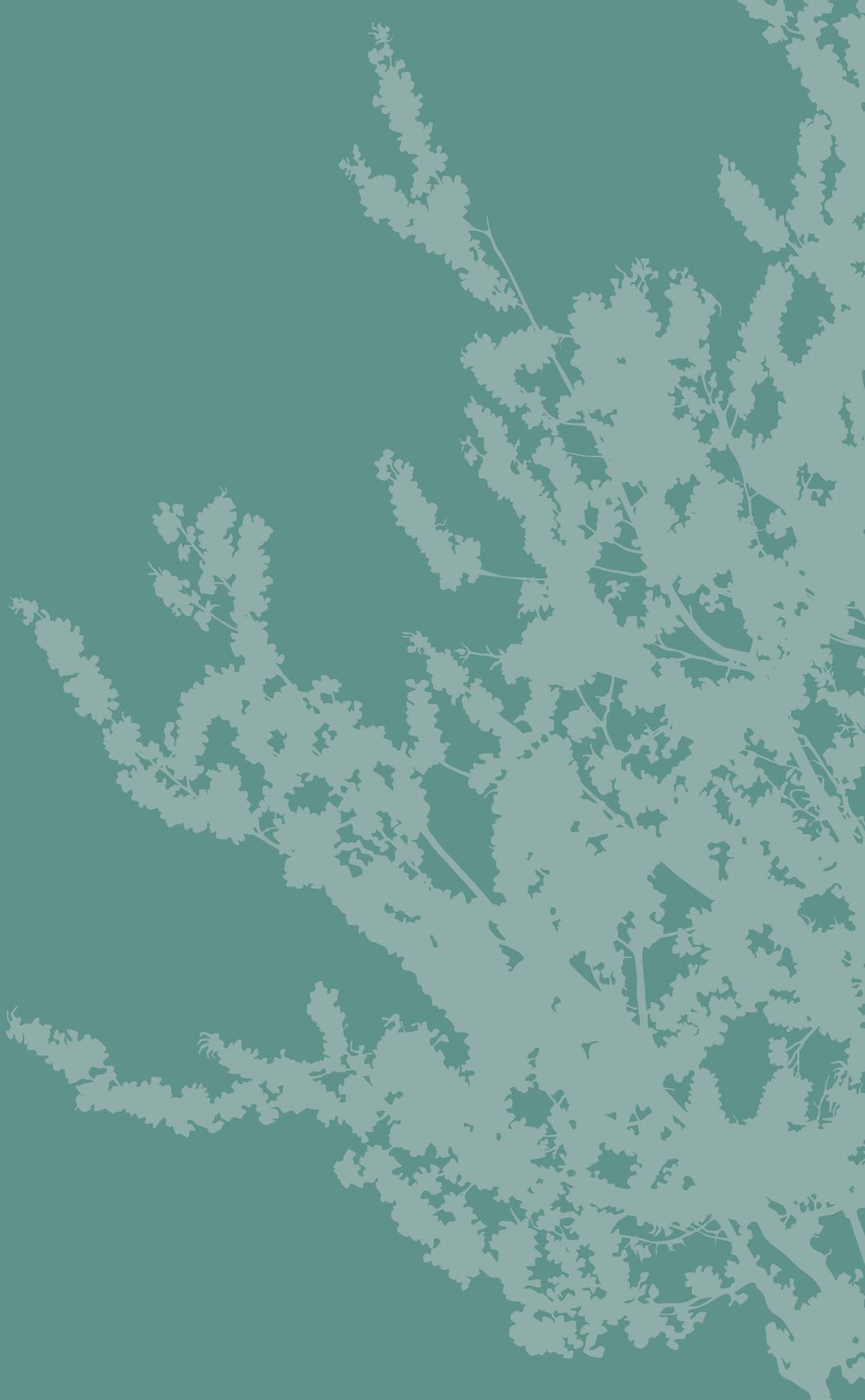


ENVIRONMENTAL COMMITMENT 2012



RED ELÉCTRICA DE ESPAÑA



ENVIRONMENTAL COMMITMENT 2012



RED ELÉCTRICA DE ESPAÑA



MORE INFO

Mouse-click on the QR codes to access corporate documents and videos of interest.

THIS DOCUMENT IS A SUMMARY OF THE FULL REPORT BY RED ELÉCTRICA DE ESPAÑA ENTITLED “ENVIRONMENTAL COMMITMENT 2012”

All Red Eléctrica activities are carried out in compliance with a strict environmental policy and from a position of maximum respect for the natural environment. To ensure this, the Company has an environmental management system certified according to the ISO 14001 standard.

In order to make its environmental commitment known, Red Eléctrica prepares an annual Environmental Statement in which all the environmental aspects arising from its activities are identified and assessed.

Also on an annual basis, a Corporate Responsibility Report is published as a means of disseminating the Company’s performance and results regarding corporate responsibility in the economic, social and environmental domains.

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

This English version is a translation of the original and authentic Spanish text found in the “COMPROMISO AMBIENTAL 2012”, originally issued in Spanish. In the event of any discrepancy, the Spanish-language version shall prevail.



QR code
Consult the 2012 Corporate Responsibility Report.



CONTENTS

OUR ENVIRONMENTAL RESPONSIBILITY	4
APPLYING ENVIRONMENTAL MANAGEMENT BEST PRACTICES	6
COMMITTED TO BIODIVERSITY PROTECTION AND CONSERVATION	10
COMMITTED TO ENERGY EFFICIENCY AND CLIMATE CHANGE	14



RED
ELÉCTRICA
DE ESPAÑA

www.ree.es

OUR ENVIRONMENTAL RESPONSIBILITY

Respect for nature, biodiversity conservation and the implementation of environmental best practices in the development of our activities are key elements of our business management.

EACH YEAR, RED ELÉCTRICA makes a significant effort to avoid or minimise those aspects arising from its activities that may produce some kind of impact on the environment.

Within the framework of our environmental management system, all activities in Red Eléctrica are evaluated and environmental improvement actions and measures are defined in order to conserve the natural environment in which these activities are carried out.

Red Eléctrica's commitment to the environment leads it to dedicate significant resources to the efficient development of its environmental management activities. In 2012, it earmarked more than 21 million euros to these activities.

To carry out continuous improvement of environmental performance, Red Eléctrica annually defines an environmental programme in which the various objectives derived from the Company strategy are established and specific work actions are defined.

The fulfillment of the environmental programme in 2012 was 77.79 %. The details on the objectives, goals and level of fulfillment of the environmental programme can be consulted in the 2012 Environmental Report 2012.

Global challenges

- » Make installations compatible with their surroundings.
- » Assure biodiversity protection and conservation.
- » Contribute in the fight against climate change.
- » Energy saving and efficiency.
- » Pollution prevention.

Our response to these challenges

- » Selection of routes and locations for facilities so that they have least impact. The establishment of preventive and corrective measures.
- » Development of a biodiversity strategy: protection of flora and fauna, fire prevention and conservation projects.
- » Definition of the Climate Change Strategy and an action plan for the reduction of emissions.
- » Establishment of efficiency measures for the reduction of consumptions of resources.
- » Establishment of preventive measures against spillages of hazardous substances and the suitable management of waste.

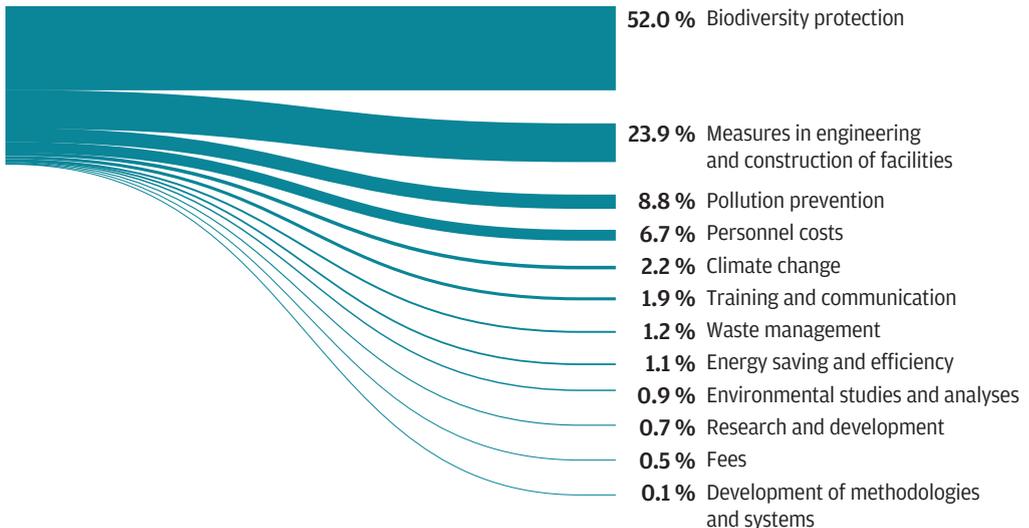


Key environmental performance indicators

	2010	2011	2012
Environmental investment (€ million)	6.3	7.0	5.1
Environmental expenditure (€ million)	18.9	20.4	16.4
Km of line in Natura 2000 network/total km of line (%)	16.0	15.4	15.0
Km of line in SPAs/total km of line (%)	11.4	11.2	10.9
Km of lines marked with bird-flight diverters	1,403	1,931	2,330
Average SF6 emission rate	1.26	1.16	0.99
Direct emissions (tonnes of CO ₂ equivalent)	63,190	68,304	77,355
Indirect emissions (tonnes of CO ₂ equivalent)	727,194	804,814	880,011
Total electricity consumption in work centres (MWh)	17,160	15,467	16,000
Hazardous waste (t)	2,744.8	2,016.7	2,052.3
Non-hazardous waste (t)	556.7	782.8	1,531.0
Autonomous communities with biodiversity projects (no.)	10	10	12

OVER 21 MILLION euros spent on the environment in 2012

Structure of environmental spending in 2012



APPLYING ENVIRONMENTAL MANAGEMENT BEST PRACTICES

Red Eléctrica has a very strict environmental policy and has implemented an environmental management system certified according to the ISO 14001 standard. This allows Red Eléctrica to identify and evaluate aspects arising from its activities that may affect the environment.

THE MAIN EFFECTS of the activities we carry out are related to the territory and landscape through which electricity lines pass. In order to minimise the possible affects arising from new installations/facilities, the Company carries out a study of the areas concerned and liaises with interested parties in order to define and agree on the locations of substations and planned routes for lines, applying strict environmental criteria during all phases of the development of the transmission grid.

Additionally, as a result of implementation of preventive and corrective measures, and strict monitoring of environmental criteria in construction and maintenance works, potential effects are reduced and the resulting impacts are compatible or insignificant.

We also apply preventive measures to avoid and minimise environmental accidents. As a result of these, the number of accidents recorded is low and their effects on the environment are minimal. In 2012, there were 12 accidents, none of which exceeded an “average” level of severity.

PREVENTIVE AND CORRECTIVE MEASURES APPLIED IN CONSTRUCTION

Preventive measures

- » Storage of topsoil
- » Hoisting of towers with boom crane/helicopter
- » Hanging of lines by hand/helicopter
- » Installation of bird-saving spirals
- » Archaeological surveys
- » Relocating of nests
- » Biological stoppages
- » Signage/markings off of habitats
- » Increasing height of towers

Corrective measures

- » Landscaping actions
- » Relocating of flora species
- » Regeneration of pathways
- » Forest repopulation
- » Restoration of slopes by use of hydroseeding and topsoil

APPLYING STRICT ENVIRONMENTAL CRITERIA IN ALL PHASES OF THE DEVELOPMENT OF THE ELECTRICITY TRANSMISSION GRID

1

Infrastructure proposal

Environmental feasibility study of all projects before including them in the infrastructure proposal Red Eléctrica sends to the Ministry of Industry, Energy and Tourism.

2

Network planning

Prepared by the Ministry of Industry, Energy and Tourism and subsequently presented to the interested parties for review by means of the Strategic Environmental Assessment of Plans and Programmes procedure, in which Red Eléctrica participates.

3

Project design

- » Dialogue with interested parties prior to the project definition and during the environmental assessment process.
- » Environmental assessment of all projects; the competent environmental administrative body is informed and their approval is sought.
- » Definition of solutions of lesser environmental and social impact.
- » Definition of the preventive and corrective measures.

During 2012, environmental proceedings were initiated for 14 projects and the administrative proceedings for a further 30 projects were finalised.

4

Construction of facilities

- » Monitoring of preventive and corrective measures, and defining new measures as required by the environmental monitoring programmes.
- » Monitoring of the contractor's compliance with environmental requirements.

During 2012, environmental monitoring was carried out on 100 % of substation works (53) and 97 % of line works (1,092 km).

5

Maintenance of facilities

- » Environmental monitoring programmes in the early years of service: periodic reviews to verify compliance with standards and identify improvement actions.
- » Application of environmental improvement actions.

During 2012, environmental monitoring regarding 123 substation works was carried out (only 5.5 % of those monitored were rated as having some form of environmental risk).



SPECIFIC ENVIRONMENTAL ACTIONS FOR THE NEW FRANCE-SPAIN ELECTRICITY INTERCONNECTOR

The electricity interconnector with France will be housed underground through a tunnel of 8.5 km in length in the stretch that crosses the Pyrenees. To minimise the environmental impacts arising from

the construction of the tunnel, Red Eléctrica has put in place a series of specific measures in addition to those ordinarily established in the construction of infrastructures/facilities.

Preventive/corrective measures in the construction of the tunnel

Land occupation

- » Location of the tunnel entrance in an area previously degraded (due to the construction of the AVE), using the existing platforms and the temporary rubbish tip (thus avoiding new impacts on the land and flora).

Surface water

- » Installation of a closed water circuit which reuses the water that circulates through the tunnel boring machine, and which passes through a treatment system allowing for its reuse, therefore avoiding contamination of the Llobregat del Empordá River flowing past the tunnel entrance; the river is protected due to the presence of fauna of interest.
- » The entire perimeter has been provided with a retention barrier to collect fine particulate, so that the runoff of rainwater from the slopes does not wash materials into the river.
- » Slopes were covered with surplus soil obtained from excavations in the Santa Llogaia converter station (part of the project) and these were hydroseeded to maintain them, limit surface erosion and facilitate their visual integration.

Waste

- » A waste management plan has been adopted: a small volume of the surpluses from the excavation works is used for the restoration of a gravel pit in the vicinity, and the bulk is being taken to a quarry to be reused.

Flora

- » The occupation of forest formation and natural flora areas has been avoided. Once the works have been completed, it is planned that all surfaces will be restored.

Protected fauna

- » Work began during a period of biological inactivity.
- » Protection of representative fauna such as the Mediterranean turtle (*Testudo hermanni*): an initial sweep took place to catch specimens and transport them to a recovery centre.
- » The entire area of operation was fenced off to prevent animals from entering the works.

Social environment

- » In all the works, where it is feasible, local companies and labour from the area itself are being used.
-



CONTROL OF ELECTRIC AND MAGNETIC FIELDS

The preventive measures applied in the design of facilities and installations allow the electric and magnetic field values to be below those recommended by the European Union. Nonetheless, Red Eléctrica keeps up to date with scientific advances and carries out research projects in this field.

PROTECTION OF THE SOCIOECONOMIC ENVIRONMENT AND LANDSCAPE

Electricity is essential in economic activity and the daily lives of citizens, and at the same time it is an engine of economic growth and increased employment that is made possible through investments in infrastructure.

But along with these benefits, electricity transmission facilities have a visual impact we try to reduce as much as possible by placing them far away from population centres and areas of high-value landscape, **restoring the areas affected** by the works and carrying out **landscape integration** projects in substations which are based on strategies of harmonisation, natural landscaping and camouflage. In 2012, seven designs for the integration of substation buildings were finalised.

Also, during the construction of the facilities, **archaeological and paleontological supervision** is carried out, on those projects where it is required, and the necessary preventive measures are implemented for the protection of cultural heritage. During 2012, archaeological supervision in the construction of ten lines and five substations was carried out, with the permanent presence of an archaeologist in 86 % of the cases.

QR Code
Consult the section on electric and magnetic fields on the corporate website.



STAKEHOLDER RELATIONS

With the aim of guaranteeing best environmental management, we extend our environmental demands to those suppliers whose services may have potential impacts on the natural environment, and we carry out comprehensive monitoring to ensure these are met. Additionally, we establish an ongoing dialogue with the relevant authorities, local communities, specialised entities, research organisations and environmental groups to find the best measures that can guarantee respect for the natural environment.



COMMITTED TO BIODIVERSITY PROTECTION AND CONSERVATION

Red Eléctrica sets out its commitment to biodiversity in its environmental policy, biodiversity strategy and the many actions it carries out in this area, to which it dedicates considerable manpower and financial resources.

THE FACILITIES of Red Eléctrica are distributed nationwide due to the fact that the objective with the transmission grid is to join energy generation points to areas of consumption.

One of the key criteria when defining the location of new facilities is to avoid those areas rich in biodiversity, although, in some cases, it is inevitable that they cross, or are located in, protected spaces or areas with species of interest (approximately 25 % of Spanish territory is protected).

In these cases, Red Eléctrica puts into motion all the necessary preventive and corrective measures to minimise the possible effects on flora and fauna, and provides additional environmental improvement actions to boost the biodiversity of the areas in which their facilities are located.

ACTIONS FOR THE PROTECTION OF FLORA AND FAUNA

- **Avoidance of those areas rich in biodiversity** when deciding on the siting of new electricity transmission facilities. Red Eléctrica facilities occupy just 0.12 % of the total Natura 2000 network area.
- **Protection of habitats and species** when it is inevitable that installations cross protected areas or areas of interest. To this end, numerous measures are established to minimise the disturbance of the habitat of certain species of flora and fauna, and the possible effects on the flora associated with the opening up of the safety corridors through which electricity lines pass.
- **Anticipation of bird collision risk** by marking the grounding cables of electricity lines. Noteworthy in 2012 was the “Bird movement maps” project, which will more accurately identify areas of risk.
- **Fire prevention** through the adequate definition of electricity line safety corridors, the application of more thorough and advanced techniques regarding maintenance, collaboration with local and regional administrations, and development of research projects and training and awareness activities on this subject.
- **Participation in projects of common interest** with the various public administrations and prestigious organisations concerning environmental matters.

RESEARCH AND INNOVATION PROJECTS IN 2012

Red Eléctrica's commitment to biodiversity goes beyond reducing the affects and impacts generated by their activities. To accomplish this mission, it leads or actively participates in different research and innovation projects aimed at the conservation of the natural environment.

Prevention and tackling of forest fires and protection of flora

» **“Modelling of the growth of forest masses” project.** This work is carried out in collaboration with Altran Technologies and the Forestry Faculty at Madrid Polytechnical University. The objective of the project is to obtain a forest growth simulation model to prevent possible incidents with high voltage lines, with the aim of being able to ensure that the safety distance between the trees and the lines is not exceeded.

Birdlife

» **Bird movement maps: flight paths and corridors.** Carried out with the CLAVE technical consultancy in collaboration with Doñana Biological Station (CSIC), the aim here is to identify and map the flight paths of birds especially prone to colliding with electricity lines.

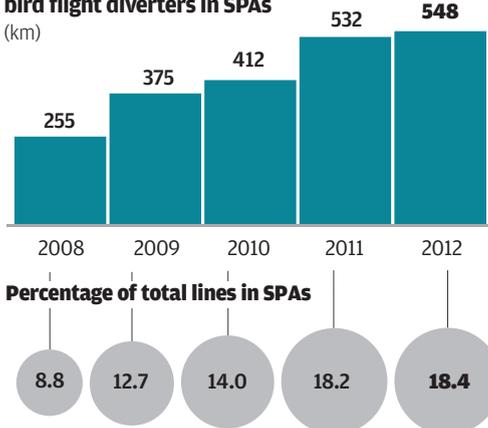
» **Predictive model of risk areas for bird collisions** with high voltage electricity lines in the Community of Valencia. Conducted in collaboration with the Miguel Hernández University of Elche and the Government of Valencia, its objective is the design and development of a model to assess the probability of bird collisions.

» **Design of a collision detector prototype system.** Carried out in collaboration with the Fundación Migres and the Research Foundation of the University of Seville, the objective of this project is to design a device which, once installed on the grounding cable of high-voltage line installations, allows the detection of birdlife collisions with the line.

» **Testing a nesting and roosting deterrent model for the White Stork.** This project is also carried out in collaboration with CLAVE and the CSIC in Doñana. Its purpose is to design a prototype device that deters White Storks from nesting and roosting on the electricity line towers.



■ **Marking of lines with bird flight diverters in SPAs** (km)



THE COMPANY HAS INVESTED over 11 million euros in biodiversity protection

BIODIVERSITY CONSERVATION PROJECTS IN 2012

Recovery Plan for the Golden Eagle (*Aquila chrysaetos*) in Galicia. Duration of project: 2011-2015. Collaboration: Xunta de Galicia (Government of Galicia), Autonomous Community of Madrid, Regional government of Castilla-La Mancha, Ecoplanin and GREFA.

Reintroduction of Bonelli's Eagle (*Hieraaetus fasciatus*) on the island of Majorca. Duration: 2011-2014. Collaboration: Government of the Balearic Islands.

Programme for the reintroduction of the Black Vulture (*Aegypius monachus*) in Catalonia.

Duration: 2008-2015. Collaboration: Obra Social Caixa Catalunya, Government of Catalonia, Government of Extremadura (Los Hornos recuperation centre), TRENCA and GREFA.

Improvement of Steppe bird habitats in Andalusia. Duration: 2008-2012. Collaboration: Doñana Biological Station (CSIC), Fundación Gyapaetus and Finca la Noruela.

Use of electricity towers as biodiversity catalysts in Andalusia. Duration: 2008-2012. Collaboration: Doñana Biological Station (CSIC), Fundación Gyapaetus.

Project LIFE+ Conservation and management in special protection areas for Steppe birds in Andalusia. Duration: 2010-2013. Collaboration: Government of Andalusia, ASAJA, COAG, UPA, the association of municipalities in Valle del Guadiato, SEO, EGMASA, DAP, Endesa and Fundación Enresa.

Study of the state of the population of the Stone-curlew (*Burhinus oedicephalus distinctus*) on the island of Gran Canaria and threats to its conservation. Duration: 2010-2012. Collaboration: Government of the Canary Islands and Inter-island Council of Gran Canaria.

Census of the Houbara Bustard population (*Chlamydotis undulata*) on the islands of Fuerteventura and Lanzarote in its pre-reproductive, reproductive and post-reproductive phases. Duration: 2011-2012. Collaboration: Government of the Canary Islands, the Inter-island Council of Fuerteventura, the Inter-island Council of Lanzarote and GREFA.



Read QR code
Consult the biodiversity section
of the corporate website.



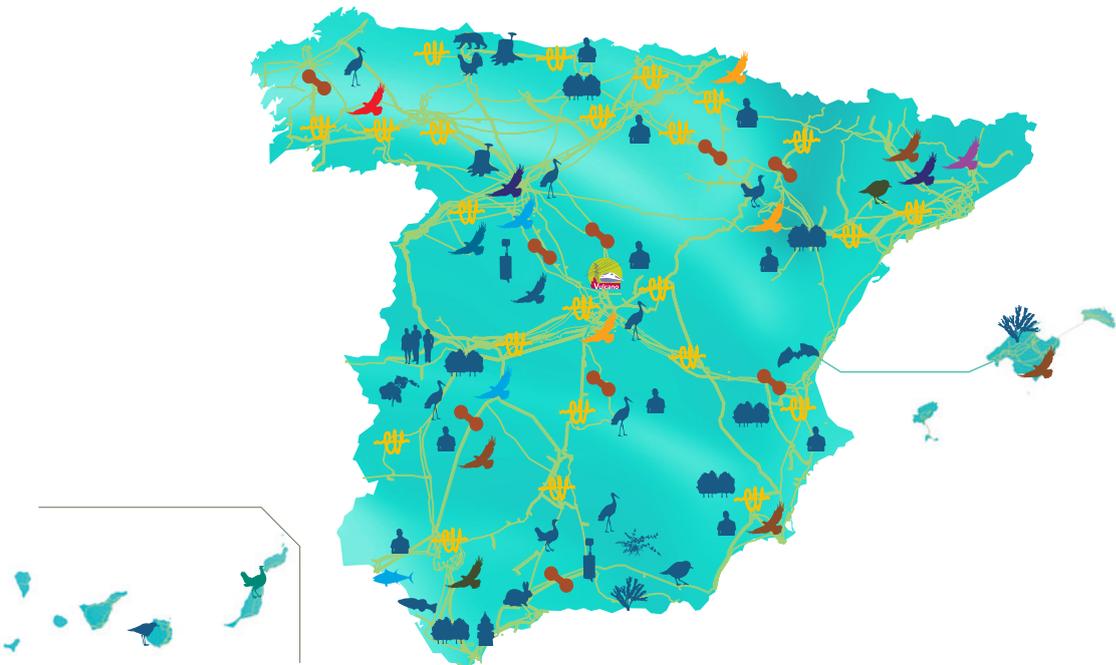
Installation of a platform for the Osprey (*Pandion haliaetus*) on an electricity tower in Andalusia. Duration: 2011-2012. Collaboration: Junta de Andalucía (Government of Andalusia) and the Fundación Migres.

Centre for Migration and Global Change. Duration: 2011 to end of works. Collaboration: Government of Andalusia, Universities of Cadiz, Cordoba and Seville, Councils of Cadiz, Tarifa and Algeciras, Ministry of Defence and Fundación Migres.

Installation of nesting boxes for Soprano Pipistrelle (*Pipistrelus pygmaeus*) bats in Turia Natural Park, Valencia. Duration: 2010-2012. Collaboration: Government of Valencia.

Installation of nesting boxes for Peregrine Falcons (*Falco peregrinus*) in Madrid's South-eastern Regional Park. Collaboration: Ministry of Environment, Madrid Region Territorial Planning Department and the SE Regional Park.

Map of Red Eléctrica biodiversity conservation projects



- | | | | | | |
|-----------------------------|---|-------------------------------|-----------------------------|------------------------|-------------------------|
| Andalusian toothcarp | Bearded Vulture | Biodiversity corridor project | Bird flight diverter spiral | Black Vulture | Bonelli's Eagle |
| Brown Bear and Capercaillie | Centre for migration and climate change | Clearing, pruning and felling | Common Kestrel | Golden Eagle | Environmental awareness |
| Environmental education | Experimental bird flight diverter | Houbara Bustard | Invasive species of flora | Kentish Plover | Lesser Grey Shrike |
| Lesser Kestrel | Marine fauna | Marine flora | Micromammals | Orchids | Osprey |
| Peregrine Falcon | Red Eléctrica Forest | Research projects | Soprano Pipistrelle | Spanish Imperial Eagle | Steppe birds |
| Stone-Curlew | White Stork | | | | |

COMMITTED TO ENERGY EFFICIENCY AND CLIMATE CHANGE

Red Eléctrica formalised its commitment to the fight against climate change in 2011 by approving a specific strategy and action plan setting out the objectives and specific actions to be developed over the coming years.

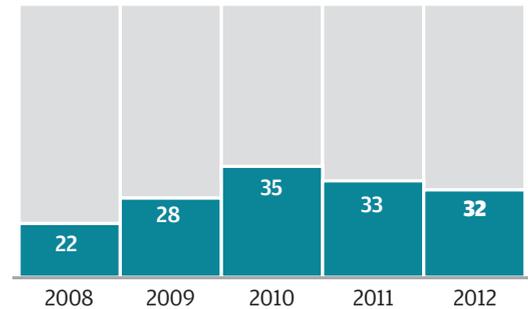
AS A KEY COMPANY within the electricity system, Red Eléctrica considers to be relevant all those efforts geared towards achieving greater overall efficiency of the system.

The Company continues to work towards achieving a better integration of renewable energies in the electricity system, reducing CO₂ emissions and allowing the demand to be covered by intermittent energies without the security and quality of supply being affected.

In this regard, the CECRE (Control Centre of Renewable Energies) continues to be a world reference in the monitoring and control of renewable energies. The work and functions it carries out have enabled the production of renewable energy in the peninsular system to represent about a third of the overall energy production of the electricity system in recent years.

■ Role of renewables in covering demand

(%)



QR code
Video of the Control Centre of
Renewable Energies (CECRE).



ACTIONS TO TACKLE CLIMATE CHANGE

>> Integration of renewable energies into the electricity system to reduce our external energy dependence and allow electricity to be generated without the emission of greenhouse gases, using technologies which produce zero CO₂ emissions.

>> Control and reduction of emissions, mainly the sulphur hexafluoride (SF₆) associated with substation equipment. In 2012, we achieved an emission rate of 0.99 % against a 2015 target of 1 %.

>> Offsetting emissions through “Red Eléctrica Forest”, a reforestation project which has offset more than 60,000 tonnes of CO₂ in five years.

>> Carbon footprint associated with the value chain. In 2012, work continued on the identification and collation of data from various suppliers.

>> Risk identification. A study to identify climatic parameters which may affect our electricity infrastructure, the risks arising from potential variations, and the actions to address those risks.

>> Energy efficiency through research projects aimed at providing greater efficiency to the electricity system, as well as through measures to improve energy management regarding own consumption. Noteworthy in 2012 was the construction of two new buildings with a ‘B’ energy rating and the Energy Management System certification of the Head Office building in accordance with ISO 50001.

QR code
Learn more about the “efficient
Red Eléctrica” commitment.



CLIMATE RISK MANAGEMENT OF ELECTRICITY TRANSMISSION INFRASTRUCTURE

During 2012, Red Eléctrica published its first Adaptation to Climate Change Report, in which the long-term implications of climate risks to electricity transmission infrastructure were evaluated. In this sense, we have conducted a comprehensive analysis of climate projections and of the regulations regarding electricity transmission lines, as well as a Europe-wide benchmarking of projects and initiatives related to climate change adaptation in the field of energy.



Offsetting greenhouse gas emissions

RED ELÉCTRICA FOREST

Every year Red Eléctrica helps create a forest on public lands in a different area of Spanish territory. This project, commenced in 2009 and ongoing, has two main objectives: to offset part of Red Eléctrica's emissions through the planting of trees, and; to contribute to the conservation of natural areas rich in biodiversity or the recovery of degraded natural areas. Additionally, this project contributes to the development of local economies, as the work is carried out by companies or groups in the area. In 2012, work was carried out in three different areas:

» **Sierra de Calasparra (Murcia).** Restoration of 20 hectares of forest in an SAC that burned in 2010. The planting of 21,840 tree and bush specimens: Aleppo Pine (*Pinus halepensis*), Mastic (*Pistacia lentiscus*), Prickly juniper (*Juniperus oxycedrus*), Kermes Oak (*Quercus coccifera*), Oleander (*Nerium oleander*), Albaida (*Anthyllis cytisoides*), Black Hawthorn (*Rhamnus lycoides*) y Rosemary (*Rosmarinus officinalis*), amongst others. In addition, this project has involved the creation of 765 working days spread across 12 job posts.

» **Sierra Calderona Natural Park (Valencia).** Land preparation and hole-digging has taken place for the restoration of 26 hectares of burned land. This will be repopulated with Aleppo pine (*Pinus halepensis*), accompanied by Phoenician Juniper (*Juniperus phoenicea*), Carob (*Ceratonia siliqua*), Prickly Juniper (*Juniperus oxycedrus*), Mediterranean Dwarf Palm (*Chamaerops humilis*) and Wild Olive (*Olea europea sp.sylvestris*). These works were planned for 2012 but were postponed to 2013 due to weather conditions.

Red Eléctrica Forest figures

(2009-2012)

**Trees and shrubs planted**

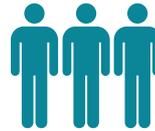
203,520 specimens

**Surface area recovered**

410 hectares

**Emissions offset**60,677 t of CO₂ eq.**Investment**

€625,000

**Impact on local employment**

an estimated 3,043 man-days

» **Robledal del Remendón, Armañón Natural Park (Biscay).** Work has begun on preparing the ground for the restoration of 22.5 hectares with Pedunculate Oak (*Quercus robur*), White Birch (*Betula alba*) and other accompanying species.

With this initiative, Red Eléctrica is participating in the Ardilla (Squirrel) Project, promoted by the "Plant for the Planet" organisation to connect the various natural areas on the Spanish peninsula.

QR Code
More information on
Red Eléctrica Forest



Published by

RED ELÉCTRICA

P.º del Conde de los Gaitanes, 177

28109 Alcobendas - Madrid

Tel: +34 91 650 85 00

Fax: +34 91 650 45 42

www.ree.es

Technical coordination

Environmental Department

Written and edited by

Communication and Corporate Image Department of Red Eléctrica

Design and layout

MRM Worldwide S.A.

Other info

Publication date: July 2013

Printed by: EPES Industrias Gráficas, S.L.

Legal Deposit: M-19023-2013

English translation

Wayman English International (www.waymanenglish.com)



QR code

Download the PDF.



Red Eléctrica works on selecting the most legible typographical font for its publications. The typographical fonts Amplitude, PF BeauSans Pro, Apex y Berthold Akzidenz have been used for the texts and graphics in this report.



RED ELÉCTRICA DE ESPAÑA

P.º del Conde de los Gaitanes, 177

28109 Alcobendas - Madrid

www.ree.es

