electricity infrastructure in no case represents a significant alteration in the way of life of the communities affected. In the case of electricity substations, these produce a total and irreversible occupation of land as it is not possible to make their presence compatible with other land uses, and the construction of a line, the land use is limited to the feet of the towers and the newly created accesses to the infrastructure. The land surface with overhead electricity lines is subject to a right of way easement during the useful life of the infrastructure. Farming and agricultural activities are compatible with the lines, allowing all kinds of agricultural crops to be grown under them and the free movement of the machinery necessary for its management.

ELECTRICAL
LINES

COMPATIBLE WITH
FARMING ACTIVITIES
CROPS
AGRICULTURE
MOVEMENT OF MACHINERY

RED ELÉCTRICA implements preventive and corrective measures to minimise the effects on the lands where facilities are located. These measures include the definition of the design of the towers and techniques that minimise the impact on crops or land restoration.

Red Eléctrica has defined, **in accordance with the criteria of the European Landscape Convention,** 13 designs of buildings depending on the environment in which the facility is located.

The social aspects are integrated into the environmental impact study carried out in the design phase of the facilities and the main conditioning factors to consider are:

- Use of land not compatible with the facilities.
- Tourist, cultural and landscape resources.
- Areas of high agricultural yields and agroforestry.

In addition to carefully defining the locations, preventive and corrective measures that ensure the impacts on the land and the activities carried out on the land are kept to a minimum. These measures are similar to those used for the protection of habitats and vegetation. Noteworthy amongst these are the location of towers and adequate work techniques to minimise impacts on crops and carrying out restoration work on the land and the elements affected by the works (paths, walls etc.). Sometimes improvement measures requested by the affected parties are added, which often involve the opening of forest tracks and paths and the making good of access routes.

Among the preventive and improvement measures undertaken in 2015, noteworthy is the completion of the hoisting and hanging work by helicopter of the 400 kV Boimente-Pesoz line, the stoppage of work on the Majorca-Ibiza interconnection between April and October to avoid impacts on the fishing and tourism industries, the recovery of 24 km of forest trails between the towns of Gueñes and Galdames and the opening of a new forest trail to join two valleys in the municipality of Alcorisa.

In regard to substations worth noting was the work carried out by Red Eléctrica to reduce noise levels produced by different elements that may cause inconvenience to neighbouring properties. In this line of work and to improve understanding of the nature of the noise generated, the **ACURED R&D+i project** was launched. Increased knowledge will allow the assessment of different technical solutions to reduce noise and promote its application in existing and future facilities.

LANDSCAPE INTEGRATION OF THE INFRAESTRUCTURES

One of the main challenges of integrating electricity transmission facilities into the environment is its landscape integration. Red Eléctrica works to improve assessment tools regarding the visual impact of facilities and thus define the best options for the route to be taken, the distribution and height of the towers. In this regard, the Company develops various projects that aim to advance regarding the knowledge and visual impact assessment that will enable improvements to be made in the decision making process:

- **Landscape assessment system for Red Eléctrica facilities.** Using georeferenced information of the various elements related to the landscape as a starting point (points of interest, observation points, viewsheds etc.), its goal is to identify sensitive sections in the transmission grid. In 2015, a pilot project was carried out for the province of Leon and its application to the entire transmission grid is foreseen (100% of the facilities) by the end of 2018.

LANDSCAPE SYSTEM
EVALUATION

IDENTIFICATION OF THE
SENSITIVE SECTIONS
IN THE TRANSMISSION GRID

Will be applied to 100% of facilities

2015-2018

- **Analysis methodology of electricity line visibility.** This is a cutting-edge analysis model, that takes into account aspects that had not been considered so far in the drafting of visibility maps: the shielding of vegetation, height of the observer, part of the tower seen and distances at which the tower is seen. The analysis can be performed automatically through the use of geographic information tools (GEORED corporate system).

Main landscape integration measures

- Restoration of areas affected by construction or maintenance work: addition of topsoil, adaptation of slopes and work sites and the undertaking of sowing and planting activities.
- Creation of plant barriers and gardens in substations. In 2015, these actions were carried out in four substations.
- Landscape integration of substation buildings. According to the criteria of the European Landscape Convention, Red Eléctrica has defined, thirteen different designs of substation building depending on the environment in which the facility is located.

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 has information from eight autonomous communities, having completed 50% of the work, and whose cataloguing is foreseen to be completed in 2016. The project is progressing successfully through close cooperation with the competent authorities. Additionally, through this collaboration, other areas of joint work on the protection of cultural heritage are being identified.

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. In 2015, archaeological supervision was carried out on the construction of 22 lines and 4 substations with the permanent

ARQUEORED **PROJECT**

Digital mapping of archaeological heritage

Currently with data from

8 AUTONOMOUS COMMUNITIES

Projects for the conservation of cultural heritage 2015

Excavation of the archaeological site of Peña Helada 1. Excavation of an area of 100 m². The element concerned is a mountain forge with a copper age metallurgy workshop for the production of iron using pre-hydraulic methods, located in the mountains of the municipality of Galdames (Vizcaya). This item is catalogued in the General Inventory of Heritage of the Basque Government and seemed to be in good condition. The works were performed under the direction of a team of archaeologists from the Mining museum in the Basque Country and with the knowledge of the Provincial Council of Biscay, owner of the property.

Archaeological assessment of the Eskatxabel I megalithic monument. Assessment of the monument excavated in 1963, which falls between the fifth and fourth millennium BC. After the assessment of its conservation status, the excavation trench was reintegrated, and protection and enhancement measures were applied.

Restoration of the fountains of El Escobal, Los Llanos and El Suto in the neighbourhood of Riaño, Solórzano. The fountains, historically used by the residents of the area, were covered with vegetation. Work began on their cleaning, improving elements of the works, adapting roads, fencing and the placement of informative signage. Prior to the works, toad and salamander tadpoles were collected for their later release.

HERITAGE

CONSERVATION

PEÑA HELADA 1

ARCHAEOLOGICAL SITE

Excavation of an area of 100 m²

ARCHAEOLOGICAL SURVEY

Conducted before starting any construction work for facilities. In 2015, this was applied in the case of 22 lines and 4 substations, with the permanent presence of an archaeologist in 64% of the lines and in all of the substations.

In the 'Map of projects' subsection of the 'Sustainability' section of the corporate website.

presence of an archaeologist in 64% of lines and substations. In addition, to preventing impacts on the heritage associated with their works, Red Eléctrica actively collaborates with the public administration on the conservation of cultural heritage.

ELECTRIC AND MAGNETIC FIELDS [G4-DMA, G4-PR1]

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 (The Official Journal of the European Communities 1999/519/EC: exposure limit values for the general public in sites where they may remain for a period of time at 5kV/m for electric fields and 100μT for magnetic fields). The most important measures are the following:

- 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 centres and isolated houses.

In order to verify compliance with the recommendation, Red Eléctrica has a tool that, as of certain parameters of the lines, accurately calculates maximum EMF levels that said facilities can generate. This action is carried out when requested by interested parties. In 2015, this has been applied to 4 lines. In the event of not having these parameters, in situ measurements are necessary.

This is the case of some facilities acquired by the Company in 2010 in the island systems, for which an **action plan** was established that started in 2015 and will end in 2016.

The main parameters influencing the field values that an electricity line can generate are the intensity (magnetic field) and the voltage (electric field) in addition to the distance that the receiver is from

EMF
LEVELS 2015

ARE KEPT BELOW
EUROPEAN
RECOMMENDATIONS

Compliance is verified through the use of a specific measurement tool

EMFS
Red Eléctrica remains abreast of all the new developments in this area, participates in various working groups and actively supports scientific research projects on this topic.

Red Eléctrica **is developing a plan for the measurement** of electric and magnetic fields, which will end in 2016, specific to facilities in island systems.

the same and other factors that have an influence, although which are not as decisive.

In the definition of the plan, measurements were deemed appropriate for each type of line configuration (defined by their voltage characteristics, geometry and number of circuits) in places with nearby buildings. In this way, this has resulted in a total of 19 measuring points in the Balearic Islands and 25 in the Canary Islands, with 30% having already been completed, all values are consistent with the recommendation.

Therefore, at this time it can be considered that Red Eléctrica has evaluated and validated compliance with the regulation for 97% of its facilities. [G4-PR1]

Red Eléctrica, on an exceptional basis, performs some measurements at the request of interested parties. In 2015, measurements were taken in four lines, with results being below those values recommended by the European Union in all cases. During 2015, there was no incident resulting from non-compliance with the regulation in this area [G4-PR2]

Moreover, Red Eléctrica considers it of utmost importance to remain abreast of all news generated on the topic, as well as to participate in various working groups and actively support research projects in this matter. Therefore, the Company has signed up to an international information service (ELF Gateway, which reports almost daily via email to its customers all the news appearing in the world) and maintains contact with different organisations and associations.

In order to reflect the advances in the scientific community and the recent declarations of international organisations, Red Eléctrica has worked with UNESA in updating the publication 'Electric and magnetic fields of 50 HZ. Analysis of the current state of knowledge'.

During 2015, there were **no incidents recorded resulting from non-compliance with the regulation** regarding electric and magnetic fields in Red Eléctrica facilities.

COMPLIANCE WITH
LEGISLATION

97
%
OF THE FACILITIES VALIDATED

Regarding EMF levels

In the 'Environment' subsection of the 'Sustainability' section of the corporate website.

Biodiversity (G4-DMA)

The commitment of Red Eléctrica to biodiversity has always been a key principle of its environmental policy and specifically it becomes evident in its biodiversity strategy and in a specific action plan that covers all the Company's activities.

Red Eléctrica is part of the Spanish Business and Biodiversity Initiative (IEBB) promoted by the Ministry of Agriculture, Food and Environment.

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.

RECOGNISED PROJECTS

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).

Good Practice of the Year Award (Renewables Grid Initiative). The 'Mapping of bird flight paths' project recognised by the jury among the best cases in 2015 in the category of environmental protection.

In the 'Environment' subsection of the 'Sustainability' section of the corporate website.

Biodiversity challenges

MAKE FACILITIES COMPATIBLE WITH BIRDLIFE

- **Project 'Mapping of bird flight paths':** identify areas of sensitivity, obtain risk maps, design a plan for the marking of electricity lines with bird-saving devices.

  Progress: identification of areas of sensitivity in 15 autonomous communities (ACs); risk maps for 7 ACs and marking plans for 2 ACs.

  Objetive 2020: risk map and marking plan for all ACs.

- **Monitoring the interaction between lines and birds:** analysis of accident rates and assessing the effectiveness of different models of bird-saving devices.

IMPROVE KNOWLEDGE OF PROTECTED NATURAL AREAS AND SPECIES OF INTERESTS

- **HÁBITAT Project (2015-2017).**

  Progress: obtaining of mapping for 5 ACs.

  Objetive 2017: mapping of all ACs.

COLLABORATE WITH AUTONOMOUS COMMUNITIES AND OTHER INTERESTED PARTIES ON MATTERS REGARDING BIODIVERSITY

- **Biodiversity protection framework agreements** and specific agreements and projects associated with specific activities.

  Progress: 10 agreements with ACs.

  Objetive 2020: agreements with all ACs.

- **Signing of agreements for the prevention of forest fires.**

  Progress: 11 new agreements signed.

  Objetive 2020: signed agreements for the whole of the national territory.

- **Agreements for the reforestation of degraded areas (REE Forest).**

  Progress (2009-2015): 11 agreements signed.

  Objetive 2020: one forest a year.

PROMOTE COMMUNICATION FROM RED ELÉCTRICA REGARDING ITS STANCE ON BIODIVERSITY

- **Participation in forums, development of informative material and the involvement of suppliers.**

The 'REE Forest' is a **reforestation project for degraded areas** with 11 agreements signed until 2015 and the target of one forest a year until 2020.

HÁBITAT

PROJECT

Improve knowledge regarding the interaction of the

FACILITIES IN NATURAL HABITATS OF

COMMUNITY INTEREST

2015-2017

RECOGNITION

Granting of the maximum score in the Dow Jones Sustainability Index (DJSI) under the biodiversity criteria.

ELECTRICITY INFRASTRUCTURE AND BIODIVERSITY

Red Eléctrica's facilities are distributed nationwide, as the aim of the electricity transmission grid is to connect the points of energy generation with those of consumption. 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 infrastructures cross, or are located in protected areas or areas with species of interest.

On these occasions, Red Eléctrica implements all preventive and corrective measures required to minimise the possible impacts on habitats and species (impacts associated with construction work and the modification of facilities, impacts on birdlife as a result of collisions and fire hazards) complementing this with environmental improvement actions to enhance biodiversity in those areas where its facilities are located.

PROTECTION OF HABITATS AND SPECIES DURING WORKS

In 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 opening up of safety corridors, necessary to prevent fires in the operation of the line. [G4-EN12]

Among the preventive and corrective measures applied, noteworthy are the following:

- Detailed field studies on specific issues, such as impact reports for Red Natura and surveys to identify the presence of protected flora and fauna.
- Introduction of some modifications in the design of facilities to minimise their effect on flora: compacting or increasing the height of towers, the relocation of towers, modification to access roads etc.
- Construction of decanting pools and filters to prevent contamination of waterways.

Hábitat Project (2015-2017)

This project seeks to discover in detail the natural values in the area of influence of the facilities of Red Eléctrica and its conservation status. The ultimate goal is to monitor the interaction of electricity transmission lines and natural habitats of Community interest, information that can be used for the decision-making process regarding operation and maintenance.

To achieve the objective a digital coverage map with all the information is being developed, that is obtained working in collaboration with the different autonomous communities and experts in the field.

In 2015, mapping was obtained of priority habitats located in the area of influence of the facilities for five autonomous communities.

RED ELÉCTRICA'S

CURRENT FACILITIES

OCCUPY JUST

0.08

% OF RED NATURA SPAIN

OF ALL

infrastructure existing in 2015, only 15% of the lines and 6% of substations are located in protected areas (Red Natura).

- Signage and protection of habitats and species of ecological value to avoid them being damaged in the course of the work.
- Use of specific techniques that minimise the need to open access roads, towers and material storage: hoisting with a boom crane or hanging of line by hand, carrying out work with a helicopter or drone.
- Transfer of species affected by the work to other areas.
- Biological stoppages in 100% of the works during breeding or nesting periods to reduce impacts on the fauna concerned.
- Recovery of affected areas: restoration of slopes, sowing of seed and the planting of trees.
- Accompanying measures and the development of specific projects to improve biodiversity in affected areas.

In addition, Red Eléctrica continues to work with CESIC-IMEDEA on the **R&D+i project 'experimental technique for recovering Posidonia oceanica sea meadows',** which aims to develop a technique that allows the planting of seeds or fragments of Posidonia and therefore restore areas affected by submarine electricity cables.

In 2015, great strides were made on the project, with the collection of seeds and the planting of fragments and seeds in Ibiza and Majorca.

Specific measures for the protection of 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'.

MARKING
OF LINES

189
km
LINE MARKED WITH BIRD-SAVING SPIRALS

During 2015

RECOVERY OF *POSIDONIA OCEANICA:*

Red Eléctrica works on this project jointly with CESIC-IMEDEA with the aim of developing a technique for the planting of posidonia seeds in areas affected by submarine electricity cables.

Example of preventive and corrective measures associated with the Majorca-Ibiza interconnection project

SPECIFIC MEASURES DURING THE LAYING OF THE SUBMARINE CABLE TO AVOID THE IMPACTS ON POSIDONIA SEAGRASS MEADOWS
(PRIORITY HABITAT 1120)

- Directional drilling of more than 700 metres to avoid the opening up of trenches in the area close to the shore.
- Suctioning and storage of excess material into biodegradable containers at the opening of the trench to prevent water turbidity. Use of the suctioned material for stabilising the trench which is carried out manually by a diver.

IMPLEMENTATION OF MEASURES TO AVOID IMPACTS ON THE BEACH

- Definition and marking out of access and work areas.
- Removing of sand and its protection to prevent loss.
- Protection of work area by the laying geotextile material which will be removed along with the work material.
- Replacement of the sand.

MEASURES TO PREVENT OF IMPACTS ON FAUNA

- Definition of a protocol to follow in the case a whale is sighted. Boat crew training.
- Prior work inspection to ensure that there is no presence of Spur-thighed tortoise *(Testudo graeca)* and European green toad *(Bufo viridis Balearic)*. The Species Protection Service of the Regional Ministry of the Environment will be advised in this case.
- Fenced off work area to prevent the entry of the Spur-thighed tortoise.
- Protection of natural ponds so as to not affect the European green toad.

MEASURES TO PROTECT FLORA

- Transplantation of carob affected by the work, using all measures necessary to ensure their survival, including irrigation measures for 12 months.
- Conducting an inventory of *Limonium magallufianum* sea lavender located in silt-marga land. If this species is found at some point, the Species Protection Service of the Regional Ministry of the Environment is advised.

WORK STOPPAGES FROM 15 MARCH TO 15 OCTOBER

To minimise impacts on fauna, the fishing and tourism industries.

MAJORCA-IBIZA
INTERCONNECTION

15 MARCH-
15 OCTOBER
STOPPAGE OF WORKS

To minimise impacts on fauna, the fishing and tourism industries

RISK MAPS
of birdlife collisions with the grounding cables. Risk maps have been drafted in 7 regions and marking plans have been defined for the Balearic Islands and the Canary Islands.

MINIMISING THE RISK OF BIRD COLLISIONS

The main effect on fauna by Red Eléctrica's facilities is the risk of birds colliding with grounding cables that protect the lines from electrical discharges during storms. [G4-EN12]

The main measure to reduce that risk is marking the grounding cables with devices that increase their visibility. In 2015, 189 km of line was marked (174 km on the Spanish Peninsula and 15 km on the islands) and work has continued on the development of specific marking plans nationwide. To do this, the project **'Identification, characterisation and mapping of flight paths of birds that interact with high voltage transmission lines'** was developed, for which the Company has received several awards since its launch in 2010.

Thanks to this project a tool has been launched based on the use of geographic information systems (GIS) that integrate data regarding bird flight paths.

In a first phase, considering the information on the species most sensitive to collision, sensitivity maps have been drafted for the entire national territory. By introducing other environmental and territorial factors in the model, collision risk maps are also obtained, from which it is possible to prioritise corrective actions on existing lines and establish marking plans. Currently, risk maps have been completed for seven autonomous communities and the marking plan for the Balearic Islands and the Canary Islands has been designed and approved.

Other relevant projects relating to the protection of birds against collisions are:

- **Methodology and protocol** for the collection and analysis of data from bird collision accident rates with electricity transmission lines. In 2015, specific training was given to contractors that monitor birdlife and this has been implemented in the monitoring of 13 lines, both during construction and maintenance. The analysis of the results obtained will assess the effectiveness of the measures employed to reduce birdlife collisions.

- **Analysis of the effectiveness** of blade-type rotating buoy bird-flight diverters in different bird communities (Steppe and aquatic).

- **Study of the quantification** of the impact of electricity lines on the eastern Canary Islands in collaboration with the Museum of Natural Sciences (CSIC) and GREFA (2015-2016).

- **Collaboration with SEO Birdlife** on developing the 3rd Atlas of birds in breeding season in Spain (2014-2017). The information obtained will allow the data relevant to the identification, characterisation and mapping of routes and flight paths to be updated.

BIRDLIFE

ACCIDENTS WITH

PROTOCOL AND ANALYSIS OF DATA IN

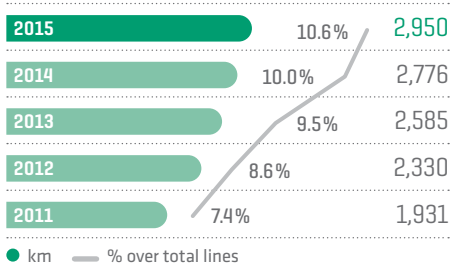
13 LINES

Evaluation and implementation of measures to reduce birdlife collisions

MARKING OF LINES WITH

BIRD-SAVING DEVICES (1)

km

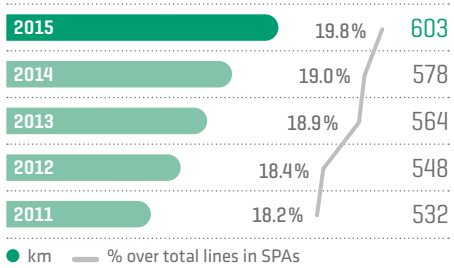


(1) Sum of all peninsular information at the end of the year.

MARKING OF LINES IN SPAs WITH

BIRD-SAVING DEVICES (1)

km



(1) Sum of all peninsular information at the end of the year.

Note: currently it is calculated identifying SPAs as risk areas although they do not always coincide (there are SPAs that protect species not susceptible to collision, and there are areas that are not classified as SPAs where there are susceptible species).

FIRE PREVENTION

In order to minimise the risk of fire associated with the presence of transmission lines strict compliance with the safety distances between flora and facilities is critical. Red Eléctrica ensures this compliance through the proper design of the safety corridors and the actions of predictive and preventive maintenance, such as the annual inspection of all facilities and conducting periodic forestry work.

The Company applies best practices in the design and maintenance of safety corridors, respecting shrubs and small size/slow growing tree species, minimising the actions on protected species, revegetating degraded areas and not using chemical treatment methods.

In the 'Environment' subsection of the 'Sustainability' section of the corporate website.

FIGHT AGAINST FOREST FIRES

Currently, 11 agreements have been signed with various regional public administrations; with an associated budget, every 5 years, of 1.1 million euros.

In 2015, **Red Eléctrica collaborated on projects related to biodiversity** and the conservation of flora and fauna in ten autonomous communities.

In 2016, Red Eléctrica will work on the **Vegeta Project,** which aims to optimise the treatment cycles of vegetation so that maintenance work on the safety corridors is more efficient, always ensuring automatic compliance with all environmental conditions.

Also, noteworthy is the active and continuous cooperation of Red Eléctrica with public administrations involved in forestry management.

Collaboration agreements for the prevention and fighting of forest fires

Red Eléctrica aims to sign agreements with different competent administrations in forestry management. In these, issues are reflected related to the management of safety corridors where electricity lines run through and additionally it sets out other commitments related to firefighting.

Currently there are 11 agreements in force, with a budget of 1,100,000 euros associated every five years.

Within the framework of these agreements various actions were carried out in 2015:

- Creating firebreaks (Balearic Islands).
- Construction of a mobile management logistics station (Tenerife).
- Material for forestry pruning and felling works (Extremadura).
- Tests of new solutions for the prevention and fighting of forest fires, such as a biomass control system through controlled grazing (Valencia).
- Training and awareness programmes, such as working on forest fires in Andalusia, technical seminars on firefighting safety in Castilla La Mancha, firefighting training programmes in Navarra, awareness and dissemination campaigns (Tenerife and La Palma), travelling exhibition on fire prevention (Valencia) and the printing of the manual for safety standards in the execution of work on forest land (Valencia).

CONTRIBUTION TO BIODIVERSITY CONSERVATION (G4-EN13)

Red Eléctrica actively contributes to the conservation of biodiversity in Spain spearheading or participating in various projects and conducting dissemination activities and environmental training.
The Company aims to carry out conservation projects in all autonomous communities. In 2015, it 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 among which noteworthy is: the **'REE Forest'.**

Conservation projects in connection with endangered species (G4-EN14)

- Monitoring and analysis of the factors driving the expansion of Egyptian vulture *(Neophron percnocterus)* in Catalonia [1] [3]
- Programme for the reintroduction of the Black vulture *(Aegypius monachus)* in Catalonia. [2] [3]
- Platforms for the Osprey *(Pandion haliaetus)* in Andalusia. [3]
- Reintroduction of the Bonelli's eagle *(Hieraaetus fasciatus)* in Majorca. [3]
- The actual impact of supplementary feeding on the spatial and reproductive ecology of the Bonelli's eagle in Valencia *(Hieraaetus fasciatus)*. [3]
- Conservation of the Lesser Shrike *(Lanius minor)* in Spain. [4]
- Monitoring, conservation and recovery of the population of the Spanish Imperial eagle *(Aquila adalberti)* in Doñana. [4] [5]

(1) Endangered species according to the IUCN Red List.
(2) Near threatened species according to the IUCN Red List.
(3) Vulnerable species according to the national catalogue of endangered species.
(4) Species in danger of extinction according to the national catalogue of endangered species.
(5) Vulnerable species according to the IUCN Red List.

In 2015, the **project for the reintroduction of the Black vulture** in Catalonia was completed, a project that has been underway since 2008.

REE
FOREST

1,442,489
EUROS INVESTED

655
ha
OF SURFACE AREA RECOVERED

In the 'Map of projects' subsection of the 'Sustainability' section of the corporate website.

RED ELÉCTRICA FOREST

Started in 2009 and of an ongoing nature, this project is twofold: to offset emissions from Red Eléctrica by planting trees and the recovery of degraded natural areas of public commonland, 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.

Relevant milestones in 2015

MAJORCA FOREST

Development of a training and awareness programme the 'REE Forest. Growing together' in which 683 students of first and second year of secondary school of the region of Llevant participated, and the celebrating of an awareness day for employees and their families to which 35 people attended.

ZAMORA FOREST (PUEBLA DE SANABRIA)

Completion of the restoration of 51 hectares in the Sierra de la Culebra (Site of Community Importance), with the planting of 102,128 pine trees *(Pinus sylvestris)*. The 'I plant my land' programme was conducted which involved 153 primary school students of the region of Sanabria. Training workshops in schools and a forest plantation tour were held.

HELLÍN FOREST

Extraordinary replanting of grapevines (28,328 plants), additional to that included in the agreement.

TERUEL FOREST

Recovery 10 hectares of forest burned in Ejulve with the planting of 9,000 pine trees *(Pinus sylvestris)* and 1,000 Holm oaks *(Quercus ilex)*.

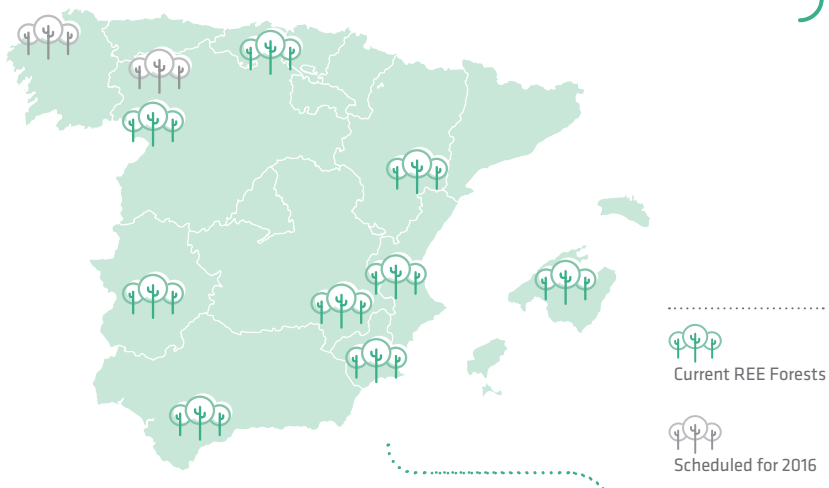
LA CARBALLEDA FOREST (ZAMORA)

New agreement with the regional government of Castilla y León for the recovery of 55 hectares of forest with pines and hardwoods.

TREMUZO FOREST (GALICIA)

New agreement with the Galician Government for the restoration of 40.9 hectares of forest with broadleaved species.

THE RED ELÉCTRICA FOREST *in figures* (2009-2015)



INVESTMENT
€1,442,489

EMISSIONS OFFSET
134,126 t of CO_2 equivalent

IMPACT ON LOCAL EMPLOYMENT
5,779 working days

TREES AND SHRUBS PLANTED
473,622

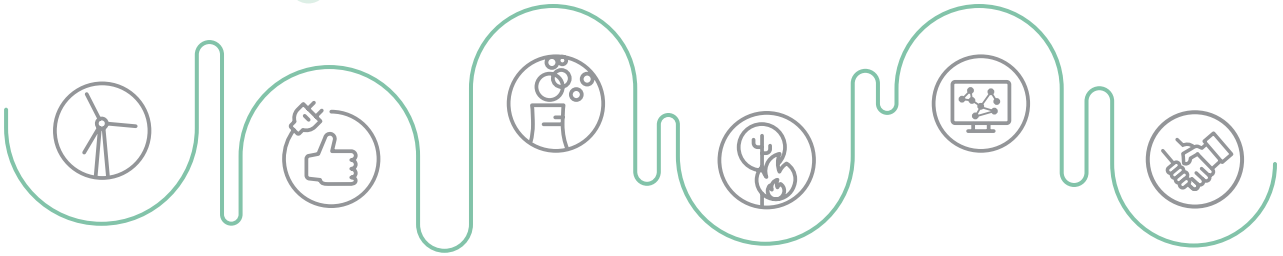
RECOVERED LAND
665 ha

Climate change (G4-DMA)

Red Eléctrica, as transmission agent and operator of the electricity system is a key player in the progress towards a more sustainable energy model: the development of transmission infrastructure and the implementation of solutions for system operation aimed at integrating renewable energy represent major opportunities in sustainability and at the same time, are essential to the achievement of the European climate targets.

Therefore, although Red Eléctrica is not subject to regulations requiring reporting and the reduction (or possibly offsetting) of emissions associated with their activities, in 2011 it decided to formalise its commitment to climate change by approving a specific strategy, which was reviewed and approved by the Chairman in May 2014.

CORNERSTONES OF THE CLIMATE CHANGE STRATEGY



Integration of renewable energies.

Betting for energy efficiency at all levels.

Reduction of Greenhouse Gas emissions.

Protection of forested areas: Fire prevention and promoting reforestation projects.

Development of climate change adaptation projects.

Extending the commitment to stakeholders, mainly suppliers.

BARCELONA
DECLARATION

Red Eléctrica, as a member of the Spanish Green Growth Group, in May 2015 signed the Barcelona Declaration, which includes 10 recommendations to promote a strategy for the development of the green economy and establishes economic policies that make this possible.

ACHIVEMENT

obtained the maximum score of the Dow Jones Sustainability Index (DJSI) under the climate strategy criteria.

In the 'Energy and climate change' subsection of the 'Sustainability' section of the corporate website.

CLIMATE CHANGE ACTION PLAN

In May 2015, Red Eléctrica launched a new **Action Plan on climate change** which included the targets to achieve in this area and the measures to be undertaken to reach these targets are established. The plan is divided into four main lines of work:

Contribution to a sustainable energy model

Includes actions related to the activity of Red Eléctrica as operator and transmission agent of the electricity grid, and is necessary for the achievement of the European 20-20-20 targets for the year 2020. In this regard, the **construction of facilities** is contemplated that contributes to reducing emissions from the electricity system as a whole, such as electricity interconnections and the transmission facilities necessary for the evacuation of renewable energy and the rail transport network.

Also included are all the projects to promote the maximum **integration of renewable energy,** such as optimising CECRE, improved tools for predicting renewable generation, the development of mechanisms for participation in system adjustment services and the integration of energy storage systems (Almacena Project).

Finally, referred to in this regard are all efforts to contribute to the efficiency of the electricity system, as are the different **demand-side management** measures and the development of research projects relating to **smart grids and electric mobility.**

Detailed information on these actions is described in the Sustainable Energy chapter of this report.

INTEGRATION OF
RENEWABLES

40
%
OF THE ELECTRICTY DEMAND WAS COVERED BY RENEWABLES

on average over the last three years

In the 'Energy and climate change' subsection of the 'Sustainability' section of the corporate website.

Reducing the carbon footprint

The Action Plan sets the **reduction or compensation of 21% of the company emissions** compared to 2010 as a general target for 2020, in addition to other partial objectives. 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 and reducing fuel consumption of fleet vehicles and the reduction of business trips. In this chapter we describe these aspects in more detail.

Stakeholder involvement

Incorporates a set of initiatives aimed at involving stakeholders in the Company's commitment in the fight against climate change. A variety of communication actions have been developed and planned addressed towards the various stakeholders to promote energy efficiency. In addition, different ways of collaboration with the administration in this area and establishing a work programme aimed at extending the commitment to providers has been defined to combat climate change.

Adapting to climate change

Besides working on mitigation actions, Red Eléctrica is aware of the need to work in the field of adaptation to climate change. For this reason, it has identified and evaluated both the risks and opportunities arising from climate change and has begun to develop some actions derived from this analysis.

Risks and opportunities of climate change (G4-EC2)

The risks of climate change of Red Eléctrica are integrated into the corporate risk map. On page 43 of this report an outline is provided regarding these risks and the main actions carried out by Red Eléctrica to manage them.

Acknowledgements

In 2015, Red Eléctrica was included in the Climate Disclosure Leadership Index, after a score of 100 B, for its transparency in disclosing information related to climate change.

CDP CLIMATE DISCLOSURE LEADER 2015

PRICE PROJECT

DEPLOYMENT OF DEMAND-SIDE MANAGEMENT MEASURES IN **1,000** HOMES

In the Corredor del Henares

RED ELÉCTRICA EFICIENTE

Internal efficiency seal, created by Red Eléctrica, which identifies projects that promote the efficient use of natural resources.

As for opportunities, the fight to stop climate change implies a change in the energy model and the transmission model. Policies set at European level are clearly aimed at these purposes. The need to increase the share of renewable energy in the electricity system (connection of new facilities and the optimisation of their management), the improvements to be undertaken in order to increase the efficiency of the system, changes in mobility policies (boost to rail transport and development of electric vehicles) represent a clear need for new investment in the transmission grid (new lines, interconnections) and therefore, a clear business opportunity for the Company.

Red Eléctrica eficiente

As a key player in the electricity sector, Red Eléctrica considers efforts geared towards energy efficiency and savings as essential due to the enormous benefits in economic, social and environmental terms.

The Company works in this field both from the perspective of operator of the electricity system, promoting various measures to improve the efficiency of the system, as well as from the perspective of improving its own processes, with the aim of reducing its carbon footprint.

To make this interest visible among its employees and shareholders, the Company has created a seal of internal efficiency **(Red Eléctrica eficiente)**, which identifies those projects that promote the efficient use of natural resources. Each year some of them are distinguished due to their contribution to the achievement of the various objectives on efficiency.

In the 3rd Edition of the Red Eléctrica eficiente Awards, three awards were given: Communication campaign 'Every gesture counts' for contractors working on the premises of Red Eléctrica,' VILI Project', aimed at reducing the use of paper for the dissemination of information, and the 'PRICE project', which through the deployment of demand-side management measures in 1,000 households in the Corredor del Henares area of Madrid, develops the active participation of citizens in the management of the electricity system.

RED ELÉCTRICA eficiente

In 2015, a methodology for calculating emissions associated with the life cycle of overhead lines was developed that will identify the most carbon-intensive activities.

EMISSIONS INVENTORY (G4-DMA)

Red Eléctrica drafts its **emissions inventory** based on the methodology of the GHG Protocol. Since 2011, the Company has been working on expanding the inventory and improving the calculation processes. Since 2013, the inventory has been submitted to independent review in accordance with ISAE 3410.

One of the objectives of the Company is to know the **carbon footprint of its facilities throughout their life cycle.** In this regard, in 2015 a methodology was developed for calculating emissions associated with an overhead line in which different aspects are taken into account, such as emissions associated with the use of raw materials and related to the construction, maintenance and decommissioning phases of the facility.

The application of this methodology will help identify those activities which are most carbon-intensive and prioritise areas in which we must work to reduce their impact on climate change.

CONTROL OF SF_6 EMISSIONS

The main direct emissions derived from Red Eléctrica's activities are those of sulphur hexafluoride (SF_6). This gas, in spite of its high potential for global warming, provides huge technical advantages. It is a nontoxic gas that allows a huge reduction in the distances to be maintained between the various elements of facilities which makes it possible to reduce the size of the installation and therefore better blend it into the landscape.

The emissions of this gas are associated to small leaks from equipment, leakages due to handling the gas and those one-off accidents that may occur. To reduce these emissions, Red Eléctrica performs the following actions:

- Improvement of the procedures for the control and identification of leaks, an inventory and management of SF_6 gas. In this regard, Red Eléctrica has developed a procedure for controlling the decanting of gas which has improved the calculation of annual leakage of SF_6, and provides results much lower than estimated based on rates of leakage values above theoretical results.

EMISSIONS

2020 TARGET

REDUCTION OF

21

%

Of the emissions of the Company

More information on the emissions inventory in the 'Energy and Climate Change' subsection of the 'Sustainability' section of the corporate website.

In 2015, this new methodology obtained a leakage value of 1,388 kg of SF_6, 0.37% of the total gas installed.

- Provision of the most efficient equipment for the detection of leaks, the handling and measurement of SF_6.
- Training of those involved in the handling of the gas. Red Eléctrica has legally recognised two training centres with a classroom for lectures and a workshop for experiments in which 412 employees have been trained since 2013.
- Replacement of old equipment with equipment with lower leakage rates.
- R&D+i projects related to the improvement in the management of gas. Collaboration with EPRI (2015-2020) and the development of a leak repair methodology for SF_6 in GIS facilities starting in 2016.

EVOLUTION OF SF_6 GAS INSTALLED IN **RED ELÉCTRICA**

kg

2015	373,806
2014	324,696
2013	297,694

The growth in installed gas is due to the commissioning of new facilities and the replacement of old equipment with equipment insulated with SF_6.

Additionally, Red Eléctrica works in collaboration with the government and other entities in the search for solutions aimed at controlling and reducing these emissions.

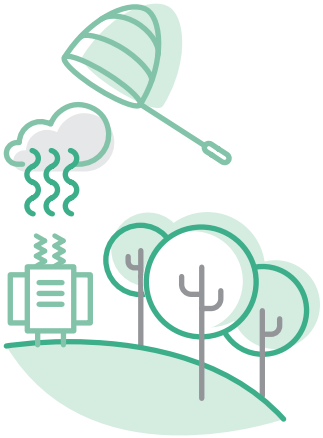
In **May 2015,** a new **voluntary agreement** was signed between the Ministry of Agriculture, Food and Environment, manufacturers and suppliers of electrical equipment using SF_6, transportation companies and electricity distribution companies and waste managers for this gas and the equipment containing it, **for a comprehensive management of the use of SF_6 in the electricity industry which is more respectful to the environment.**

VOLUNTARY **AGREEMENT 2015**

SIGNED WITH THE MINISTRY OF AGRICULTURE, FOOD AND ENVIRONMENT

SF_6 MANAGEMENT

Respectful with the environment



Replacing old equipment with equipment with lower leakage rates

- The theoretical average emission rate of equipment in 2015 was 1%, so it has met the target set for this year. In the last six years this rate has been reduced by 20.6%. Red Eléctrica has set a new target for 2020: reach an average theoretical leakage rate of 0.8%.
- The climate change Action Plan also includes the objective of avoiding 1,500 tons of CO_2 eq thanks to the replacement of old equipment by equipment with a lower leakage rate. In 2015, an estimated total of 277.18 tonnes of CO_2 eq has managed to be avoided.

[*] The calculation of the average emission rate of the equipment is done by assigning different emission rates to equipment installed depending on their age. It is a theoretical rate of leakage. The estimate of avoided emissions is accomplished by applying the same method.

The sustainable mobility Plan, aims to incorporate a new culture of mobility into the Company based on energy efficiency.

EFFICIENCY *in electricity consumption*

MAIN ENERGY EFFICIENCY ACTIONS

- **Improved energy management of** existing buildings and application of efficiency criteria in the construction of new buildings.
- **Energy Management System certified under the ISO 50001 standard** for the buildings of the head office with a consumption reduction target for these facilities of 15% in the period 2010-2020.

- **Reduction of electricity consumption associated with the use of IT equipment.**
  Renewal of equipment and systems and the application of efficient use policies, with a target of reducing electricity consumption associated with this equipment of 60% in the period 2012-2020.

- **Reduction of energy consumption associated to the Electricity Control Centres.**
  Target of a 15% reduction in its consumption for the period 2014-2020.

- **Reduction of electricity consumption in substations.**
  Selection of more efficient equipment and components and establishing efficient guidelines for use, with a special focus on ancillary services.

- **Awareness** of employees and collaborators working in the facilities of the Company.

ELECTRICITY CONSUMPTION
SAVINGS

106,487 kWh
ESTIMATED ANNUAL SAVING

Due to efficient lighting systems and the insulation of buildings

76,871 kWh
Estimated annual savings by renewing IT equipment including equipment in control centres.

SUSTAINABLE MOBILITY

Red Eléctrica maintains a clear commitment to efficiency in mobility. In this regard, in 2014 it approved the **Sustainable Mobility Plan** with the aim of incorporating a new culture of mobility into the Company. Its implementation has been carried out mainly at the head offices, affecting a total of 850 employees and the measures adopted include the following:

- **Progressive incorporation of efficient vehicles** (mostly hybrids) in the catalogue of shared leasing vehicles available.

- **Reducing emissions associated with business travel:** implementation of a corporate fleet of electric vehicles to travel during the workday, prioritise the use of efficient taxis and improved communication tools (video conferencing platforms and remote accessibility).

- **Rationalisation in the use of private vehicles** in work commutes: improved Company bus service and shuttles to communicate offices with different points, inclusion of travel passes in the benefits-in-kind payments for employees and promoting the use of car sharing.

- **Promoting the use of efficient vehicles among employees:** implementation of a fleet of electric and hybrid vehicles for management, incentives to purchase efficient vehicles, addition of extra charging points for privately owned electric vehicles, preferred parking spaces etc.

The implementation of the Plan has been considered as a management objective of the Company for 2015. The measures planned for this period, with a budget of 1,258,874 euros, have been completed in full, representing a 100% fulfilment of the objective.

In addition, Red Eléctrica has been working for a few years on optimising the journeys made in maintenance activities through two complementary actions. On the one hand, improving the energy rating of the vehicles used and on the other, optimising their management and use.

Proof of this is the **'Green Fleet Accreditation' in its 'Master'** mode (the most demanding) received from **AEGFA** (Association of Fleet Managers) and IDAE (Institute for Energy Diversification and Saving) in 2015. This certification shows that the fleet of Red Eléctrica meets strict standards of environmental respect and sustainability, while taking into account other aspects such as fleet management, training of drivers, offsetting of emissions, optimising routes, maintenance of vehicles or corporate commitment.

In this regard, also noteworthy is the development of the **CARS project** (Safe Responsible and Agile Driving), which has facilitated a reduction in fuel consumption through the use of efficient routes and responsible driving. This project has received **recognition from the Association of Fleet Managers (AEGFA) in the category of efficient fleet management.**

OFFSETTING EMISSIONS

Within the climate change action plan, we have set a goal to offset at least 20% of our direct emissions. In this regard, Red Eléctrica offsets its emissions primarily through the project: **Red Eléctrica Forest** described in the biodiversity section of this report.

Mobility objectives 2020

- 30% reduction of emissions associated with the use of fleet vehicles (2010-2020).
- 300 t of CO_2 equivalent avoided each year on business trips as of 2020.
- 200 t of CO_2 equivalent avoided annually in the transfer of employees to work centres as of 2020.

ENERGY RATINGS OF
VEHICLES

70.7% of fleet vehicles (including shared leasing vehicles) have an energy rating of A or B, noteworthy being the increase of vehicles with an A rating, which has gone from 48% in 2013 to 57% in 2015.

91.5% of management vehicles are rated A, B or are electric.

EVOLUTION OF EMISSIONS
FLEET VEHICLES

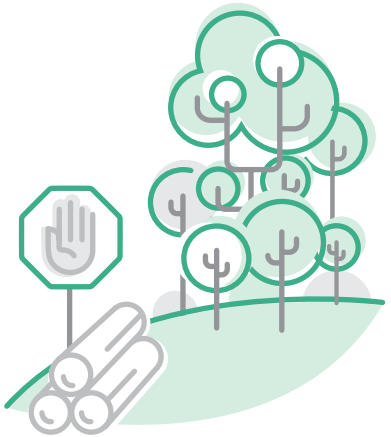
tCO_2 equivalent

In 2015, works for the Puebla de Sanabria Forest (Zamora) was concluded, which completes the offsetting of emissions corresponding to 2014. It is estimated that the species planted under this project will offset 30,638 tonnes of CO_2 throughout their life, which added to the Majorca Forest, completed last year, represent an offsetting of 41% of the direct emissions of 2014.

Also, the planting of pine and oak trees took place in Ejulve (Teruel) that would be equivalent to 3,000 tons of CO_2 being offset. Work has also started on the restoration of 50 hectares of forest with pine and hardwoods in the municipality of Espadañedo (Zamora), which will be completed in the first half of 2016 and will help meet the objective of offsetting emissions corresponding to 2015.

Moreover, for the third consecutive year the Company has offset a part of the emissions corresponding to employee commutes to their respective work centres, having purchased a total of **2,212 VCUs (Verified Carbon Unit)** under the standard VCS (Verified Carbon Standard), which correspond to the emissions generated by all those workers who answered the mobility survey 2015 (65.7% of the workforce). This purchase has been offset by supporting a project against a deforestation project in the Amazon rainforest - Peru: **'Madre de Dios Amazon REDD Project',** which contributes to the conservation of biodiversity in the area and the development of indigenous communities.

The 'Madre de Dios Amazon REDD Project', supported by Red Eléctrica in Peru, helps **prevent deforestation of the Amazon rainforest.**



OFFSETTING OF

EMISSIONS

ANNUAL OBJECTIVE:

20%

OF ITS EMISSIONS

Main offsetting measure: the 'REE Forest'

CALASPARRA FOREST 2012,

included within the framework of the 'Red Eléctrica Forest' project, in 2015 received a prize from the Region of Murcia for sustainable development: **Award for initiatives on Climate Change** in the 'effort for the generation and maintenance of carbon sinks'.

More about the Red Eléctrica Forest in the 'Map of projects' subsection of the 'Sustainability' section of the corporate website.

Effluents and Waste [G4-DMA]

The waste that Red Eléctrica generates is produced as a result of the following activities:

- Preventive or corrective maintenance tasks: inspections, changing of parts, oil renewal, etc.
- Actions against accidents: containment measures used in the case of leaks or spillages and cleaning work may lead to a large amount of associated waste.
- Improvement of facilities: renewal of obsolete switchgear, improvement in accident prevention systems, among others.

Red Eléctrica has established processes that help minimise the quantity and hazardous nature of waste generated, such as the in-situ regeneration of power transformer oil for its reuse. This process has identified an opportunity to reduce 'water-oil mixture' waste and has launched an **R&D+i project** to develop a process which, by using a mobile treatment plant, allows the in-situ separation of water oils and greases, so that the amount of hazardous waste that is necessary to be transported and managed is minimised.

Reverse logistics project 'Sustainable Stock'

In 2015, this pilot project was developed that involves the application of a reverse logistics model to manage inactive equipment or materials, obsolete or over-stocked, so that a full or partial recovery of its components can take place.

This project closely follows the principle of the 3Rs: Reduce, Reuse and Recycle.

The application of this methodology has been a clear improvement in the management of stored material that required it be categorised as redundant stock, with 89% of the material to be removed having been auctioned off as useful.

The development of the project in 2015 has led to an economic benefit of 55,623 euros, which when dealing with the management of materials as waste, has represented a net improvement for Red Eléctrica of 80.32%.

SUSTAINABLE STOCK PROJECT

€ 55,623 OF ECONOMIC BENEFIT

80.32% *Of net REE's overall improvement*

HAZARDOUS WASTE REDUCTION

Red Eléctrica has launched an R&D+i project for the in-situ separation via a mobile treatment plant, for water, oils and greases, reducing the hazardous nature of the waste.

However, and given the nature of the waste generating activities, it is very difficult to predict the evolution of the quantities generated and set quantitative reduction targets. Therefore, most of the efforts are aimed at finding better solutions for final management, promoting good practice through training and awareness and seeking the best options among our suppliers.

The waste generated in construction activities is managed by contractors. For all works there is a waste management plan which sets out the management to be carried out in each case, with the criteria of minimisation and reuse established as a priority (which is especially important for surplus excavation material). In addition, Red Eléctrica includes specific waste management requirements in the contractual documentation of works and reviews compliance through monitoring visits to works and via documentation control.

PREVENTION OF THE
CONTAMINATION

OF SOIL AND GROUNDWATER
EQUIPMENT
MAINTENANCE

Containment systems and response protocols

WASTE MANAGEMENT PLAN

Carried out in all works and establishes the management of waste depending on each case, with the principles of minimisation and reuse being a priority.

Red Eléctrica promotes **good practices in the management of its waste** and works to find its best final destination.

PROTECTION AGAINST LEAKS AND SPILLAGES

Red Eléctrica includes among its environmental risks the risk of contamination of soil or groundwater from leaks or spillages of oils, fuels and hazardous substances. For this reason, it has established numerous preventive and corrective measures to minimise these risks. On the one hand, proper maintenance of equipment is carried out and strict working procedures that reduce the number of incidents are established. On the other hand, it has adequate containment systems (especially relevant in the case of power transformers containing large amounts of oil) and response protocols when faced with possible events that result in a reduction of the severity of the consequences should accidents occur.

Indicators

FUEL CONSUMPTION

L

[G4-EN3]

	2013	2014	2015
Diesel	475,792	408,277	400,096
Petrol	27	-	44
Biodiesel	-	-	121
Autogas (LPG)			33
Diesel generator sets [1]	2,377	4,100	5,061

[1] Corresponds to diesel refilled in the fuel tanks in the year.

Note: The fuel consumption indicated refers to the consumption in fleet vehicles, cherry pickers and executive vehicles until 2013. The 2014 and 2015 data does not include executive vehicles as they are shared leasing vehicles.

ELECTRICITY CONSUMPTION

kWh

[G4-EN3]

	2013	2014	2015
Head Offices (Moraleja+Albatros) [1]	8,566,662	8,399,121	8,558,868
Tres Cantos [1]	1,674,293	1,652,529	1,690,439
Non-peninsular systems [1]	689,674	1,304,592	1,319,628
Regional head offices	2,353,001	2,176,256	2,049,798
Work centres: main regional offices [2]	1,887,422	2,648,473	2,281,308
Total	**15,171,052**	**16,180,971**	**15,900,041**

[1] These are work centres with special characteristics due to the fact that electricity control centres are located there. These work 24 hours a day 7 days a week and have special energy consumption.

[2] These are work centres staffed primarily with maintenance personnel.
In 2013 only the regional head offices (7 offices) were included.
In 2014, the consumption of 38 additional work centres was included.
In 2015 data regarding 14 new buildings is included.

SUMMARY OF ENERGY CONSUMPTION [1]

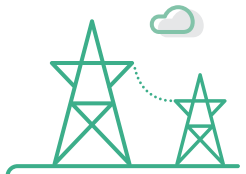
J

[G4-EN3]

	2013	2014	2015
Fuel consumption	$1.77 \cdot 10^{13}$	$1.52 \cdot 10^{13}$	$1.48 \cdot 10^{13}$
Consumption of electricity	$5.46 \cdot 10^{13}$	$5.82 \cdot 10^{13}$	$5.72 \cdot 10^{13}$

1 kWh = $36 \cdot 10^5$ joules; 1 litre diesel = $37 \cdot 10^6$ joules; 1 L of gasoline = $34 \cdot 10^6$,
1 L of gas oil = $37 \cdot 10^6$ joules; 1 L of biodiesel = $32.79 \cdot 10^6$ joules;
1 L of LPG = $25.7 \cdot 10^6$ joules.

[1] Total consumption data in joules, according to the criteria defined by GRI G4.



INDIRECT ENERGY CONSUMPTION. ELECTRICITY

[G4-EN3]

	2013	2014	2015
Transmission grid losses (GWh) (1)	3,115	3,187	3,023
Transmission grid losses (Joules)	$1.12 \cdot 10^{16}$	$1.15 \cdot 10^{16}$	$1.08 \cdot 10^{16}$

(1) Losses in the electricity transmission grid are related to the location of generation points in relation to the consumption points (the greater the distance, the greater the losses), the amount of energy demanded during the year, the generation mix of the year (percentage of each generation technology in the total energy generated), international exchanges and the shape of the demand curve. Practically none of these factors are controllable by Red Eléctrica, making it very difficult to reduce them. However, Red Eléctrica works to identify and improve those factors it can have an influence on. During 2015, the value of losses in the transmission grid decreased over the previous year mainly due to the different distribution of generation in the Spanish peninsular system.

EXTERNAL ENERGY CONSUMPTION. LOGISTICS

[G4-EN4]

	2013	2014	2015
Fuel consumption (litres)	251,654	239,120	238,240
Fuel consumption (Joules)	$9.31 \cdot 10^{12}$	$8.85 \cdot 10^{12}$	$8.82 \cdot 10^{12}$

1 litre of gas oil = $37 \cdot 10^{6}$ joules.

ENERGY INTENSITY

[G4-EN5]

	2013	2014	2015
Electricity consumption per employee in head offices (kWh/employee) (1)	7,642	6,725	7,126
Transmission grid losses (MWh/MWh transported) (%) (2)	1.265	1.320	1.219
Average consumption of vehicles for logistical use (external) (L/100 km)	26.36	25.75	26.56

(1) The calculation takes into account all staff working at Head Office and Moraleja work centres (employees of the Group, interns, employees from temporary staffing agencies et al).

(2) The indicated percentage corresponds to the energy dissipated in losses with respect to total demand. Losses in the Electricity Transmission Grid are related to the location of generation points in relation to the consumption points (the greater the distance, the greater the losses), the amount of energy demanded during the year, the generation mix of the year (percentage of each generation technology in the total energy generated), international exchanges and the shape of the demand curve. Practically none of these factors are controllable by Red Eléctrica, making it very difficult to reduce them. However, Red Eléctrica works to identify and improve those factors it can have an influence on.

Note. It is not considered relevant. The calculation of a global energy efficiency indicator is not deemed relevant as it is considered that the internal energy consumption is very low.

REDUCTIONS IN ELECTRICITY CONSUMPTION

[G4-EN6]

	kWh/annually	Joules/annually
Reduction in the Head Office via the implementation of energy efficiency measures (insulation of piping and renovation of the external elements of the façade of the buildings) (1)	70,604	$2.54 \cdot 10^{11}$
Improvements to insulation and lighting systems at 3 work centres (1)	35,883	$1.29 \cdot 10^{11}$
Renewal of display screens and PCs (1)	22,822	$8.22 \cdot 10^{10}$
Renovation of display screens and hardware in the control centres (1)	54,049	$1.94 \cdot 10^{11}$

(1) Estimated annual reductions resulting from the measures carried out in 2015 (estimations obtained from equipment specifications and information coming from energy audits).

REDUCTIONS IN FUEL CONSUMPTION

[G4-EN6]

	Litres	Joules
Saving of diesel due to efficiency measures in fleet vehicles, CARS project (1)	8,181	$3.02 \cdot 10^{11}$

(1) Actual reductions achieved in 2015 compared to 2014, thanks to efficiency measures implemented.
1 litre of diesel = $37 \cdot 10^{6}$ joules.

TOTAL WATER WITHDRAWAL BY SOURCE

[G4-EN8]

	2013	2014	2015
Head Office (m^3) (1)	10,983	9,177	9,018
Other work centres (m^3)	20,614	18,892	18,232
Total of all work centres (m^3) (2)	**31,597**	**28,069**	**27,250**

(1) Only the Head Office building in 'La Moraleja' is taken into account.
(2) The data provided has a coverage of 96%, in terms of personnel (taking into account all personnel that work in the different work centres: employees of the Group, interns, employees from temporary staffing agencies et al). Data for all work centres is not available due to the absence of meters and the breakdown of some devices.

Note: The water consumed comes from: the municipal mains (59.52%), wells (35.44%), cisterns (5.04%). In the Northern regional office and in some work centres cisterns are available for the collection of rainwater for sanitary use, fire prevention and irrigation. In general the wells do not have mechanisms to measure the water stored, so the actual % of utilisation of rainwater cannot be calculated. [G4-EN10]

PRESENCE OF FACILITIES IN RED NATURA SPACES

[G4-EN11]

	2013	2014	2015
Peninsular system			
Km of line in Red Natura / total km of line (%)	15.6	15.5	15.5
Number of substations in Red Natura / Number of substations (%)	7.2	6.8	6.6
Surface area of facilities in Red Natura / Total surface in Red Natura on the Spanish Peninsula (%) (1)	0.12	0.10	0.09
Insular systems			
Km of line in Red Natura / total km of line (%)	10.0	9.3	9.3
Number of substations in Red Natura / Number of substations (%)	2.8	2.80	2.8
Surface area of line in Red Natura / Total surface in Red Natura on the islands (%) (1)	0.08	0.03	0.02
Total Spain			
Km of line in Red Natura / total km of line (%)	15.2	15.1	15.0
Number of substations in Red Natura / Number of substations (%)	6.4	6.2	6.0
Surface area of facilities in Red Natura / Total surface in Red Natura (%) (1)	0.12	0.09	0.08

Red Natura (Natura 2000 Network) includes: SCI (Site of Community Importance); SPA (Specially Protected Areas for birds).

(1) Surface area occupied by lines and substations: The surface area of lines has been calculated assuming an occupation of 20 m on each side of the line. It is necessary to keep in mind that the occupation is overhead; there is only actual occupation in the case of the towers.

Note 1. For the calculation of the 2013 ratios, the database of Red Natura 2000 published in 2012 was used. For the calculation of the 2014 ratios, the database published in July 2014 was used. For the calculation of the 2014 ratios, the database published by MAGRAMA in February 2016. The mapped area of Red Natura on the islands is significantly higher than in previous years, which explains the variation in the indicators identified).

Note 2. The mapping of in-service facilities is improved and updated annually, whereby some variations in calculations not related to the increase or decrease in the number of facilities may result.

MOST SIGNIFICANT VEGETATION IMPACTS

(G4-EN12)

Felling of 10 Sweet Tabaiba *(Euphorbia balsamifera)* associated with the construction of a new power line.
Felling of native vegetation (122 Birches, 120 Oaks, 308 Chestnuts and 12 Willows) due to the opening of the security corridor for the construction of a new power line.
864.92 m^2 of *Posidonia Oceanica* (Priority Habitat 1120) seagrass meadows affected due to the laying of the submarine cable for the Mallorca-Ibiza 132 kV interconnection line.
2.9 ha of vegetation (Gorse, Kermes Oak and Holm Oak) affected due to a fire in SCI (fertile plains, slopes and wastelands southeast of Madrid) and SPA (Jarama and Manzanares River).

DETECTED COLLISIONS OF SPECIES OF INTEREST 2015

(G4-EN12)

Species affected	Nº of birds affected
Great Bustard *(Otis tarda)* (1)	25
Little Bustard *(Tetrax tetrax)* (2) (3)	9
Black vulture *(Aegypius monachus)* (2) (3)	1
Canarian Egyptian Vulture *(Neophron percnopterus majorensis)* (4) (5)	1
Houbara Bustard *(Chlamydotis undulata)* (1) (4)	10
Bonelli's Eagle *(Hieraaetus fasciatus)* (3)	1
Stone Curlew *(Burhinus oedicnemus)* (3)	9

(1) Vulnerable species according to IUCN Red List. **(G4-EN14)**
(2) Near threatened species according to IUCN Red List. **(G4-EN14)**
(3) Vulnerable species according to the National Catalogue of Endangered Species . **(G4-EN14)**
(4) Near extinction species according to the National Catalogue of Endangered Species. **(G4-EN14)**
(5) Endangered species according to IUCN Red List. **(G4-EN14)**

Collisions are mainly detected during monitoring plans or specific studies.
In 2015 the number of studies conducted increased significantly, mainly in existing facilities.

TOTAL NUMBER OF IUCN RED LIST SPECIES AND NATIONAL CONSERVATION LIST SPECIES WITH HABITATS IN AREAS AFFECTED BY OPERATIONS, BY LEVEL OF EXTINCTION RISK

[G4-EN14]

Scientific name	Common name	Classification according to MARM (2011) (National Catalogue)	Classification according to the IUCN red list (UICN)
Aquila adalberti	Imperial Eagle	In danger of extinction	Vulnerable (VU)
Hieraaetus fasciatus	Bonelli's Eagle	Vulnerable	Least concern (LC)
Pandion haliaetus	Osprey	Vulnerable	Least concern (LC)
Aquila chrysaetos	Golden Eagle	-	Near threatened (NT)/ Least concern (LC)
Burhinus oedicnemus dbspp.	Stone-curlew	Vulnerable	Least concern (LC)
Neophron percnopterus	Griffon Vulture	Vulnerable	Endangered -E-
Neophron percnopterus majorensis	Canarian Egyptian Vulture	In danger of extinction	Endangered -E- Species native to the Canary Islands
Chersophilus duponti	Dupont's Lark	Vulnerable	Near threatened (NT)
Botaurus stellaris	Euroasian Bittern	In danger of extinction	Least concern (LC)
Otis tarda	Great Bustard	-	Vulnerable (VU)
Chlamydotis undulata	Houbara Bustard	In danger of extinction	Vulnerable (VU)
Aegypius monachus	Black Vulture	Vulnerable	Near threatened (NT)
Marmaronetta angustirostris	Marbled Duck	In danger of extinction	Vulnerable (VU)
Ciconia nigra	Black Stork	Vulnerable	Least concern (LC)
Corvus corax canariensis	Common Raven	-	Species native to the Canary Islands
Fulica cristata	Crested Coot.	In danger of extinction	Least concern (LC)
Pterocles alchata	Pin-tailed Sandgrouse	Vulnerable	Least concern (LC)
Pterocles orientalis	Black-bellied Sandgrouse	Vulnerable	Least concern (LC)
Ardeola ralloides	Squacco Heron	Vulnerable	Least concern (LC)
Falco pelegrinoides	Barbary Falcon	In danger of extinction	Least concern (LC)
Geronticus eremita	Northern Bald Ibis	-	Critically endangered (CE)
Oxyura leucocephala	White-headed Duck	In danger of extinction	Endangered -E-
Milvus migrans	Black Kite	In danger of extinction	Least concern (LC)
Columba junoniae	White-tailed Laurel Pigeon	Vulnerable	Near threatened (NT)
Dendrocopos leucotos	White-backed Woodpecker	In danger of extinction	Least concern (LC)
Fringilla teydea subspp	Blue Chaffinch	In danger of extinction (Tenerife) /Vulnerable (Gran Canaria)	Near threatened (NT)
Aythya nyroca	Ferruginous Duck	In danger of extinction	Near threatened (NT)
Gypaetus barbatus	The Bearded-Vulture	In danger of extinction	Near threatened (NT)
Tetrax tetrax	Little Bustard	Vulnerable	Near threatened
Tetrao urogallus cantabricus	Cantabrian Capercaillie	In danger of extinction	Least concern (LC)
Tetrao urogallus aquitanicus	Aquitanian Capercaillie	Vulnerable	Least concern (LC)

The main effects on protected species from the operations of Red Eléctrica are those derived from birds colliding with electricity lines. Within the framework of the "Birds and Power Lines: mapping of bird flight paths" project 2010-2014 for the identification, characterisation and mapping of flight corridors of birds interacting with high voltage transmission lines, the species that prone to collision with the lines of Red Eléctrica have been identified (focal species, a total of 47) and whose habitats are in areas where these lines exist. Of the 47 species identified, 31 are considered threatened.

DIRECT GREENHOUSE GAS EMISSIONS (1)

tCO_2 equivalent

[G4-EN15]

Direct (SCOPE 1)	2013	2014	2015
SF_6 (2)	72,210	81,018	31,651
Air conditioning	545	809	840
Fleet vehicles	1,275	1,094	989
Diesel Generator sets	950	204	182
Total direct emissions	**74,980**	**83,125**	**33,662**

(1) The emission calculation is performed from an operational control approach. The information on the scope and methodology of inventory is available on the website of REE. http://www.ree.es/es/sostenibilidad/energia-sostenible/energia-y-cambio-climatico/nuestra-huella-de-carbono. The inventory was submitted to independent review in accordance with ISAE 3410.

(2) Taking GWP to 100 years: 22,800 (Source IPCC, Intergovernmental Panel on Climate Change: 4th assessment report). The decrease in SF6 emissions is linked to the change in the methodology used for its calculation. In 2013 and 2104 the data was calculated based on the application of theoretical emission factors of the installed gas. In 2015 the calculation is based on actual data regarding leakage.

OTHER INDIRECT GREENHOUSE GAS EMISSIONS

tCO_2 equivalent

[G4-EN17]

Indirect (SCOPE 3)	2013	2014	2015
Business travel (1)	1,046	1,485	2,517
Logistics	674	641	589
Employees commuting (2)	1,579	3,468	3,345
Supply chain (3)	176,528	175,389	234,807

(1) Corresponds to trips made by train, plane, privately owned or rental vehicles. In 2015, emissions from the use of vehicles on shared leasing (including management vehicles) and from the use of taxi were included.

(2) Since 2014, the calculation is performed taking into account all of Red Eléctrica employees.

(3) 2013: data calculated on suppliers representing 87% of the volume of orders. Carbon intensity in the value chain: 331 t CO_2 / million euros. 2014: information on suppliers representing 95% of the volume of orders. Carbon intensity in the value chain: 370 t CO_2 / million euros. 2015: information on 100% of the volume of orders. Carbon intensity in the value chain: 424 t CO_2 / million euros

Note: For the correct interpretation of the data it is necessary to take into account that:
- Carbon intensity depends on the type of orders made in the year and there are products / services with different carbon intensity. Therefore, one cannot establish strict comparisons between different years. Of all the activities, the construction of facilities and the manufacturing of equipment are the most carbon intensive.
- From the latest study of the value chain of Red Eléctrica, for the year 2015, it can be deduced that 37% of emissions in the value chain are associated to only one supplier, another 55% to the next top 10 suppliers, and 77% to the next 50 main suppliers.

INDIRECT GREENHOUSE GAS EMISSIONS FROM THE GENERATION OF ENERGY (1)

tCO_2 equivalent

[G4-EN16]

Indirect (SCOPE 2)	2013	2014	2015
Electricity Consumption (2) (4)	3,565	3,867	4,229
Transmission grid losses (3)	732,025	767,907	804,118
Total indirect emissions	**735,590**	**771,774**	**808,347**

(1) The emission calculation is performed from an operational control approach. The information on the scope and methodology of inventory is available on the website of REE. http://www.ree.es/es/sostenibilidad/energia-sostenible/energia-y-cambio-climatico/nuestra-huella-de-carbono.

(2) Peninsular emission factor calculated by Red Eléctrica that takes into account the energy mix of each year and that associates an emission factor with each generation technology.

(3) Losses in the Electricity Transmission Grid are related to the location of generation points in relation to the consumption points (the greater the distance, the greater the losses), the amount of energy demanded during the year, the generation mix of the year (percentage of each generation technology in the total energy generated), international exchanges and the shape of the demand curve. Practically none of these factors are controllable by Red Eléctrica, making it very difficult to reduce them. However, Red Eléctrica works to identify and improve those factors it can have an influence on (see sustainable energy chapter). In this case, the same way as emissions associated with electricity consumption, CO_2 is not emitted during Red Eléctrica activities, as it takes place at the different points of power generation. To calculate the emission factor associated to losses in transmission, the emission factor calculated by Red Eléctrica, which is based on the total annual peninsular electricity data, is used. During 2015, emissions have increased, although the losses have been reduced by 6% over the previous year. This is due to the increase in the emission factor (0.266 in 2015) associated with the decline in renewable energy generation (coverage of demand with renewable goes from 42.8% in 2014 to 36.9% in 2015) and the significant increase of coal generation (registered an increase of 24% compared to 2014).

(4) The increase in emissions associated with electricity consumption is also related to the increase in the emission factor value.

GREENHOUSE GAS EMISSIONS INTENSITY

(G4-EN18)

	2013	2014	2015
Emissions of SF_6/SF_6 installed (%) (1)	-	-	0.37
Emissions from fleet vehicles (kg CO_2/ km) (2)	-	-	0.27
Emissions (1 y 2) /revenues (t CO_2/million euros) (3)	476	479	462
Emissions/revenues (t CO_2/million euros) (4)	46.16	48.76	20.78
Emissions/energy transported (t CO_2/GWh) (5)	3.29	3.51	3.39

(1) The emission rate is calculated based on emissions data calculated according to actual data regarding leakage. No data from previous years are included as they are not comparable.

(2) All types of vehicles are included. The indicator litre/100 km is replaced by this new indicator as it is considered more appropriate to reflect all types of fleet vehicles (biodiesel and liquefied natural gas vehicles are included).

(3) Emissions Scope 1 and 2 (includes transmission grid losses).

(4) Emissions Scope 1 + electricity consumption emissions. REE considers it relevant to monitor this indicator, without including transmission grid losses (since it is not possible to act on them, as explained above). The reduction in the rate is due to the decrease of Scope 1 emissions associated with the change in methodology in calculating SF_6 emissions.

(5) Emissions Scope 1 and 2 (including transmission grid losses). The total energy transported corresponds to the annual demand measured at power station busbars.

REDUCTIONS OF GREENHOUSE GAS EMISSIONS

(G4-EN19)

Net savings	**tCO_2 e**
Saving of diesel due to efficiency measures in fleet vehicles, CARS project (1)	20

Annual savings (2)	**tCO_2 e/year**
Reduction in the Head Office via the implementation of energy efficiency measures (insulation of piping and renovation of the external elements of the façade of the buildings)	19
Improvements to insulation and lighting systems at 3 work centres	10
Renewal of display screens and PCs	6
Renovation of display screens and hardware in the control centres	14
Reduction in SF_6 emissions through the substitution of old equipment for that with a lower leakage rate	277

(1) Net savings achieved compared to 2014.

(2) Reductions associated to the measures implemented in 2015.

NON-HAZARDOUS WASTE

kg

(G4-EN23)

	2013	2014	2015	Waste management (2)
Septic tank sludge	1,311,240	1,380,716	1,087,310	Composting
Scrap metal not contaminated with hazardous substances	1,513,762	2,022,441	1,476,903	Recycling
Inert waste	544,082	329,005	537,505	Recycling/Elimination landfill
Paper and cardboard	241,938	262,328	95,106	Recycling
Toner & printer ink (1)	22	14	8	Recycling
Wood	69,581	119,834	119,939	Recycling
Non-hazardous electrical and electronic waste	3,443	1,415	291	Recycling
Plastics	4,957	12,014	15,483	Recycling/Elimination landfill
Glass	176	40	10	Recycling
Vegetable cooking oils	4,800	5,640	1,160	Regeneration
Alkaline batteries/without mercury	33	40	51	Recycling
Total	**3,694,034**	**4,133,487**	**3,333,766**	

(1) The management of toner and ink corresponds to the company that supplies and services the printers. Only units purchased directly by Red Eléctrica are taken into account.

(2) Default Procedure for the contractors responsible for waste management.

Note: The data shown does not reflect data regarding waste vegetation. The greater part of this waste is incorporated into the land or given to landowners, owing to the fact that it is the most adequate type of waste management. Only waste which cannot be managed as indicated previously and that is actually delivered to the waste management company is included. This information is not included as it is not considered relevant and could lead to error.

HAZARDOUS WASTE

kg

[G4-EN23]

	2013	2014	2015	Waste management [3]
Used oil	287,967	315,235	172,389	Regeneration
Oil with PCBs [1]	137	160	0	Elimination
Oil/water mix	929,592	362,868	418,535	Regeneration /Elimination
Diesel/water mix	400	21	0	Valuation/Elimination
Transformers and equipment with PCBs [1]	10,477	23,175	3,942	Valuation/Elimination
Hazardous electrical and electronic waste: equipment containing oil	307,077	1,248,046	275,542	Valuation
Hazardous electrical and electronic waste: other	59,897	132,724	119,476	Valuation
Nickel/cadmium accumulators	112,035	73,102	33,352	Recycling
Lead batteries	15,062	2,131	661	Recycling
Soils impregnated with hydrocarbons	383,033	195,348	144,864	Elimination landfill
Containers that have contained hazardous substances	5,077	7,057	5,600	Recycling
Absorbent matter and other	47,057	3,964	2,770	Valuation/Elimination landfill
Silica gel and other inorganic chemical products	848	0	673	Elimination
Non-halogenated solvents	47	4	0	Regeneration /Elimination
Halogenated solvents	108	0	0	Regeneration /Elimination
Water-based cleaning liquids	0	59	0	Valuation
Paint waste	372	284	1,749	Valuation/Elimination
Insulation material (with or without asbestos)	1,244	1,154	291	Elimination landfill
Laboratory chemical products	354	344	951	Elimination
Gases in pressurised containers [2]	8,522	7,690	3,191	Regeneration
Antifreeze containing hazardous substances	29	80	43	Regeneration /Elimination
Fluorescent lighting tubes	974	517	548	Recycling
Batteries	28	15	92	Valuation
Fuel oil and diesel	0	1,041	0	Valuation
Total	**2,170,337**	**2,375,019**	**1,184,669**	

(1) Once the elimination/decontamination plan of transformers, equipment and oil with PCBs was completed in 2010, the amounts now generated are caused by the removal of old sealed equipment that is contaminated at the end of its useful life.

(2) These wastes deal with used SF_6 gas that is out of specification. The treatment of this waste, consisting of the regeneration of gas for reuse, takes place outside Spain. **[G4-EN25]** This means that 0.27% of total hazardous waste has been transported internationally.

(3) Default Procedure for the contractors responsible for waste management.

TYPE OF WASTE MANAGEMENT

%

(G4-EN23)

	Non-hazardous	Hazardous
Composting/Regeneration/Recycling	93.5	50.0
Valuation	0.0	33.8
Elimination (any other method)	6.5	16.2

NUMBER OF ENVIRONMENTAL GRIEVANCES FILED

%

(G4-EN34)

	2014	2015
Birdlife	0	0
Electromagnetic fields	1	1
Consumption/Energy efficiency	0	0
Environmental expenditure	0	0
Emissions/Climate change	0	0
Impact on the landscape	1	0
Facilities	0	0
General environmental information	0	0
Waste	2	0
Noise	0	1
Environmental management system	0	0
Vegetation	11	19
Total	**15**	**21**

Note. Environmental claims are handled through the DIGAME service. Claims are classified according to type of attention (includes complaints, enquiries, suggestions, requests for information and acknowledgements) or grievance. In 2015, 85 claims of an environmental nature were handled, 21 of them were grievances (only grievances deemed applicable according to the criteria established in the internal procedure are recorded). All grievances submitted in 2015 have been addressed and resolved in 2015. Additionally, two pending grievances filed in 2014 were closed, whereby all grievances filed until December 2015 were dealt with and closed.

LEAKS AND SPILLAGES

(G4-EN24)

Historical data regarding leaks and spillages of chemical substances, oils and fuels (1)	2013	2014	2015
Construction activities	1	0	0
Maintenance activities	5	2	6

Leaks and spillages in 2015 of chemical substances, oils and fuels (1) (2)	1	2	3	4	5
Construction	0	0	0	0	0
Maintenance (3)	0	4 (3)	2 (4)	0	0

(1) Accidents of minor importance related to the breakage of hoses of the machinery used for construction, or minor spillages of oil or fuel occurring during decanting and temporary storage.

(2) Classification of accidents depending on the severity on a scale of 1 to 5 (1 slight - 5 severe).

No spillage has been included to date in the financial statements of the organisation. The following accidents were registered:

(3) Minor accidents: an accident caused due to a malfunction/breakdown of equipment, two as a result of bad practices in maintenance work carried out by contractors and a leakage of 6,000 litres of oil from a power transformer that flowed into the collection pit.

(4) Significant accidents: two cases caused by the breakage of the end section of a an overhead line at its feed point to an underground line.

- Spillage of 120 litres of silicone oil. The land around the base of the tower and a private plot (concrete paved area, garden, roof, vehicles and water tank) were affected. Actions were taken to clean-up the oil and affected area, including excavation and management of oil-contaminated soil (56 tonnes managed). Water tank was emptied, cleaned and refilled with water.
- Explosion that sprayed oil and which affected some 3,000 m^2, affecting a corn plantation, a vegetable garden and the safety corridor of the power line. Absorbent material was used to clean-up the oil and affected area, all material and contaminated soil was removed, generating about 2,300 kg of waste.

SANCTIONS AND FINES

(G4-EN29)

	2011		2012		2013		2014		2015	
Type of infringement	**Nº of cases**	**Amount**	**Nº of cases**	**Amount**	**Nº of cases**	**Amount**	**Nº of cases**	**Amount**	**Nº of cases**	**Amount**
Fire risk (1)	7	2,314	4	1,082	6	6,522	1	100	2	811
Unauthorised felling and pruning	3	22,477	1	300	4*	1,597*	2*	2,175*	1	100
Felling, pruning and shrub-clearing without preventive measures					-	-	-	-		
Fire due to line discharge	1	3,848	1	3,948	-	-	-	-		
Obstruction of waterway / Unauthorised works in certain areas	2	3,100	-	-	1	1,200	2*	3,600*		
Activities with high probability of soil contamination	-	-	-	-	-	-	-	-		
Accumulation of biomass waste	-	-	-	-	1	100	-	-		
Fauna/wildlife in captivity without authorisation	-	-	-	-	1	100	-	-		
Works in protected areas without authorisation	-	-	-	-	-	-	-	-		
Works without authorisation			2	62,153	1	2,000	-	-		
Opening up of a forest trail without authorisation							1*	1,001*	1	2,000
Use of a helicopter in a critical birdlife area without authorisation									1	1,000
Total	**13**	**31,138**	**8**	**67,483**	**14***	**11,519***	**6***	**6,876***	**5**	**3,911**

(1) Fire risk due to the lack of maintenance of vegetation, or abandonment of material.

* Data updated in 2015 following the resolution of pending cases (one case opened in 2013 and three cases opened in 2014). Additionally in 2015 a case was closed related to conducting works without authorisation what had been opened in 2010. The amount of the fine totalled 6,010 euros.

ENVIRONMENTAL EXPENDITURE

[G4-EN31]

	2013	2014	2015
Investments	**2,752,119**	**2,651,609**	**3,856,802**
Engineering and construction of facilities [1]	2,752,119	2,651,609	3,856,802
Expenditure	**20,620,761**	**19,795,259**	**18,848,972**
Development of methodologies and systems [2]	49,980	50,082	47,145
Environmental studies and analyses	167,746	125,502	201,743
Environmental actions in facilities in service	18,564,425	17,502,652	16,722,722
Contamination prevention [3]	1,547,453	1,376,552	1,268,565
Protection of biodiversity. Landscape [4]	16,039,821	14,914,991	14,593,765
Climate change [5]	277,067	494,335	408,725
Energy efficiency and savings in resources [6]	206,834	277,153	226,418
Waste reduction and management	493,250	439,622	225,250
Research and development	305,868	363,316	339,554
Training and communication	163,180	256,722	176,595
Environmental training and awareness	26,394	54,310	41,067
Communication [7]	136,785	202,412	135,528
Environmental taxes and fees [8]	105,162	280,223	92,906
Cost of personnel involved in environmental activities	1,264,401	1,216,762	1,268,307
Total	**23,372,880**	**22,446,868**	**22,705,774**

(1) Environmental impact studies carried out on all projects, application of preventive and corrective measures, environmental supervision at electricity facilities under construction and application of environmental improvement measures.

(2) Certifications, audits, environmental consultancy.

(3) Adaptation of facilities, repair of equipment, analysis, etc.

(4) Fire prevention (inspection of facilities, felling, pruning and clearing of vegetation for the maintenance of the safety distances, projects related to the prevention and fight against fires) line marking with bird-flight diverters, bird-nesting deterrents, management of nests, landscaping adaptation, biodiversity conservation projects, etc.

(5) "Red Eléctrica Forest", improvement of SF_6 management.

(6) Installation of meters, energy audits, activities for the improvement of energy efficiency.

(7) Affiliations, congresses, brochures and reports, stands at fairs, publicity in magazines, collaboration and sponsorships agreements.

(8) Data reported differ from those included in the 2014 Report, since there has been a change of criteria in the consideration of certain environmental taxes, and have now been excluded from the three years.