RED ELÉCTRICA
DE ESPAÑA

EMAS ENVIRONMENTAL STATEMENT 2014

April 2015

English translation is exclusively for information purposes and is based on the original, official document in the Spanish language, available in the Spanish version on the company´s website.

Ref.: MAIP/MA/15-111

INDEX

1. WHO IS RED ELÉCTRICA 3

2. ENVIRONMENTAL MANAGEMENT AND POLICY 4

3. SCOPE OF THE EMAS REGISTRATION 10

4. RED ELÉCTRICA'S ACTIVITIES AND THE ENVIRONMENT 12

5. ENVIRONMENTAL ASPECTS 18

6. ENVIRONMENTAL PERFORMANCE 2014 23

6.1 Climate Change and Energy Efficiency 24
6.2 Biodiversity 39
6.3 Saving of resources: Water and paper 46
6.4 Socio-economic environment 48
6.5 Waste management 53
6.6 Stakeholder Groups 58
6.7 Research and development 66

7 OBJECTIVES - ENVIRONMENTAL PROGRAMME 68

8 ACCIDENTS WITH ENVIRONMENTAL IMPACT 80

9 LEGAL COMPLIANCE ASSESSMENT 82

10 ENVIRONMENTAL EXPENDITURE 84

11 INDICATORS 86

12 FREQUENCY OF THE ENVIRONMENTAL IMPACT STATEMENT 96

GLOSSARY OF TERMS 97

VALIDATION 99

ANNEX: *ENVIRONMENTAL ACTIONS 2014*

1. WHO IS RED ELÉCTRICA

Red Eléctrica is the sole transmission agent and operator (TSO) of the Spanish electricity system. The Company carries out this mission with transparency, neutrality, independence and economic efficiency with the aim of providing an electricity service of the highest quality for society as a whole.

Red Eléctrica, as TSO of the Spanish electricity system has the task of ensuring the continuity and security of the electricity supply and the proper coordination of the power generation and transmission systems. In addition, it is responsible for the transmission of high voltage electricity and builds, maintains and operates the transmission grid facilities.

We are therefore responsible for the technical management of the Spanish electricity system, owners of the Spanish high voltage electricity transmission grid and the only company in Spain specialising in the activity of electricity transmission. [1]

As **operator** of the Spanish electricity system (peninsular and non-peninsular), our main function is to ensure the continuity and security of the electricity supply and the proper coordination of the power generation and transmission systems, working in cooperation with operators and agents in the Iberian electricity market under the principles of transparency, objectivity and independence.

As **transmission agent**, we ensure the development and enlargement of facilities, perform maintenance on them and improve them under homogenous and coherent criteria and manage the transmission of electricity between external systems which is performed using the grids of the Spanish electricity system. We also provide sufficient information to the operator of any other grid system, with which REE is interconnected, to ensure its safe operation and guarantee third party access to the grid on equal terms.

Our facilities consist of electricity control systems that direct and supervise the operation of the system; 42,601 kilometres of high voltage transmission line circuit and 5,292 substation bays with a transformer capacity of 84,539 MVA.

Evolution of the facilities		2012	2013	2014
Lines (km of circuit)	**Kilometres of circuit**	**41,232**	**42,008**	**42,601**
	400 kV	20,109	20,641	21,094
	220 kV and less	21,123	21,367	21,507
Substations	**Number of bays**	**5,054**	**5,210**	**5,292**
	400 kV	1,319	1,374	1,394
	220 kV and less	3,735	3,836	3,898
	Transformer capacity (MVA)	**78,170**	**80,695**	**84,539**

(*) Data for the last three years revised and updated in 2014

[1] *Clasificación Nacional de Actividad Económica – CNAE* (Standard Industrial Classification) 35.12: Electricity transmission.

2. ENVIRONMENTAL MANAGEMENT AND POLICY

❖ ENVIRONMENTAL POLICY (*)

The Red Eléctrica Group expresses its commitment to protect the natural environment and undertakes to promote and ensure that each employee in the Group performs their daily work with the utmost respect for the environment. This is achieved through ongoing improvement in the fulfilment of their responsibilities and functions.

The principles of our environmental policy are as follows:

- Apply the principles of excellence adopted by the Company and incorporate and promote best practices in the field of environmental management.
- Ensure **compliance with environmental legislation, regulations and laws** applicable to the activities they carry out and adopt those **voluntary commitments** regarding environmental matters which are considered to be of interest.
- Guide the Group towards **sustainable development**, seeking to maintain the adequate balance between respect for the environment, the promotion of progress, social well-being and economic interests, with the objective of creating value on an ongoing basis.
- Achieve **leadership** in environmental matters in all the companies of the Red Eléctrica Group within their scope of activity.
- Guarantee **continual improvement**, the **prevention of contamination** and the **principle of precaution**, according to the objectives and capacities of the Group.
- Promote **research, development** and the use of new technologies and processes with the objective of preventing or minimising environmental impacts.
- Contribute to a **sustainable energy model**, with a greater presence of energies generated by clean and efficient technologies regarding electricity consumption.
- Develop and maintain a **transmission grid which is integrated into the landscape**.
- Drive the conservation of **biological diversity** through active collaboration on those initiatives which help reduce its loss.
- Adopt a clear commitment in the fight against **climate change**, backing energy efficiency and sustainable mobility as fundamental pillars.
- Develop and provide ongoing actions regarding **training, awareness and motivation** concerning environmental protection.

- Maintain means and channels of **communication** for informing and communicating with all interested parties regarding environmental related actions whilst promoting **collaboration frameworks** with stakeholder groups.

- Consider the environmental policies and requirements as one of the criteria in the selection and evaluation of **suppliers**.

(*) First Edition (PC01 replacing Edition.4 of policy PG11) approved by the Management Committee in October 2014.

❖ ENVIRONMENTAL MANAGEMENT

All the activities performed by Red Eléctrica are done so in compliance with strict environmental criteria, in accordance with the principles undertaken in the environmental policy, and from a position of ethical commitment to society, integrating environmental protection into the business management with the aim of creating ongoing value.

The main environmental objective of Red Eléctrica is to make its facilities compatible with the environment/landscape, with particular attention paid to the protection of biodiversity. Furthermore, as a company related to the energy sector, Red Eléctrica has decided to adopt a specific commitment to the fight against climate change and to promote energy efficiency.

Red Eléctrica's commitment to the environment, which stems from the Company's senior management, establishes the environmental policy and implements the means for compliance with environmental requirements. The General Manager of Transmission has been appointed by the Chairman as the specific representative of the environmental management system.

The involvement of all organisational units and the commitment of all those working in the Company are essential for the development of an adequate environmental management.

In order to provide technical support there is a specific Environment Department, which in December 2014 was made up of 16 experts with varying experience and who are environmental experts that actively support all the organisational units in the performance of their daily activities. Similarly, the various regional areas have a total of 19 experts, whose function is to environmentally control, in situ, Red Eléctrica's facilities in each one of the phases they are undergoing: project definition, construction or maintenance.

The focused effort of Red Eléctrica to become a model company that is responsible, efficient and sustainable has been recognised by leading sustainability rating agencies and the Company is present in some of these indexes based on the results they obtain, among the indexes of note are:

- **FTSE 4 Good**
- **MSCI** (Morgan Stanley Capital International)

Noteworthy among the awards and recognitions received by Red Eléctrica for their environmental management in 2014 are the following:

- **European Environment Award for Business 2014** (EBAE) in the special category Business and Biodiversity, for the project '*Birds and Power Lines: mapping of bird flight paths*'. The Company had also been the winner of the award in the Spanish section within the same category.

- Red Eléctrica has been granted the **MEMBER** distinction in the **Sustainability Yearbook 2014**, ranking among the 15 best companies in the electricity sector in the evaluation performed by RobecoSAM (*Sustainable Asset Management*).

More information at www.ree.es, in the Corporate Responsibility section.

❖ ENVIRONMENTAL MANAGEMENT SYSTEM

RED ELÉCTRICA has a certified Environmental Management System (EMAS) in accordance with UNE-EN ISO 14.001:2004, certified since May 1999 and which, since October 2001, has been registered under the Community Eco-management and Audit Scheme (EMAS) with registration number **Nº ES-MD-000313** (*previously ES-SB-000013*).

EMAS is part of a Comprehensive Management System comprised of Quality, Health & Safety, Corporate Responsibility, Energy Efficiency and Environment, which enables the Company to:

- Gear the processes to achieving objectives, increasing the satisfaction of clients and stakeholders.
- Increase the integration and reliability of operations and effectiveness at a personal and organisational level.
- Create a culture oriented to safety, excellence and efficiency.

This model therefore involves the integration of all those common points in the different norms that must be complied with by the three management systems, namely:

- Management of internal norms
- Qualification of personnel
- Operational control
- Audits
- Control of non-compliance and corrective actions
- Training and Communication
- Risk management
- Emergency plans and response capability
- Supplier rating

Specifically the EMAS comprises all the activities performed by REE, with special attention to those that generate an interaction with the environment. It is integrated across the board into the decision-making process and in the Company's activities, promoting a business model that takes into account the social, economic, ethical and environmental dimensions.

During all the activities carried out in the development and implementation phases of the transmission grid infrastructure (essentially, the **definition of the project, construction/modification and maintenance of the infrastructures**), we identify and evaluate the direct and indirect environmental aspects that can interact with the environment and that may generate some type of negative impact, in either normal or abnormal functioning conditions.

In order to identify, evaluate and register the environmental aspects, and to be aware of the applicable legal requirements to be applied to each one, it is necessary to indicate that the system presents differences among its various phases:

In the cases of the identification and evaluation of aspects, the following are outlined:

- ✓ **Definition of projects (new facilities and modifications)**: the effects or impacts and by extension, the aspects associated to the same, for each one of the new facility projects, are identified in the corresponding environmental impact study and the corresponding environmental impact statement or resolution. Also set out are the preventive and corrective measures which shall be adopted in the construction phase of each facility.

- ✓ **Construction or modification of facilities:** for each construction project of new lines, new substations or enlargements with environmental relevance, the associated environmental aspects of the same are identified and evaluated. The results of the evaluation are incorporated into the Environmental Monitoring Programme (EMP), and/or the environmental specifications of each project, a procedure that ensures they are properly monitored and that they are in compliance with the preventive and corrective measures defined in the design of the projects.

  The environmental criteria established for the evaluation of aspects, under both normal and abnormal conditions are: magnitude and intensity.

- ✓ **Maintenance of infrastructure**: the environmental aspects detected during the maintenance activity are identified and evaluated periodically, under both normal and abnormal operating conditions and at different levels, depending on the status of the aspect with respect to a higher level of evaluation (maintenance phase), or at lower levels (regional centre and/or logistical building/centre). The evaluation of environmental aspects is performed annually, after year end.

  For the evaluation of maintenance aspects, the following general environmental criteria have been established:

  - o Normal and abnormal conditions: Magnitude, nature/sensitivity and prevention.
  - o Abnormal conditions: probability of occurrence and of consequence.

On the other hand, in the case of the legal, regulatory and other requirements, Red Eléctrica undertakes the commitment, as part of the Environmental Policy of the Group, to ensure compliance with the environmental legislation, regulation and norms applicable to the activities it carries out.

In order to identify and assess the legal environmental requirements that apply to the different stages of development and implementation of transmission grid infrastructure within its respective spheres (European, state, regional and local), the following procedures are carried out:

- ✓ **Definition of Projects:** those facilities that have an 'Environmental Impact Study' incorporate the applicable environmental legislation during the design phase of the project and in any case, all applicable requirements are registered through an IT application.
- ✓ **Construction or modification of facilities:** during the construction phase, the applicable environmental requirements (internal and external) are set out in the environmental specifications of each project and/or in the construction EMP (Environmental Monitoring Programme) if deemed necessary. In order to assure and reinforce the process, it is established that prior to the start of the execution of a construction project, an initial assessment will be carried out regarding the legal environmental compliance with all the applicable legal requisites (including those at the municipal level), in order to detect possible shortcomings prior to the execution. Subsequently, an assessment is performed one year after the start of the project, during each environmental supervision visit, and once it is finished.

- ✓ **Maintenance of infrastructure:** during the maintenance of infrastructure/facilities, apart from the applicable regulations, environmental requirements are identified in the EMP for the operation phase (in facilities with EIS) and in the transfer document for maintenance. All facilities have a transfer document, which includes all the requirements, and internal and external environmental commitments (among them, the ones marked in the EIS for the operation phase). In addition, the infrastructure/buildings shall meet the requirements set out in the authorizations for felling and pruning, removing nests, wells, septic tanks, waste generation and fuel tanks.

The Environmental Department analyses the results of the legal compliance reports and establishes solutions in cases where deviations occur with respect to what was foreseen. Depending on the case, objectives and goals will be established within the environmental programme, or corrective actions will be set that allow the activities to be adapted to the legal and regulatory requirements indicated.

Changes in the documentation of the environmental management system 2014

During 2014 many of the EMAS documents were modified in order to keep them updated on an ongoing basis and introduce improvements in the management thereof. The changes are indicated in the table below.

Code	Title	Edition	Edition date	Approval date	Cancels
PC01	Environmental policy	1	02/10/14	01-02/10/14	Edition 4 page 11
EA010	Environmental specifications for line maintenance works	1	13/01/14	16/01/14	
GN01	Management of Internal Norms	12	21/11/14	12/12/14	Edition 11
IC001	Corporate monitoring of suppliers	2	29/04/14	05/05/14	Edition 2
IC002	Disposal of non-hazardous waste with metal components	3	31/03/14	10/04/14	Edition 2
ET218	Adaptation of oil collection containment systems of power transformers	1	11/03/14	22/04/14	--
ET219	Emptying and cleaning of oil collection containment systems of power transformers	1	11/03/14	22/04/14	--

3. SCOPE OF THE EMAS REGISTRATION

Red Eléctrica de España, S.A.U has an environmental management system that complies with the requirements of Regulation (EC) No. 1221/2009 ('EMAS III') Nº ES-MD-000313 whose scope covers the **entirety of the Company's activities**:

- *The engineering, construction and maintenance of high voltage lines and electricity substations, and of telecommunication systems*
- *The operation of electricity systems*
- *The physical security of facilities*
- *Technological research, development and innovation projects*
- *The consulting and professional services in the activities described above*
- *The provision of stakeholder attention and claims management services for all Red Eléctrica stakeholders via the corporate stakeholder attention centre ('Digame')*

And that are performed at:

- ✓ **Moraleja Head Office**: Paseo Conde de los Gaitanes, 177. 28109 - Alcobendas (MADRID)
- ✓ **Albatros Head Office**: C/ Anabel Segura 11, 28109 - Alcobendas (MADRID).
- ✓ **System Operation Department of the Balearic Islands**: Camino Son Fangos, 100 Edificio A - 2ª planta. 07007 - PALMA DE MALLORCA (BALERIC ISLANDS)
- ✓ **System Operation Department of the Canary Islands** (Main Office in Las Palmas de Gran Canaria) CL JUAN DE QUESADA, 9. 35001 - LAS PALMAS DE GRAN CANARIA (LAS PALMAS)
- ✓ **System Operation Department of the Canary Islands** (Main Office in Tenerife): NUESTRA SEÑORA DE LA TERNURA (LOS MAJUELOS). 38108 - SAN CRISTOBAL DE LA LAGUNA (S.C. DE TENERIFE)
- ✓ **Western Regional Office:** CL ZALAETA, S/N EDF REE. 15002 - LA CORUÑA (A CORUÑA)
- ✓ **Northern Regional Office:** AV DE ENEKURI, 60 EDF REE. 48014 - BILBAO (VIZCAYA)
- ✓ **North-western Regional Office:** AV PARALELO, 55 EDF REE. 08004 – BARCELONA
- ✓ **CECORE**: C/ ISAAC NEWTON, 13 EDF REE. 28760 - TRES CANTOS (MADRID)
- ✓ **Southern Regional Offices:** C/INCA GARCILASO, 1 EDF REE. 41092 - ISLA DE LA CARTUJA (SEVILLA)
- ✓ **Eastern Regional Transmission Centre:** Avenida de Aragón, 30 PLANTA 14. 46021 - VALENCIA
- ✓ **North-western Regional Transmission Centre:** Carretera N-601, MADRID-VALLADOLID-LEÓN, KM 218. 47630 - LA MUDARRA (VALLADOLID)
- ✓ **Ebro Regional Transmission Centre:** Carretera ZARAGOZA-SARIÑERA, KM 9,2. 50162 - VILLAMAYOR (ZARAGOZA)
- ✓ **North-eastern Regional Transmission Centre:** Carretera ANTIGUA CASTELLBISBAL-RUBÍ, S/N PI CAN PI DE VILAROC. 08191 - RUBÍ (BARCELONA)

- ✓ **Central Regional Transmission Centre:** Carretera N-I MADRID-BURGOS (KM 20,7) 28700 - SAN SEBASTIÁN DE LOS REYES (MADRID)
- ✓ **Southern Regional Transmission Centre**: Carretera SEVILLA-UTRERA, KM 17. 41500 - ALCALÁ DE GUADAIRA (SEVILLA)
- ✓ **Balearic Islands Regional Transmission Centre:** (Industrial estate MARRATXI) C/ Gerrers esquina Siurells, 2ª Planta. MARRATXI – PALMA DE MALLORCA
- ✓ **Canary Islands Regional Transmission Centre: (Industrial estate MAYORAZGO)** C/Laura Grötte de la Puerta. Polígono industrial Mayorazgo- SANTA CRUZ DE TENERIFE

The facilities, or line sections, of the following infrastructure are excluded from the scope of the EMAS registration specifically in those areas where they are located, or they cross through the municipalities indicated below:

Facility	Municipality
Trives-Aparecida 400 kV line	Manzaneda (Orense)
Boimente-Meson do Vento 400 kV line	Muras (Lugo)
Mesón do Vento-P.G.Rodriguez 400 kV line	Abegondo (La Coruña)
Alcocero de Mola-Puentelarrá 220 kV line	Pancorbo and Santa Gadea (Burgos)
Mudarra-Robla 1 400 kV line	Medina de Rioseco (Valladolid)
Penagos-Gueñes 400 kV line	Guriezo, Ampuero and Rasines (Cantabria)
Telledo-Villablino 220 kV line	Lena (Asturias)
Aena –SS.Reyes 220 kV line	Alcobendas (Madrid)
Brazatortas-Puertollano 220 kV line	Almodovar del Campo (C.Real)
El Palmar substation	Murcia (Murcia)

4. RED ELÉCTRICA'S ACTIVITIES AND THE ENVIRONMENT

Red Eléctrica's facilities are located nationwide due to the fact that the aim of the electricity transmission grid is to link the points of energy generation with those of consumption.

The interaction of the electricity facilities with the environment is mainly linked to their presence in the territory and to the works associated with their construction and maintenance. Therefore, it can be understood that the main environmental impacts are associated with the territory and landscape where the substations are located, and which are crossed by electricity lines.

To minimise these effects, it is essential that a detailed study is performed on the area and that work be carried out to reach consensus on the siting and landscape integration of substations and the routes chosen for the lines.

The best tool for developing this process is the environmental impact assessment procedure which defines the alternatives, which being technically and economically feasible, have the least impact on the natural and social environment. Most of the projects carried out by Red Eléctrica are bound by law to carry out this procedure.

When the law does not require any regulated procedure, Red Eléctrica performs an assessment of an environmental nature which allows preventive and corrective measures to be defined and applied, and voluntary communication with the competent authority is established.

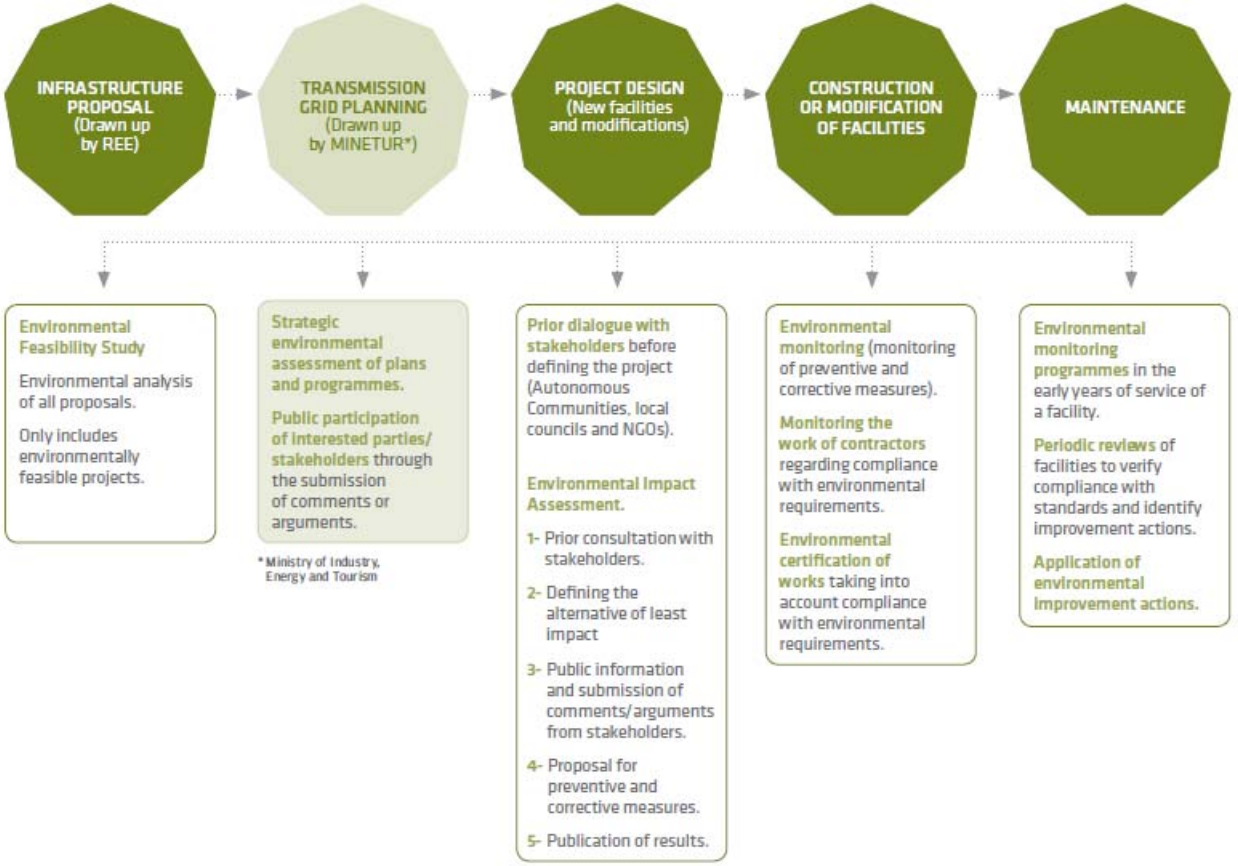
Furthermore, defining the appropriate preventive and corrective measures is fundamental in order to avoid, or reduce, undesired impacts on the territory and on local communities.

The environmental monitoring of construction works and the periodic revisions and systematic audits of in-service facilities (infrastructure maintenance), ensure that the defined measures are implemented and controlled during construction work, evaluating their effectiveness and defining new actions if deemed necessary.

Coordination with local governments and other stakeholder groups is ongoing and is key throughout this process.

The following diagram illustrates in a schematic form the main environmental criteria involved in the key phases of the development of the transmission grid:

Environmental criteria in the development and implementation phases for transmission grid infrastructure



Taking the diagram of activities previously shown as a reference, the following are relevant events that occurred during 2014:

1 - TRANSMISSION GRID PLANNING

As a relevant event in 2014, the Ministry of Industry drafted and published in the Official Gazette (BOE) the Environmental Sustainability Report (ESR) and the preliminary version of the Electricity sector planning document 2015-2020. In addition, work has continued on the calculation of indicators to assess the environmental impacts (positive and negative) derived from the execution of the infrastructure 2008-2016 planning in which REE is actively involved.

2 - PROJECT DEFINITION

During 2014, environmental permitting procedures for **10 projects** were begun:

	Permitting procedures initiated		
	2012	**2013**	**2014**
Initial document	6	8	1
Environmental Document	8	6	9
Total initiated	14	14	**10**

The evolution of the conclusion of the environmental permitting procedures of the projects for new facilities in the last three years is as follows:

	Completed permitting procedures		
	2012	**2013**	**2014**
Positive Environmental Impact Statement	20	22	14
Environmental Resolution	10	11	17
Total	30	33	**31**

Environmental authorisation was obtained for **31 projects**. No negative environmental impact statement has resulted, nor has there been a halting in the processing of any project.

The number of finalised Environmental Impact Studies during the year was 3. At year end, **78 projects are at different stages of the environmental permitting procedure.**

Finalised Environmental Impact Studies		
2012	**2013**	**2014**
23	7	3

The relationship of projects can be found in the Annex: *Environmental Actions 20*14

3 - CONSTRUCTION OR MODIFICATION OF FACILITIES

Red Eléctrica performs environmental monitoring on the construction of new electricity lines and substations as well as renovations, upgrading and enlargements of those facilities already in service. This monitoring consists mainly of verifying that the preventive and corrective measures defined in the project are implemented, verifying their effectiveness and defining new measures, if deemed necessary, based on the results obtained.

Similarly, especially important are the tasks that are included in the environmental monitoring programmes, to be carried out during construction, as well as the tasks prior to the commencement of works (e.g. inventories of trees felled), and the subsequent tasks related to the start of the operating phase of the facility.

9 substations and 335 km of line were put in service in 2014.

32 substations and 698.4 km of line were under construction during the year.

With the aim of ensuring the suitable fulfilment of the environmental requirements and verifying the effectiveness of the implemented preventive and corrective measures, environmental monitoring was carried out throughout the year on 64 of the 66 works underway, in other words, **93.75% of the construction works in substations and 100% of the works on lines** (this percentage also considers works regarding modifications of existing lines).

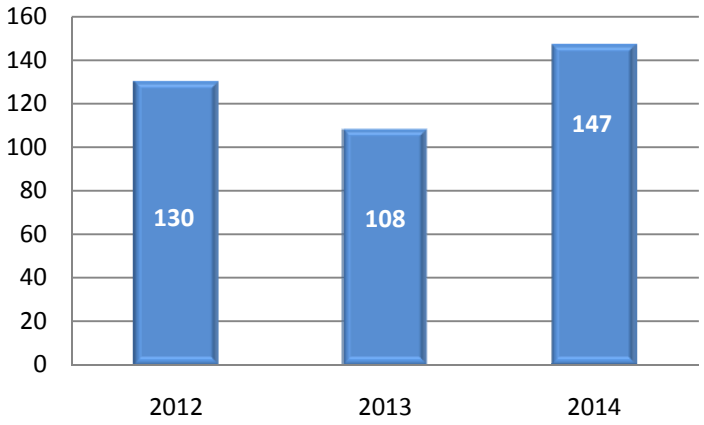
The **permanent environmental supervision**, aimed at intensifying the control and monitoring, covered 72.72% of total works performed (of a total of 48 works).

Environmental monitoring (new facilities)				
		2012	**2013**	**2014**
SUBSTATIONS	**No. of works supervised**	53	40	30
	Permanent environmental supervision	36	26	23
	Permanent environmental supervision %	68	65	**71.80**
LINES	**Total km of works supervised**	1,091.50	1,302.22	698.43
	Km of line with permanent environmental supervision	877.954	1,045.270	643.810
	Permanent environmental supervision %	80.40	80.27	**92.18**

The most notable preventive, corrective and compensatory measures carried out in this phase during 2014 can be consulted in the Annex: *Environmental Actions 2014*.

4 - FACILITIES MANAGEMENT

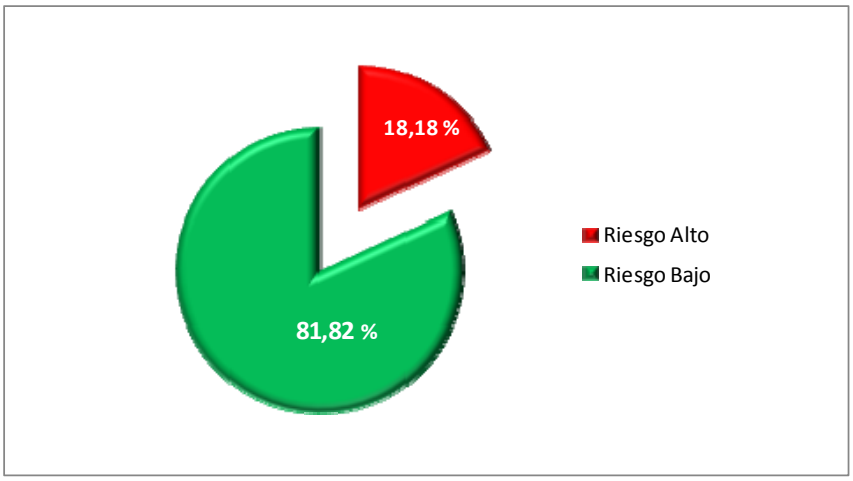
During 2014, a total of 147 environmental monitoring visits were performed of which 143 corresponded to substations, and of these 44 were facilities that had not been monitored since 2008, the year in which this activity was launched.



Over **81.2%** of the substations in service in 2014 have been visited, at least once, in the last 6 years (2008-2014).

In terms of risk, only 18% of supervisions registered a high level of risk. This level was reached due to incidents being detected mainly in substations under the supervision of the Northern Regional area and occasionally in the Central Regional area. In the case of the Northern Regional area, some substations were detected, at the time the supervision was conducted, that were not authorised as small producers of hazardous waste. The pertinent authorisations were processed, and currently they all now have their authorisation.

In the case of substations in the Central Regional area, the risk detected mainly stems from the state of the transformer containment systems and poor practice of suppliers during maintenance works on transformers.



High risk

Low risk

The results of these supervisions allow environmental improvement actions to be identified and considered in the planning of actions in both the renovation and improvement plans as well as in the maintenance programmes.

5. ENVIRONMENTAL ASPECTS

❖ Environmental aspects in the definition of projects for facilities

The aspects for each of the projects for new facilities are identified in the corresponding environmental impact study and the corresponding environmental impact statement or resolution, which also sets out the preventive and corrective measures that shall be taken in the construction phase of each facility.

❖ Environmental aspects in the construction of facilities

The construction activities for new lines and substations that are susceptible to generating environmental aspects are:

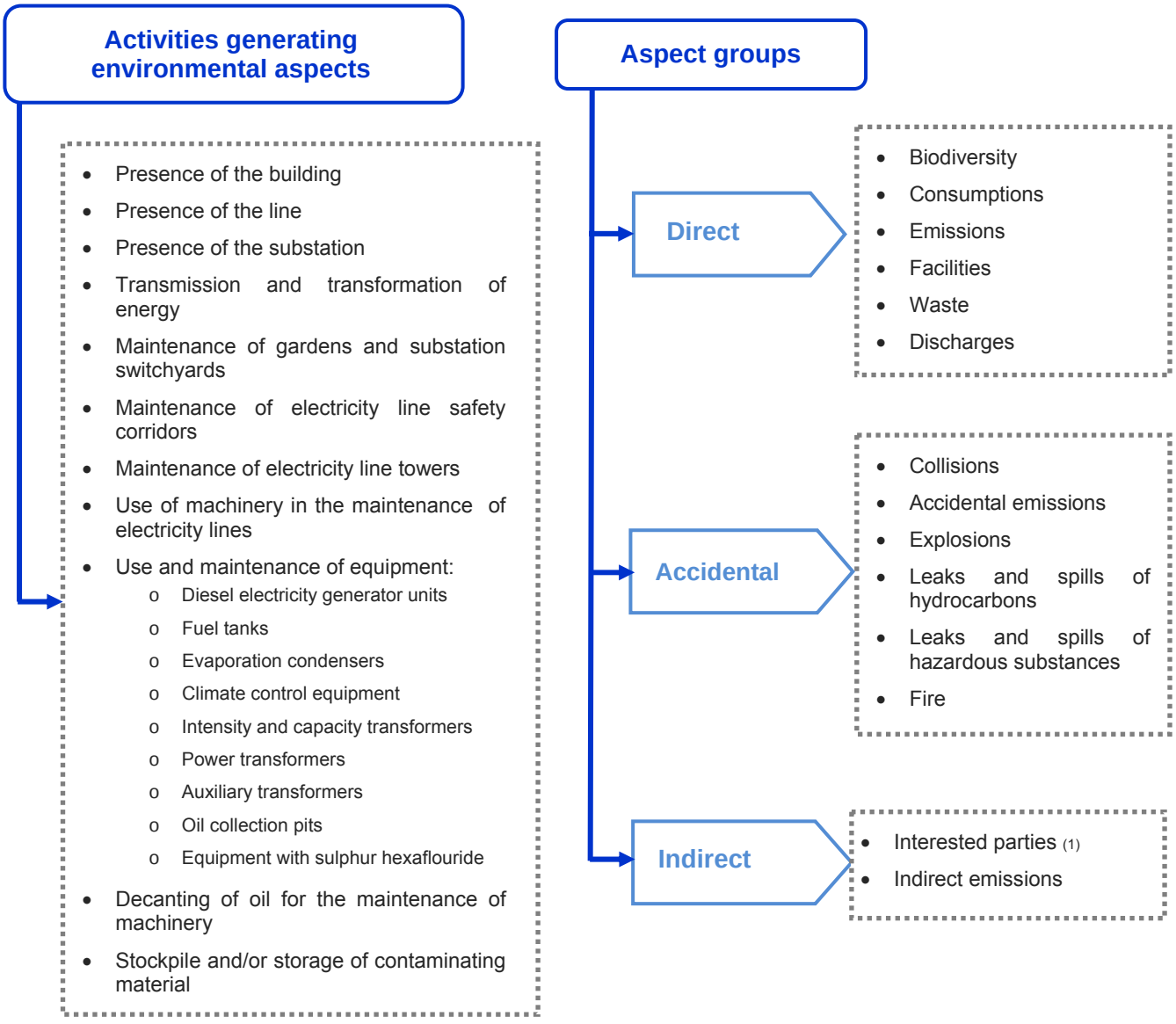
Activities that generate environmental aspects
Storage and transfer of oils and fuels
Storage and management of waste
Work sites (substations)
Land compacting
Clearing, pruning and felling
Excavation and landfill works
Concreting and cleaning of containers
Hanging/laying of conductor and grounding cables (lines)
Equipment assembly (substations)
Use of machinery

Although the environmental aspects associated to each of the works are specifically evaluated, those that generally have a significant impact on the construction of new lines and substations are detailed in the following table:

Significant environmental aspects in the construction of lines and substations	Environmental aspect susceptible to impact	Impact
Affecting fauna	Biological	Altering population behaviour
Affecting flora	Biological	Elimination of flora/vegetation
Affecting land/soil	Physical	Possible modification of physical characteristics of ground, erosion etc.
Affecting historical and cultural heritage	Socio-economic	Potential landscaping impact, affecting archaeological sites, crops, etc.
Risk of fire	Physical/Biological/ Socio-economic	Potential degradation
Risk of oil and fuel spillage during use of machinery	Physical	Potential contamination of ground and water sources
Risk of oil and fuel spillage during storage and transfer of oils and fuels	Physical	Potential contamination of ground and water sources
Risk of oil spillage during assembly of equipment	Physical	Potential contamination of ground and water sources
Risk of affecting water during land movements	Physical	Potential contamination of ground and water sources
Risk of affecting birdlife	Biological	Potential collisions
Non-hazardous waste	Physical	Potential impact due to inadequate storage
Hazardous waste	Physical	Potential contamination of grounds and water sources due to storage and management

❖ Environmental aspects of facilities in service

The activities carried out in facilities in service that can generate an environmental aspect are the following:



(1) Collaborations carried out with interested parties (organisations and institutions) on matters linked to the environmental aspects of Red Eléctrica.

The evaluation of aspects is conducted annually. Those aspects shown in the table below were identified as **significant** in the 2014 assessment; none of them were identified as being indirect.

Aspect	Relevant evaluation	Environmental aspect susceptible to impact	Impact	Observations
Biodiversity				
Clearing, pruning and felling (Direct)	All Regional areas	Biological	Potential impact on species	40% or more of the actions are carried out in protected areas, forested areas or areas of high fire risk. For the evaluation, the most restrictive criteria have been used due to the lack of detailed information.
Emissions				
Emissions of greenhouse gases SF_6 (Direct)	Maintenance phase	Physical	Potential contamination of the atmosphere	CO_2 emissions resulting from the emission of SF_6 exceeds 50,000 t CO_2 eq and a leakage rate of between 1% - 2% of the total amount installed.
Emissions of greenhouse gases (Power generator sets) (Direct)	Regional areas and buildings (except buildings of the Balearic Islands, Gran Canaria, Tenerife electricity systems and the Levante Regional area).	Physical	Potential contamination of the atmosphere	The uptime of the power generator sets has been more than 4 hours in each Regional area per year (not calculated per individual generator set). As the age of the sets in many cases was not known, for the evaluation an average value was assigned (between10 and 20 years) which has determined its relevance. The adequacy of the evaluation criteria for this aspect is being evaluated as an improvement aspect.
Non-hazardous waste				
Septic tank sludge (Direct)	Eastern Regional area	Physical	Potential contamination of ground and water due to storage and management	The collection of sludge from septic tanks has been increased reaching over 5,000 kg / year on average per generation centre. In the process of acquiring assets from other utilities, large amounts of material had to be classified and evaluated to see if it was obsolete and therefore not possible to reuse. Once classified, in 2014 it has been necessary to proceed with the management of all obsolete and non-reusable material.
Ceramic equipment not containing oil (Direct)	Mudarra Logistical Centre Gran Canaria Logistical Centre			

Aspect	Relevant evaluation	Environmental aspect susceptible to impact	Impact	Observations
Hazardous waste				
Electrical and electronic waste with hazardous components (Direct)	Mudarra Logistical Centre	Physical	Potential contamination of ground and water due to storage and management	The amount of hazardous waste has been significant and has exceeded 5,000 kg / year on average per generation centre in each Regional area and those that, with an average production of between 500-5,000 kg / yr final destination is evaluation or controlled disposal. In the case of Logistics Centres the management of obsolete equipment from the acquisition of assets from utility companies has been undertaken.
Used insulating oil without PCBs (Direct)	Eastern Regional area North-eastern Regional area			
Contaminated equipment with oils without PCBs (Direct)	All Regional areas Mudarra Logistical Centre Tenerife Logistical Centre			
Water-oil mix (Direct)	Southern Regional area North-western Regional area Eastern Regional area Central Regional area			
Soils contaminated with hydrocarbons (Direct)	Eastern Regional area Central Regional area			
Accidental aspects				
Birdlife collisions (Accidental)	Balearic Islands Regional area Southern Regional area Canary Islands Regional area North-western Regional area Northern Regional area	Biological	Potential impact on species	For the evaluation, the most restrictive criteria have been used due to the lack of data regarding its monitoring.
Accidental emissions (Accidental)	North-western Regional area	Physical	Potential contamination of the atmosphere	An accident occurred in the Compostilla substation with the leakage of 128 kg of SF_6 gas due to human error through the poor practice carried out during the filling of the gas in the switch.
Leaks or spillages of hazardous substances (Accidental)	Southern Regional area	Physical	Potential contamination of ground and water	All those incidents and accidents occurring in the Regional areas related to leaks or spillages during the transfer, storage or use of machinery were taken into account. Noteworthy was the accident at the Tajo de la Encantada substation with 280 m2 of soil being affected.

Aspect	Relevant evaluation	Environmental aspect susceptible to impact	Impact	Observations
Fires due to lines (Accidental)	All Regional areas	Biological	Elimination of flora/vegetation	The most restrictive criteria have been taken into account in order to evaluate the likelihood of its occurrence.

6. ENVIRONMENTAL PERFORMANCE 2014

To ensure the correct operation of the transmission grid, the facilities require permanent ongoing maintenance, an appropriate renovation as well as the relevant repairs in the case of failure, and these activities must be compatible with the environment in which the facilities are located. It is therefore necessary to be aware of both the existing natural values as well as those elements of the activity that could impede the Company from being able to act in the most respectful way possible.

Similarly, in its role as transmission agent and electricity system operator, Red Eléctrica is oriented towards developing a more sustainable energy model, contributing to reaching the European 20-20-20 targets, through the integration of renewable energies (developing the transmission grid necessary for their evacuation, and facilitating their integration into the system), and the activities to increase the energy efficiency of the electricity system. In addition, Red Eléctrica has undertaken to work on reducing its own emissions of greenhouse gases.

The environmental performance of REE in 2014 is included within the set of strategies that allow the environmental variable to be integrated internally in all the development phases of transmission grid facilities, and therefore in all the works performed by the Company that contemplate both raising the awareness of stakeholders and encouraging their participation.

Throughout this section, Red Eléctrica's environmental performance during 2014 regarding the Company's overall activities is set out as per each of the following environmental aspects:

- Climate Change and Energy Efficiency
- Biodiversity
- Saving of resources: Water and paper
- Socio-economic environment
- Waste management
- Stakeholder groups
- Research and development

6.1 Climate Change and Energy Efficiency

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 and making a better use of renewable energy, are essential to the achievement of the European climate targets.

As REE is a Company related to energy, in 2011 it decided to formalise its commitment to the fight against climate change by approving a specific strategy, which was reviewed and approved by the Chairman in May 2014.

Additionally in 2014, the Chairman of Red Eléctrica signed the Pact for adhesion to the Spanish Green Growth Group. The signatory companies recognise the importance of evaluating their own carbon footprint, setting targets to reduce emissions, publicly report on their achievements and consider the risks and opportunities linked to climate change as part of their business strategy.

CARBON DISCLOSURE PROJECT (CDP): since 2011, REE has annually participated in the CDP and discloses its responses to society. The Company has established as an objective, the progressive improvement of its score. In 2014, (corresponding to the 2013 fiscal year) the Company achieved a score of 83 B (vs. 71 C the previous year).

The climate change strategy is associated with an action plan covering all actions related to the activity of the Company. It includes not only the actions related to its activity as transmission agent and operator of the electricity system, but also actions related to reducing its carbon footprint.

In relation to REE's business, there are various activities that are particularly relevant in the fight against climate change and the achievement of European climate targets:

- The development of transmission infrastructure, which allows the evacuation and better use of renewable energy, provides power to the high-speed train and is essential for improving the efficiency of the electricity system as a whole.
- The operation of the electricity system, which thanks to the CECRE (Control Centre of Renewable Energy), enables the highest amount possible of renewable energy to be safely integrated into the system. In 2014, 42.8% of demand was covered by renewable energy.
- The work related to demand-side management and the introduction of the electric vehicle is essential to energy efficiency. Some of the projects in this area are included in section 6.1.3 on energy efficiency.

In connection with its carbon footprint, REE makes a significant effort to quantify its emissions (GHG Inventory) and has established different actions that are described throughout this section.

6.1.1 CO_2 emissions inventory

The emissions inventory of greenhouse gases of Red Eléctrica has been submitted to independent review, in accordance with ISAE 3410, in 2014 (2013 data) and in 2015 (2014 data) and in the last three years has been as follows:

Greenhouse gas emissions (t CO_2 equivalent) (1)	2012	2013	2014
SF_6 emissions (2)	69,986	72,210	81,018
Emissions associated to the use of fleet vehicles	1,381	1,275	1,094
Air conditioning (3)	-	545	809
Power generator sets	-	950	204
Total direct emissions (SCOPE 1)	**71,367**	**74,980**	**83,125**
Emissions associated with electricity consumption (4)	4,752	3,565	3,867
Emissions derived from losses in transmission (5)	875,259	732,025	767,907
Total indirect emissions (SCOPE 2)	**880,011**	**735,590**	**771,774**
Totals (SCOPE 1+2)	**951,378**	**810,570**	**854,899**

(1) The calculation of emissions is performed from an operational control approach. The information on the scope and methodology of the inventory is available on the website of REE: http://www.ree.es/en/sustainability/sustainable-energy/energy-and-climate-change/our-carbon-footprint.

The values of 2013 and 2014 have been submitted to independent review in accordance with ISAE 3410. The variation in the values of 2012 and 2013 with regard to the report published in 2013 are due to the corrections made during this process.

(2) Taking GWP to 100 years: 22,800 (Source IPCC, Intergovernmental Panel on Climate Change: 4th assessment report). The increase in SF_6 emissions is derived from the increase in installed gas due to the commissioning of new installations and the replacement of old SF_6 insulated equipment. However, the emission factor (gas emitted/installed gas) is lower than previous years.

(3) The increase in 2014 is mainly due to adjustments made in data collection and the collation of information.

(4) The peninsular emission factor calculated by REE is used, an emission factor that takes into account the energy mix of each year and associates an emission factor to each generation technology.

(5) 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 section). In this case, the same way that 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 this, the emission factor calculated by Red Eléctrica is used. In 2014, emissions increased slightly over the previous year due both to increased losses (3% increase in 2014/2013), and the increase of the emission factor (0.235 in 2013, 0.239 in 2014). The different distribution of generation in the Spanish peninsular system that, in general is located far from the point of consumption, has influenced the increase in losses. The growth in generation using domestic coal, has also affected the small worsening of the emission factor.

NOTE: The increase in emissions associated with electricity consumption in 2014 is primarily due to the inclusion in the calculation of 38 additional work centres.

Indirect emissions (SCOPE 3) (t CO_2 equivalent) [1]	2012	2013	2014
Emissions associated with business trips	827	1,046	1,485
Emissions associated with internal transport of materials	782	674	641
Work displacements [2]		1,579	3,468
Emissions associated with the value chain [3]	190,858	176,528	175,389

(1) The calculation of emissions is performed from an operational control approach. The information on the scope and methodology of the inventory is available on the website of REE:
http://www.ree.es/en/sustainability/sustainable-energy/energy-and-climate-change/our-carbon-footprint

(2) In 2013, the calculation was performed only for the employees of the Head Offices. In 2014, this calculation was performed for all employees of REE.

(2) 2012: data regarding suppliers that represent 95% of the volume of orders. Carbon intensity in the value chain: 294 t CO_2 / million euros.

2013: provisional data calculated on suppliers that represent 87% of the volume of orders. Carbon intensity in the value chain: 331 t CO_2 / million euros.
2014: data about suppliers that represent 95% of the volume of orders. Carbon intensity in the value chain: 370 t CO_2 / million euros

Note: For the correct interpretation of the data it is necessary to consider:-

The carbon intensity depends on the type of orders made in the year and there are products / services with different carbon intensities. So you cannot establish strict comparisons between different fiscal years. Of all the activities, the construction of facilities and the manufacturing of equipment are the most carbon-intensive (representing 88% of the emissions associated with the value chain in 2014).

From the latest study of the value chain of Red Eléctrica, for the year 2014, one can deduce that 44% of the emissions of the value chain are associated with just 5 suppliers, and 73% to 25 suppliers.

6.1.2 SF_6 emissions

The main direct emissions derived from Red Eléctrica's activities are those coming from sulphur hexafluoride (SF_6).

This gas, in spite of its high potential for global warming, provides huge technical advantages. It is a non-toxic gas that allows a huge reduction in the distances to be maintained between the various elements of facilities making 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.

Red Eléctrica works in collaboration with the government administration and other entities in the search for solutions aimed at controlling and reducing SF_6 emissions. The main measures are associated with the implementation of best practices in equipment maintenance and management of the gas. The following actions are noteworthy:

- Improved procedures for the control and identification of leaks, the inventory and management of SF_6 gas.
- Replacing old equipment for equipment with lower leakage rates (2015-2020).
    - It is estimated that around 337 t CO_2 eq will be avoided annually as a result of the equipment replaced in 2014.
    - Thanks to the planned replacements for the 2015/2020 period, it is estimated that the savings in emissions will be over 1,500 t CO_2 eq during the period.
- Incorporation of the most efficient equipment for leak detection, and the management and measurement of SF_6.
- Training of personnel involved in the management of this gas (Red Eléctrica has two legally recognised training centres offering classroom lectures and a workshop for hands-on training).
- Promotion of R&D+i projects related to the improvement in the management of this gas (Programme in collaboration with the Electric Power Research Institute) 2015-2020.

	2012[3]	2013[3]	2014	Objective 2015	Objective 2020
SF_6 installed (kg)[1]	280,017	297,694	324,696		
Emissions of equipment in service (kg) [2]	3,039	3,156	3,412		
Average emission rate of equipment in service (%)	**1.08**	**1.06**	**1.05**	**1.0**	**0.8**
Emissions derived from accidents (kg)	31	11	141		
Total emissions (kg)	**3,070**	**3,167**	**3,553**		

(1) The growth in installed gas is due to the putting into service of new facilities and the replacement of old equipment for SF_6 insulated equipment.
(2) The savings derived from reduction measures implemented are not reflected in this inventory due to the fact that the calculation is based on the allocation of different emission factors depending on the age of the equipment installed (these factors are reflected in the Voluntary Agreement signed in 2008 by the parties involved).
(3) Variations with respect to the data published in the 2013 report are derived from corrections.

REDUCTION OF GREENHOUSE GAS EMISSIONS [1]	
Annual savings	*t $CO_{2\ eq}$ / year*
Reduction of SF_6 emissions due to the replacement of old equipment for equipment with a lower leakage rate [1]	337

(1) Reductions associated with measures implemented in 2014.

6.1.3 Energy efficiency

Increasing energy efficiency is essential when it comes to reducing emissions.

As a key company in the electricity system, we consider most important those efforts geared to reducing electricity consumption and consequently the emissions associated to its production.

Actions aimed at reducing energy consumption focus on two areas of action:

- internal measures aimed at: reducing electricity consumption, efficient mobility and raising employee awareness

- demand-side management measures aimed at contributing to the efficiency of the electricity system

The information regarding these actions is described in more detail in the following sub-sections.

6.1.3.1 Electricity consumption-Reduction of electricity consumption

Taking into account all Red Eléctrica work centres, electricity consumption in recent years has been as follows:

	2012	2013	2014
Work centres (kWh)	16,000,428	15,171,052	**16,180,368**

	2012 (kWh)	2013 (kWh)	2014 (kWh)
Head Offices (Moraleja + Albatros) (1)	8,788,140	8,566,662	8,399,121
Tres Cantos (1)	1,693,771	1,674,293	1,652,529
Non-peninsular systems (1)	1,408,343	689,674	1,304,592
Regional Head Offices	2,396,947	2,353,001	2,176,256
Regional work centres(2)	1,713,227	1,887,422	2,648,473
TOTAL (kWh)	**16,000,428**	**15,171,052**	**16,180,971**
TOTAL (Joules) (3)	**$5.76 \cdot 10^{13}$**	**$5.46 \cdot 10^{13}$**	**$5.82 \cdot 10^{13}$**

(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 the period 2012-2013, only the regional head offices (7 offices) were included. In 2014, the consumption of 38 additional work centres has been included.
(3) 1kWh = $36 \cdot 10^{5}$ joules; total consumption data in joules, according to the criteria defined by GRI G4.

The main actions in this field regarding the reduction of electricity consumption are the following:

- Actions aimed at improving energy management of existing buildings and applying strict efficiency criteria in the construction of new buildings. The maximum energy rating the Company's buildings can be classified as is B, since A requires the generation of a certain quantity of renewable energy and Red Eléctrica, by law, cannot generate electricity.
- Reduction of electricity consumption in substations by selecting more efficient equipment and components.
- Renewal of IT equipment and systems, with a target of reducing by 60% the electricity consumption associated with this equipment during the period 2012-2020.

6.1.3.1.1 Specific actions carried out in buildings:

Within the programme of measures for the improvement of the energy management of the 2012-2019 Energy Management Plan below are those implemented in 2014:

- Monitored control and management of electricity consumption (***REeficiente Project)***[2]: In 2014, electricity monitoring devices have been installed in the 'Romica' and 'Viladecans' buildings.

- Energy audit plan: Continuing with the activity initiated in 2011, in 2014 two buildings were audited. Work centres, whose refurbishment projects are significant and whose scope can affect elements that may reduce energy costs, are audited before and after the comprehensive reforms are carried out.

    - The 'Rubí' building will be remodelled in 2015. In the audit prior to the remodelling of the building, it had an energy rating of C. In 2016, an audit will be carried out after the work is finished, to allow the energy improvements achieved in the building to be ascertained.
    - The 'Rocamora' building was reformed during 2014. In the audit prior to the remodelling of the building, it had an energy rating of C and after the remodelling; it obtained an energy rating of **B** based on the following:

        - Measures for the control and management of energy consumption in the building: a climate control system has been installed, with a small display screen at the entrance to the building. It regulates the indoor air temperature and ventilation.

[2] The **Red Eléctrica eficiente** brand revolves around a specifically created work team in which different areas and activities of the Company are represented. A number of projects and initiatives are developed and carried out under this brand; further details are available on the website of Red Eléctrica: http://www.ree.es/en/sustainability/sustainable-energy/energy-and-climate-change

- Measures regarding the building envelope: an insulating layer of glass wool, 80 mm thick, has been installed. The windows on the first floor have been replaced by aluminium carpentry and Climalit windows.
- Measures for climate control in the building: A variable refrigerant flow unit has been installed with a Carrier brand heat pump, which has a coefficient of performance of 3.09. Energy rating C for air-conditioning and rating B for heating. R-410A refrigerant. With a rated cooling capacity of 43 kW and a heating capacity of 46 kW. A climate control system with an enthalpy exchanger.
- Measures regarding the lighting in the building: the lighting system is equipped with sensors which regulate the intensity of the lighting according to the amount of natural light that comes through the windows. Motion sensors have been installed in the changing rooms and toilets.
- Measures regarding other elements of consumption: Solar panels have been installed for heating sanitary hot water.

- Renovated buildings: minor reforms have been made in 9 work centres in which different energy efficiency related measures have been considered such as:
  - Energy reduction measures: Improved closures (windows, doors etc.), eliminating thermal bridging, increasing the insulated glazing of glass panes and improving profiles; improvements in lighting efficiency; building envelope improvements by renovating insulation materials and improvements to the climate control systems.
  - The buildings that were reformed are: Picón, Siero, Grijota, Herrera, Villarino, Güeñes, Romica, Viladecans and Senmenat.

- Energy rating of buildings: Since 2011, Red Eléctrica has introduced standardised efficiency criteria in the design of buildings that are used as work centres and, since 2012, all new work centre buildings have been built under this efficiency criteria, achieving a B energy rating.

In 2014, the Rocamora building was reformed; going from an energy rating of C prior to the reform to an energy rating of B once the works were completed.

	2012	2013	2014
Energy rating A	---	---	---
Energy rating B	*5*	*5*	*6*
Energy rating C	*13*	*13*	*12*
Energy rating D	*4*	*4*	*4*
Higher energy rating	*42*	*42*	*42*

NOTE: At present, REE cannot have a building with an energy rating A as this requires the generation of a certain quantity of renewable energy and Red Eléctrica, by law, cannot generate electricity.
REE has a total of 64 buildings distributed nation-wide and on the Balearic Islands and the Canary Islands.

6.1.3.1.2 Specific actions carried out in corporate communication systems:

- IT upgrading of workstations:

In 2014, the **strategy for the transition to virtual servers** which began in 2010 was completed. **65%** of IT servers have been virtualised while the other 35% have stayed on a physical platform, in most cases due to redundancy or security reasons in the architecture. This measure has resulted in an improvement in the utilisation of hardware and the reduction of energy consumption.

Similarly, work continued with the **renewal of TFT screens** from 17" to 23". In 2014, the number of replacements totalled 378.

This year 215 **old desktop PCs** and **150** laptops were renewed.

It should be noted that a substantial improvement in energy efficiency of equipment has been achieved in 2014 by incorporating solid state drives (SSD) as part of the workstation's hardware configuration; SSDs are much more efficient and use less power than the former traditional hard drives (HDD).

- Management platform for office IT systems ***(REeficiente Project)***:

  In the field of energy efficiency policies being implemented since 2012 in office IT equipment (auto screen shut off, stand-by mode for idle equipment, etc.), with the data obtained in 2013 and 2014 **it can be confirmed that this has represented a 20% savings in energy consumption of IT office equipment since the pilot programme began in September 2012**, with the subsequent improvement in the environmental impact (savings in CO_2 emissions).

6.1.3.1.3 Key results 2014

- A reduction of 3.8% in electricity consumption at the Head Office has been achieved since 2012, thanks to the broadening of the efficiency measures contemplated in the 2012-2019 plan within the Energy Management System (certification ISO 50.001) for the Head Office.

- Efficiency measures implemented at 10 work centres. At the end of 2014, of the 64 buildings owned by Red Eléctrica, 6 have an energy rating of B and 12 have a rating of C.

- Specific analysis of consumption at substations and the possibilities for reducing them. The conclusions have been included in the Guide on energy efficiency at Red Eléctrica's facilities.

- A reduction of 20% in electricity consumption associated with the use of computer equipment during the 2012-2014 period. Specifically, the upgrading of equipment (screens and PCs) in 2014 has resulted in a savings estimated at 27,880 kWh a year.

REDUCTIONS IN ENERGY CONSUMPTION(1)		
	kWh	*Joules*
Reduction in the Head Office due to the implementation of the energy management system(2)	299,593	$1.07 \cdot 10^{12}$
	kWh/annually	*Joules/annually*
Reduction due to renewal of IT systems and PCs(3)	27,880	$1.10 \cdot 10^{11}$

(1) Reductions resulting from the measures already taken or plans that are in place in 2014 have been included. No reductions associated with measures previously implemented in the Company are included.

(2) Reduction achieved in 2014 compared to 2012, the year in which the energy management system was launched (associated reduction measures implemented in 2012, 2013 and 2014).

(3) Expected reduction with the measures implemented in 2014.

REDUCTION OF GREENHOUSE GAS EMISSIONS [1]	
Net savings	*t $CO_{2\ eq}$*
Reduction in the Head Office due to the implementation of the energy management system [2][3]	72
Annual savings	*t $CO_{2\ eq}$/year*
Reduction due to renewal of IT systems and PCs[3]	7

(1) Reductions resulting from the measures already taken or plans that are in place in 2014 have been included. No reductions associated with measures previously implemented in the Company are included (installation of energy efficient equipment, use of videoconferencing, company shuttle bus, etc.).
(2) The emission factor corresponding to 2014 was used in the emissions savings estimation.
(3) Reduction achieved in 2014 compared to 2012, the year in which the energy management system was launched (associated reduction measures implemented in 2012, 2013 and 2014).

6.1.3.2 Efficient mobility

Among the actions carried out by Red Eléctrica in this area are those related to its fleet vehicles. In this regard, it is noteworthy that 70.6% of Company vehicles (fleet and leasing) have an energy rating of A or B.

Also noteworthy is the CARs Project (*Safe Responsible and Agile Driving*), whose implementation will enable the monitoring and optimisation of fuel consumption thanks to the tools to be implemented, such as calculating efficient routes and responsible driving, among others.

In addition to these and other measures already in place (such as videoconferencing, lighting [LED] identifying available parking spaces, Company shuttle bus to the head office), Red Eléctrica's Sustainable Mobility Plan was defined.

Mobility objectives 2020

- ✓ Reduction of 21% of the emissions associated with the use of fleet vehicles (base year 2010).
- ✓ Business related travel: savings as over 300 t CO_2 eq per year is avoided.
- ✓ Commuting to and from work centres: over 200 t CO_2 eq in savings.

Fuel consumption (l) during 2014 associated to vehicles:

	2012	2013[3]	2014
Diesel (l)	498,388	475,792	408,277
Gasoline (l)	19,408	27	-
Total fuel [1]	517,796	475,818	408,277
Fuel consumption (Joules)	$1.93 \cdot 10^{13}$	$1.77 \cdot 10^{13}$	$1.52 \cdot 10^{13}$

(1) Includes fleet vehicles, cherry pickers and executive vehicles until 2013. The 2014 figure does not include executive vehicles (shared leasing), but does include the consumption of cherry pickers.
(2) This ratio is an average based on the different types of vehicles. Data was recalculated in 2013 after the launch of a new control methodology for the km travelled.
(3) Data corrected after the verification process of the 2013 carbon footprint.
(4) 1 l of diesel = $37 \cdot 10^6$ joules; 1 l of petrol = $34 \cdot 10^6$; 1 l of gas oil = $37 \cdot 10^6$ joules

6.1.3.2.1 Sustainable mobility plan

The implementation and execution of a Sustainable Mobility Plan, approved by the Management Committee in December 2014, will help: meet the challenges undertaken in the Company's climate change strategy, promote energy efficiency, improve the quality of life of people employed and promote the positioning of Red Eléctrica as a company committed to sustainable development that takes actions anticipating future regulations in this field.

The objective of the Plan attempts to solve the specific issues caused by daily commuting between home and the workplace, and redirect those work displacements that are usually for work reasons towards more sustainable transport alternatives with less impact on climate change.

Therefore the Plan is addressed from an environmental perspective (reducing emissions) and a social perspective (improving the quality of life of its employees). It includes a series of measures to improve mobility conditions for employees of Red Eléctrica and applies both to business trips as well as the daily commute.

Four courses of action are carried out:

- Rationalise the use of private vehicles
- Promote the use of efficient vehicles
- Apply fuel saving measures
- Awareness and training

The implementation of the Sustainable Mobility Plan will have an associated saving in emissions.

The plan will initially be implemented for personnel, including the management team, in Red Eléctrica's Head Office. In other work centres the measures that do not require a preliminary analysis of the centre's mobility situation will be implemented immediately. Subsequently, the characteristics of each centre will be studied, in order to design and implement other complementary measures that fit the centre's specific needs.

6.1.3.3 Awareness

The awareness raising actions for employees carried out this year have been mainly focused on the Sustainable City concept through posters, intranet communications, visits, competitions etc. Furthermore, in 2014 a specific campaign was developed for contractors that work in Red Eléctrica's facilities.

In 2014, the **second edition of the Award to the year's most noteworthy Red Eléctrica Eficiente Project** took place; a recognition that arises from the need to promote best practices in energy efficiency developed or carried out in Red Eléctrica. The ceremony for the presentation of the award was organised on 5 March on the occasion of World Energy Efficiency Day. The event was presided over by the Chairman of the Company, who also presented the awards.

Additionally, as in previous years, a number of projects and initiatives in this specific area have been carried out taking as a reference the two significant dates indicated below. These initiatives were complemented by disseminating messages and information using internal communication media in order to publicise the events.

- **Energy efficiency: 5 March - World Energy Efficiency Day**
- **Mobility: 16 to 22 September - European Mobility Week**

6.1.3.4 Demand-side management: Projects related to energy efficiency

The most relevant projects in this area of demand-side management during 2014 were:

- **PRICE Project *(REeficiente Project):*** a joint project for the implementation of smart grids in the field of residential electricity demand and for which the Corredor del Henares area of the Community of Madrid was selected. Red Eléctrica has participated with 20 other partners in this project since its inception in 2011; a project funded by the Ministry of Economy and Competitiveness.

  This project is noteworthy as it is the first-of-its-kind in which the technological challenges associated with demand-side management mechanisms are addressed in a true deployment scenario, because so far, research projects in this area consisted only of concept testing. This prior experience and the deployment of smart meters in the Corredor del Henares area allowed the demonstration phase of the project to commence in 2014. This demonstration is allowing Red Eléctrica to develop a knowledge base and technology for the implementation of demand-side management mechanisms and on new mechanisms for providing information to citizens on the state of the electricity system.

- **The electric vehicle *(REeficiente Project).*** Red Eléctrica participates in various working groups and dissemination initiatives, in order to prepare the operation of the electricity system for the introduction of this type of demand. (See: *http://www.ree.es/en/red21/electric-vehicle/electric-vehicle-initiatives-and-projects*

  The management of the demand of the electric vehicle is an opportunity for the improved functioning of the future electricity system.

  The introduction of the electric vehicle promises to evolve the mobility models of our society and will become, thanks to the possibility of charging during off-peak hours, an ally that will allow more flexibility in operating the system thanks to this demand-side management possibility.

- **ALMACENA Project: *(REeficiente Project).*** The '*Almacena*' project consists of the field installation and subsequent operation of an energy storage system, specifically a prismatic lithium-ion battery with a power of about 1 MW and a capacity of at least 3 MWh, which aims to assess the capabilities and technical characteristics that this type of installation currently offers as a tool that seeks to improve the operating efficiency of electricity systems.

This innovative electrochemical storage system was installed in 2014 in Carmona, Seville, and has allowed two functionalities to be tested during the year Said functionalities are aimed at promoting the integration of renewable energy and improving the system operation services (modulation of the load curve and load-power frequency control). In later phases, the facility will serve as a platform to assess the potential contribution of this technology to other system operation services, the increase in the flexibility of grids or the stability of the system. Specifically, in 2015 the collation and applicability of the results obtained will continue through a collaborative project with the Electric Power Research Institute to perform an international benchmark analysis of the installed equipment.

- **PERFILA Project** ***(REeficiente Project):*** Geared towards the definition of patterns of behaviour of the energy needs of households and small businesses to carry out a more efficient management of both the demand and of energy resources. Led by Red Eléctrica it involves the major distribution companies.

  The information which has been collected since January 2014 from approximately 20,000 members of the panel has been used in the 2015 initial profile proposal developed by Red Eléctrica.

- **Active citizen** ***(REeficiente Project):*** Red Eléctrica promotes the involvement of the consumer as a key protagonist in the new energy model.

  The electricity system is in a transition phase towards a more dynamic energy model in which the role of the citizen as a key piece of the operation of the system is increasingly more noteworthy. This is why Red Eléctrica promotes demand-side management initiatives such as making available information to citizens on the status of the electricity system, or disseminating recommendations on best practices regarding efficient consumption.

  Red Eléctrica has created a space on its website specifically dedicated to disseminating this information to citizens and, in 2014, it drafted and released the book "The Operation of the Electricity System for Dummies" that responds to this commitment to disclose the functioning of the service.

- ENTSO-E and the GO15 Association ***(REeficiente Project)***: Red Eléctrica has continued throughout 2014 to actively work as part of the Very Large Grid Operators Association (GO15), a voluntary and innovative project supported by the major power grid operators, which together account for over 60% of the worldwide electricity demand.

6.1.4 Offsetting of emissions

Within the climate change action plan, we have set a goal to offset at least 20% of our direct emissions. In this sense, Red Eléctrica offsets its emissions primarily through the **'Red Eléctrica Forest'** project.

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, 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 involve the local population through environmental education activities and reforestation with the help of volunteers. The project is undertaken on public land in different areas of Spain.

In 2014 the following works were carried out:

- **Zamora Forest**: Work was carried out for the preparation of the land and the planting of 51 ha of pine began (Pinus sylvestris) in public highlands in the municipality of Puebla de Sanabria (Zamora). The area is included in the Sierra de la Culebra SCI (Site of Community Interest).

- **Majorca Forest**: Recovery of 36 ha of burned lands in the Sa Duaia public common land (Artá municipality) included in the Muntanyes d'Artá SCI. 11,520 species were planted including Pines (Pinus halepensis), Holm Oak (Quercus ilex) and Olive (Olea europea var. Sylvestris). The restored area will have a hiking route indicated with a plaque stating, 'Walk in the Red Eléctrica Forest'.

On the other hand, Red Eléctrica has offset, for the first time, part of the emissions corresponding to the commuting of employees to and from work, having acquired a total of 2,324 CER (Certified Emission Reductions on the basis of projects derived from the Clean Development Mechanism (CDM) under the Kyoto Protocol) that correspond to the emissions generated by all those workers who responded to the mobility survey relative to 2014. The project for offsetting emissions, Hydroelectric Generation in Lam Dong Province (Vietnam) was chosen by these same employees.

In addition, Red Eléctrica calculated and offset the emissions associated with the holding of its **General Shareholders' Meeting**. In 2014, 17 t CO_2 eq was offset with the purchase and permanent retirement in the National Registry of Emission Allowances account of **17 CER** (Certified Emission Reductions on the basis of projects derived from the Clean Development Mechanism (CDM) under the Kyoto Protocol), for the project: CECIC Changma HKC Gansu Wind Power Project.

6.2 Biodiversity

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 covering all the Company's activities. In 2014, a new **biodiversity strategy** was updated and signed and a new **action plan** was drafted to be undertaken as of 2015 (currently under approval) which gives continuity to the 2010-2014 action plan.

The following are the cornerstones of the biodiversity strategy:

- ✓ Foster a communication and collaboration framework with stakeholders, increasing the visibility of the Company's commitment to biodiversity conservation.
- ✓ 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 Company's activities, especially in sensitive natural environments.
- ✓ Contribute and promote the development of applied research projects aimed at blending the transmission grid into the environment.

Main highlights of the Action Plan **2015-2020**:

- ✓ Direct actions regarding biodiversity:
    - o Drafting of bird collision risk maps.
    - o Definition and execution of a multi-year plan for the marking of electricity lines with bird-saving devices.
    - o Evaluation of the effectiveness of blade or rotating-ball bird-saving devices.
    - o Hábitat Project (2015-2017). Obtaining up-to-date geo-referenced information regarding the natural habitats of community interest; in addition to their conservation status with regard to the sphere of influence of Red Eléctrica's facilities.

- ✓ Collaborative actions with the competent entities on biodiversity matters:
    - o Continuity regarding collaboration with the Autonomous Communities.
    - o Continuity of agreements for the reforestation of degraded areas (the Red Eléctrica Forest).
    - o Signing of agreements for the prevention of forest fires nationwide.

The main results of the Action Plan **2010-2014** are provided below in summary form:

- ✓ Direct actions regarding biodiversity:
    - o Development of the Mapping of flight paths project to identify the routes and flyways of birds that interact with transmission lines.

- Monitoring of the interaction of birds with the lines: methodology and protocols for the collection and analysis of data from bird collision accidents with transmission lines.
- Improved knowledge of natural protected areas and species of interest: development of the project Territorial Observatory /updating of existing mapping.

✓ Collaborative actions with the competent entities on biodiversity matters:

- Framework agreements for the protection of biodiversity.
- Specific agreements related to specific projects and activities.
- Collaboration agreements for the prevention of forest fires (11 agreements).
- Agreements for the reforestation of degraded areas (the Red Eléctrica Forest).

6.2.1 Electricity grids and biodiversity

The aim of the electricity transmission grid is to link the points of energy generation with those of consumption. Therefore, Red Eléctrica's facilities are located nationwide.

The priority criteria for the siting of new facilities are to avoid areas rich in biodiversity. These criteria are taken into account in the planning phase of the transmission grid and continue in the definition phase of each project. However, in some cases it is inevitable that infrastructures cross or be located in protected areas, or areas with species of interest as many spaces are protected in Spain (approximately 25% of the surface area is protected).

The interaction of electricity infrastructure with biodiversity is mainly associated with its presence in the territory and the works required for its construction and maintenance.

On these occasions, Red Eléctrica implements all the necessary preventive and corrective measures to minimise such effects on spaces and species, and it even establishes environmental improvement actions to promote biodiversity in those areas where its facilities are located.

In 2014, 335 km of line was brought into service, of which **9.6% is located in Red Natura** (this high percentage is related to the commissioning of the Spain-Portugal interconnection via Extremadura, which was impossible to construct without crossing Red Natura spaces). Of all existing infrastructures, only 15.1% of total lines and 6.2% of substations are in protected areas (Red Natura). Currently, Red Eléctrica's facilities occupy only 0.09% of Red Natura Española.

6.2.2 Birdlife protection

The main impact on fauna due to Red Eléctrica's facilities is the risk of birds colliding with grounding cables that protect the lines from electrical discharges during storms. The main measure to reduce that risk is marking the grounding cables with devices that increase their visibility.

In 2014, **191 km of line** was marked and work has continued on the project: **'Identification, Characterisation and Mapping of the Flight paths of Birds that Interact with High-Voltage Power Lines'.** http://www.ree.es/en/sustainability/noteworthy-projects/mapping-bird-flight-paths-project

Red Eléctrica was awarded the European Environment Award for Business 2014 (EBAE) for this specific project in the special category 'Business and Biodiversity'.

Based on the information collated through the mapping of bird flight paths project, criteria for prioritisation of corrective actions regarding transmission lines was defined; this criteria was subsequently used as the basis to identify the areas and sections of lines which require priority actions. The result was a sensitivity map of the territory prepared according to the pattern of spatial distribution and aggregation of a set of species considered most prone to collision. The sensitivity map drafted allows the identification of line sections in the transmission grid which require priority actions as a result of them being identified as high-sensitivity areas due to the aggregated density and presence of birds which are potentially prone to collisions with electricity lines. All this information is set out in the **Annual Line Marking Plans**.

Furthermore, the Company has begun to implement a specific methodology to assess the effectiveness of the measures put in place to reduce bird collisions: **methodology and protocol for the collection and analysis of data from bird collision accidents with electricity transmission lines**.

The method is applicable to both new installations (assessments in the context of environmental monitoring programmes), as in sections or specific points of existing lines. It is also valid for comparisons between different types of devices, such as the new blade-type model bird-saving device in comparison to the traditional spiral model.

During the environmental monitoring regarding the capacity increase of the 220-kV Casaquemada-Onuba line, **drones** were used to overfly 8 towers with white stork nests (Ciconia ciconia) to determine if they were occupied, or not: This determined if the work was to be performed or delayed until they were vacated. This technology, first used in 2014, allows specific inspections to be performed on Stork nests or nest other species of birds that are located in electricity line towers and can provide data regarding their occupation in the breeding and/or rearing period without altering the behaviour of the bird that may be occupying it at the time.

6.2.3 Protection of habitats and species

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

- Detailed field studies on specific issues.
- Introduction of some modifications in the design of facilities to minimise its effect on flora: compacting or increasing the height of towers, the relocation of towers, modification to access roads etc.

- Signage and protection of habitats and species of ecological value to avoid them being damaged in the course of the work.
- Using specific techniques to raise towers and hang conductors by hoisting with a boom crane, or helicopter and hanging lines by helicopter, or by hand to minimise the need to open access roads and work sites.
- Biological stoppages (halting all works in the identified periods to reduce effects on fauna).
- Recovery of affected areas: restoration of slopes, sowing of seed and the planting of trees.
- Accompanying measures for improving biodiversity in affected areas.

The main actions carried out in 2014 regarding the protection of habitats and species were the following:

- Hoisting towers and hanging line by helicopter in the construction of a total of 28 km of line.

- Using a drone, for the hanging cables between two towers on two sections of line. This technology improves the safety of personnel and is a major fuel saving when compared to the use of a helicopter.

- Biological stoppages of work on lines (complete stoppage of all work in the time periods indicated to avoid impacts on fauna).
  - ✓ *Penagos-Gueñes* line: stoppages for various periods from February to September on 13 towers.
  - ✓ *Mérida-San Serván* line: stoppages during the period March to July on 9 towers.
  - ✓ *Brovales- Guillena* line: stoppages for various periods from January to August on 17 towers.
  - ✓ *Boimente-Pesoz* line: stoppages for various periods from April to September on 3 towers.

- Recuperation of affected areas: restoration of slopes, sowing of seed and planting of trees. In 2014, noteworthy was the restoration of areas with the use of strawberry trees (90), cherry (20), oak (65), apple (12), willow (36), fig (25), holly (50) and chestnut (25).

Other actions carried out in 2014 are included in the 'Environmental Actions' annex of this environmental statement.

6.2.4 Contribution to biodiversity conservation

Red Eléctrica actively contributes to the conservation of biodiversity in Spain spearheading or participating in various projects and conducting dissemination activities and environmental training. During the period of the latest Biodiversity Action Plan (2011-2014) we signed agreements and developed projects in 14 Autonomous Communities.

Most of the projects are aimed at the conservation of endangered bird species, although it also works with other species, for example by installing bat roosting boxes in high-voltage towers.

In addition, projects aimed at restoring degraded habitats are relevant of note are the Red Eléctrica Forest and the Recovery of the Ses Salines dunes (Formentera). Under the framework of the latter project numerous actions were carried out and Red Eléctrica is committed to following up on the monitoring of the restored area for a period of ten years, which includes the review and replacement of elements that have been damaged and the assessment of the degree of evolution of the beach-dune system.

❖ **Conservation projects related to endangered species**

Detailed information on all projects spearheaded by, or in which Red Eléctrica participates, can be found via the following links:

http://www.ree.es/en/sustainability/map-of-projects
http://www.ree.es/en/sustainability/the-natural-environment/avifauna

- **Reintroduction of the Bonelli's Eagle (Hieraaetus fasciatus) in Majorca.** *Collaboration with the Balearic Islands' Government. Duration of the project 2011-2014.* It is worth mentioning that thanks to the project being carried out; in 2014 the first birth took place, in 40 years, of a Bonelli's Eagle chick born in the wild on the Balearic Islands.

- **Platforms for the Osprey (Pandion haliaetus) in Andalusia.** *Collaboration between the Migres Foundation and the Regional Government of Andalusia.* Of the 18 Osprey chicks hatched in 2014 in Andalusia, 5 of them took place on the platform provided through the project.

- **Recovery of the Bonelli's Eagle in Aragón.** Release into the wild of 2 adults and 3 chicks. Collaboration with the Government of Aragon. (2013-2014). A video of the project has been produced.

- **Programme for the reintroduction of the Black Vulture (Aegypius monachus) in Catalonia.** Birth of 3 chicks and the release of 16 birds. Collaboration with GREFA (2008-2015). A video of the project has been produced.

- **Conservation of the Lesser Grey Shrike (Lanius minor) in Spain.** Release of 58 chicks, return of 12 individuals and the appearance of an unringed new individual. Collaboration with TRENCA (2010-2014).

- **Monitoring and analysis of the causes that favour the expansion of the Egyptian Vulture in Catalonia.** Census carried out in 27 areas, 22 pairs have laid eggs and 21 chicks have been born. Viable population if current conditions continue. Collaboration with the University of Barcelona (2014)

- Other actions carried out in 2014 for the conservation of birdlife:

    - ***Recovery of the Golden Eagle in Galicia.*** 2 birds released and 3 breeding pairs have been formed. Collaboration with GREFA (2011-2015).

    - ***Reintroduction of the Lesser Kestrel in Valencia.*** A total of 116 chicks have been reintroduced in the 'hacking method' in Salinas, Camporrobles and Ayora. Red Eléctrica has donated a total of 3 release cages. Collaboration with the Valencian Government through a collaboration framework agreement (2013-2014).

    - ***Improvement of the habitat of the Soprano Pipistrelle bat (Pipistrelus pygmaeus) in Valencia.*** Collaboration with the Valencian Government through a collaboration framework agreement (2011-2016).

    - ***Evaluation of the effectiveness of blade or rotating-ball bird-saving devices.*** Analysis of the effectiveness of blade-type or rotating-ball bird-flight diverters on different communities of birds, mainly Steppe birds and waterfowl, in order to reduce bird mortality rates due to collisions with electricity line cables.

❖ **Other noteworthy biodiversity conservation projects**

- **Hábitat Project (2015-2017):** The Hábitat project was started in 2014 with the aim of obtaining geo-referenced information regarding priority habitats of community interest (HIC*) and their conservation status in the sphere of influence of all in service electricity lines and substations nation-wide. It started in 2014 as a pilot project in the Autonomous Community of Aragón.

- **Effect of light pollution on the migratory flows of invertebrates in the Strait of Gibraltar.** Collaboration with the Migres Foundation (2012-2014). The project has been completed after having verified that exterior lighting significantly affects invertebrate communities and consequently their predators. As a corrective measure, the use of LEDs has been proposed versus the conventional lighting used to date.

- Restoration of the coastal dunes in the area of Llevant in Formentera. (Agreement with the Island Council of Formentera, the Balearic Islands' Government and Dem. Costas in the Balearic Islands). Collaboration with the Balearic Islands' Government (2012-2020). In 2014, sand collection devices and a soft fenced boundary of the dune system were installed, and informative posters were designed.

In addition, regarding biodiversity conservation, there are R&D+i projects underway associated with the protection of birds and flora *(see section 6.7).*

6.2.5 Fire prevention

The criteria relative to Red Eléctrica's course of action regarding the fighting of forest fires is formally set out in an internal forestry management document, which this year incorporates new criteria and milestones to be achieved in this area (2nd Edition – Forestry Policy).

To minimise the risk of fire associated with the presence of transmission lines, strict compliance with the safety distances between flora and the facilities is critical.

The main actions carried out by Red Eléctrica are:

- Implementation of best practices in the design and maintenance of safety corridors.
- Active collaboration with the public administrations involved in forestry management.
- Predictive maintenance: annual review of all facilities.
- Preventive maintenance: periodic forestry works.
- Good practices in the opening up and maintenance of access roads: respect for shrub land and species of low-growing trees, minimisation of activities on protected species and the re-vegetation of degraded areas.
- Elimination of the use of chemical methods for treating the flora in the safety corridors.

These actions result in the number of fires involving Red Eléctrica's facilities being very low. During 2014, there was only one small outbreak of fire which was without consequence.

Since 2007, Red Eléctrica has aimed to continue signing agreements with the different competent administrations regarding forestry management through which, in addition to addressing issues related to the management of safety corridors which electricity lines run through, it also includes other commitments to fight fires.

During 2014, an **agreement was signed with the Island Council of La Palma** bringing to 11 the number of agreements signed in the field of fire prevention.

Noteworthy in 2014, the carrying out the tests corresponding to the R&D+i project, '*Monitoring system for forest fires caused by lines*' (2013-2014), whose objective is the development of an autonomous detection system of forest fires in the vicinity of overhead high voltage electricity lines (more information in section 6.7).

6.3 Saving of resources: Water and paper

- **Water consumption**

	2012	2013	2014
Head Office (m^3)[1]	10,947	10,983	**9,177**
Head Office (m^3/employee) [1]	12.91	13.06	**9.60**
Work centres [2] (m^3)	41,586	31,597	**28,069**

(1) Only the head office building in the Moraleja and the staff that consume water in it is considered (employees, interns and collaborators: a *total of 956 people).*

(2) Data taken from 45 of a total of 63 work centres. Data for all work centres is not available due to the absence of meters and the breakdown of some devices. The data provided has a coverage of 91%, in terms of personnel. Indicator not supplied due to the fact that all centres do not have meters, therefore the figures shown are not true values.

Withdrawal by source (%)	2012	2013	2014
Rain water collection tanks	0.13	0.15	**0.28**
Cisterns	2.31	3.20	**2.40**
Wells	23.51	25.27	**32.96**
Municipal water mains	74.05	71.37	**64.36**

Note: 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 true % value of utilisation of rainwater is greater than that calculated according to available data).

During 2014, in Red Eléctrica water saving measures were implemented to reduce consumption, such as water flow regulators on taps. In addition, an awareness raising action was carried out on 22 March on the occasion of the celebration of World Water Day.

- **Paper consumption (office)**

	2012	2013	2014
kg	(1)	48,333	33,443
kg/employee [2]	(1)	25	16

(1) In 2013, the paper consumption calculation system changed whereby the historical data is not provided.
(2) Employee: All REE, including interns, workers from temporary employment agencies and collaborators. Total of 2,099.

57% of documents are printed or photocopied on both sides.

The table below shows the evolution of paper consumption in publications in the period 2011-2014.

	2012	2013	2014
kg	29,018	30,190	14,275
% FSC *	100	100	100
% FSC 100% Recycled	---	---	8
% FSC 60% Recycled	---	---	92

** Ecological paper certified to Forest Stewardship Council standards.*

6.4 Socio-economic environment

6.4.1 Protection of archaeological and ethnological heritage

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

In 2014, the *ArqueoRED* project was launched, which aims to provide digital mapping of information regarding catalogued heritage sites that can be consulted prior to the planning of works. Being fully aware of the situation in advance, enables potential effects to be avoided and or prior measures can be taken if needed in each case. The project requires close collaboration with the competent authorities and will run throughout 2015 and 2016.

Furthermore, before performing any earthworks, an archaeological survey is carried out whose intensity and scope are based on the probability of any material/remains of interest in the area. The results of this survey determine the need for the ongoing presence of an archaeologist during works.

In 2014, archaeological supervision was carried out in the construction of 12 lines and 5 substations, with the permanent presence of an archaeologist in 70% of the cases.

The main activities carried out regarding the protection of archaeological and ethnological heritage are set out in the 'Environmental actions' annex.

Of these, of note this year was the archaeological work arising from the supervision and monitoring of the new 132 kV switchyard in the Torrent substation located in the municipality of Santa Eulària (Ibiza) conducted between December 2013 and April 2014.

Following the completion of prior surveys on the foundation of the Torrent electricity substation evidence of archaeological remains were found.

The excavations confirmed the existence of a vast necropolis of the Byzantine period (VI – VII centuries) consisting of 18 tombs. In addition, a living and working area of about 1,500 m^2 was found, confirmed by the presence of various walls and roads of a rural settlement of the late Punic period (II-I centuries BC).

The Torrent substation is a facility of general interest, vital to the security of the electricity supply in Ibiza and point of interconnection with Majorca. According to the Energy Sector Roadmap for the Balearic Islands, there are no alternatives to the siting of this substation, making it impossible to change the route to relocate the project.

Red Eléctrica has had to make an effort to redesign the substation (the initial planned siting occupied over 90% of the plot) and also the associated lines to minimise the impact on the archaeological value of the remains found, ensuring no overall effect on the new archaeological site. It has also undertaken the extraction, transfer and relocating of burial structures as their location in the centre of the plot meant that it was not possible to preserve them in situ. Red Eléctrica has allocated more than 700,000 euros to the archaeological works, as well as the preservation of the remains and the closing off of the archaeological reserve area.

How to ensure that the archaeological site is accessible and can be visited is currently being examined.

Red Eléctrica also collaborates with the Public Administration in heritage conservation. In 2014, collaboration was carried out on the archaeological assessment of megalithic monuments of Eskatxabel I (Galdames) and Kanpazaulo (Gueñes).

6.4.2 Electric and Magnetic Fields (EMFs)

Thanks to the preventive measures 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: limits exposure values for the general public in sites where they may remain for a period 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 nuclei and isolated houses.

In order to verify that the facilities are below exposure limits, between 2004 and 2006 Red Eléctrica carried out an exhaustive measurement plan for EMFs. From that moment, thanks to the great development of calculating tools, in situ measurement plans are no longer necessary as given the parameters of the lines it is possible to precisely calculate the maximum levels of EMFs that such facilities can generate. Only in the case when these parameters are not available would in situ measurements be needed.

This is the case of some facilities acquired by the Company in 2010 in the island systems, for which it has established an action plan which will begin in 2015.

In addition, Red Eléctrica performs some measurements at the request of interested parties. In 2014, five lines were measured, with results in all cases being below those values recommended by the European Union:

- Cartuja – Pinar 220 kV line, municipality of Jerez de la Frontera (Cádiz).
- Cartelle – Velle 220 kV line, municipality of Ourense.
- Alhaurín – Costasol/Alhaurín – Jordana 220 kV DC line, municipality of Alhaurín de la Torre (Málaga).
- Alhaurín – Cártama 220 kV DC line (1 and 2), municipality of Alhaurín de la Torre (Málaga).
- Hernani – Itsaso/Hernani-Argía 400 kV DC line, municipality of Aizarna (Guipúzcoa).

During 2014, there were no incidents resulting from non-compliance of norms in this area.

6.4.3 Noise pollution

During 2014, two acoustic studies were performed regarding the substations in Santa Ponsa, located in the municipality of Calvia (Palma de Mallorca), and Loeches (Madrid) to determine the noise levels in areas surrounding the facilities through measurements of the current scenario and simulations based on the future scenario.

In the case of Santa Ponsa (electricity substation and converter substation), these are new facilities to be constructed next to an existing switchyard, therefore the simulation is performed using software based on the new emission sources.

In the case of the Loeches substation, it is the urban development that will be created around the same that will represent a change of the current conditions; therefore it is the new buildings and homes that are the object of the simulation.

The results of both studies led to the **installation of noise barriers around power transformers**, which are the sources that contribute the most noise, as mitigating measures to reduce immission levels in the vicinity of the substation. The implementation of mitigating measures in the case of Santa Ponsa is the responsibility of REE as developer of the facility, and in the case of Loeches, it is the real estate agent of the housing development.

❖ Sound level measurement (simulation) for the future Santa Ponsa substation

Receptor	$L_{keq,Ti}$ [dB(A)]	Valor límite	$L_{keq,Ti}$ [dB(A)]	Valor límite	$L_{keq,Ti}$ [dB(A)]	Valor límite
	DÍA		TARDE		NOCHE	
P1.1	27	55+3	31	55+3	28	45+3
P1.2	34	55+3	36	55+3	34	45+3
P2.1	41	55+3	43	55+3	44	45+3
P2.2	42	55+3	46	55+3	46	45+3
P2.3	54	55+3	56	55+3	56	45+3
P3.1	37	55+3	39	55+3	39	45+3
P3.2	44	55+3	45	55+3	45	45+3
P3.3	49	55+3	50	55+3	50	45+3
P3.4	44	55+3	46	55+3	46	45+3
P4.1	43	55+3	44	55+3	44	45+3
P4.2	43	55+3	44	55+3	44	45+3
P4.3	38	55+3	41	55+3	41	45+3

Receiver *Limit value*

Morning/ Afternoon / Night

NOTE: the results obtained at each measurement point in each of the readings for the three periods are summarised in the table. In two of the measurement points, the limit values on acoustic quality targets for land areas in the territory that are predominantly for residential use, as established by Royal Decree 1367/2007 of 19 October, transposed to Law 37/2003 of 17 November, on Noise, regarding acoustic zoning are exceeded,.

❖ Sound level measurement in the vicinity of the Loeches substation

ZONA	Punto de Evaluación	$L_{Aeq,5s}$ (dBA)					
		Día		Tarde		Noche	
		Objetivo	Medida	Objetivo	Medida	Objetivo	Medida
ESTE	15	60	47 ± 2,2	60	42 ± 2,4	50	37 ± 2,2
	16	60	40 ± 2,2	60	45 ± 2,2	50	38 ± 2,3
	17	60	38 ± 2,3	60	38 ± 2,2	50	33 ± 2,2
	18	60	32 ± 2,2	60	43 ± 2,3	50	36 ± 2,2
	19	60	39 ± 2,2	60	38 ± 2,2	50	41 ± 2,2
SUR	20	60	42 ± 2,2	60	43 ± 2,2	50	44 ± 2,2
	21	60	31 ± 2,3	60	42 ± 2,4	50	38 ± 2,3
	22	60	39 ± 2,2	60	37 ± 2,2	50	38 ± 2,2
Límite parcela SE	23	60	47 ± 2,2	60	47 ± 2,2	50	46 ± 2,2
	24	60	57 ± 2,2	60	55 ± 2,2	50	55 ± 2,2
	25	60	60 ± 2,2	60	59 ± 2,2	50	57 ± 2,2
	26	60	50 ± 2,3	60	51 ± 2,3	50	40 ± 2,2
	27	60	53 ± 2,2	60	54 ± 2,2	50	55 ± 2,3

ZONE Measurement Point Target Median
Morning/ Afternoon / Night

NOTE 1: the results obtained at each measurement in each of the readings for the three periods are summarised in the table. Figures highlighted in red identify those points where the target acoustic quality sound level is exceeded. Orange highlights those points where the level is considered inconclusive with regard to the target, that is, considering the uncertainty associated to the measurement, these points could be statistically above or below target.

NOTE 2: The area of influence of the Loeches substation is considered as an area predominantly for residential use whereby the following acoustic quality targets apply: Day Period: 60 dB (A) // or Afternoon Period: 60 dB (A) // or Night Period: 50 dB (A) according to RD 1367/2007.

6.5 Waste management

The most relevant waste generated by Red Eléctrica is produced as a result of the following activities:

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

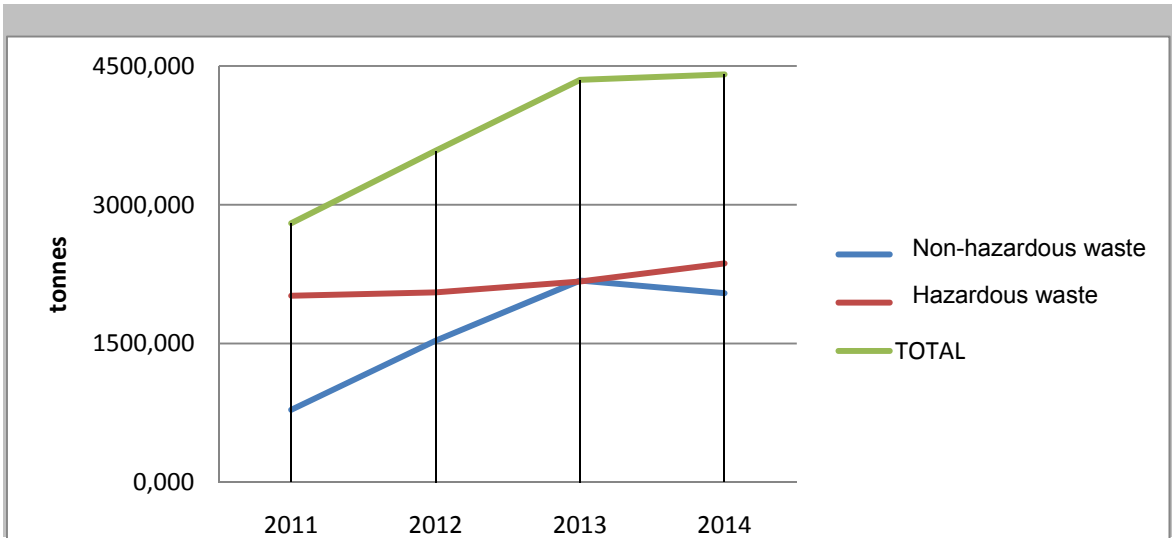
In recent years, the largest quantities of waste are associated with the activities for the adaptation of facilities, given that a major campaign is being undertaken to bring the assets acquired from other companies to Red Eléctrica's standardised criteria.

Given the nature of these activities, it is very difficult to predict the evolution of the amount of waste and set targets for its reduction. Therefore, although minimisation criteria have been established, such as the regeneration of oil from power transformers and reducing the hazardous nature of some products used; the main lines of working are aimed at improving segregation and the ultimate management of power transformer waste.

To minimise the consequences of a possible accident, these machines have containment systems appropriate for the volume of oil contained in the machine. The timely revision, maintenance and upgrading activity of these systems is very important, whereby the Company seeks the best options among its suppliers and promotes good practices through training and awareness.

The waste generated by construction activities is managed by contractors. For all works there is a Waste Management Plan which establishes the waste management to be carried out in each case, the criteria of minimisation and reuse being of utmost importance (especially important for surpluses from excavation works). In addition, Red Eléctrica includes specific requirements for waste management in the contractual documentation of works and reviews compliance through the monitoring of works, visits and through the control of documentation.

In general terms, the amount of waste generated in 2014 registered a slight increase compared to 2013. Specifically, the volume of non-hazardous waste decreased compared to last year while the hazardous waste increased.



The following are of note based on waste type:

Non-hazardous waste:

- Decrease of inert waste due to fewer renovations and improvements performed in facilities throughout 2014 and that required civil works.
- Stabilisation in the management of septic tank sludge due to the emptying procedures. This is primarily due to the fact that the campaign for the adaptation or replacement of assets to Red Eléctrica's standardised criteria and in some cases, to regulation in force, launched in 2010 is practically coming to its end.
- Stabilisation in the growth of paper and cardboard waste; primarily in the head office building.
- Increase in wood waste due to improved segregation practices and delivery to a waste management company at the logistics centres (54 t of pallets).
- The other non-hazardous waste, generated in non-representative quantities, follow the trend of previous years.

Non-hazardous waste	Quantities managed (t)			
	2012	2013	2014	Type of management*
Septic tank sludge	1,118.660	1,311.240	1,380.716	Recycling/Treatment
Metallic waste not contaminated with hazardous substances (1)	No data	1,513.762	2,022.441	Recycling
Inert waste	144.580	544.082	329.005	Controlled elimination / Recycling
Paper and cardboard	211.558	241.938	262.328	Recycling
Toner and printer inks (2)	0.032	0.022	0.014	Recycling
Wood (3)	42.231	69.581	119.834	Recycling
Vegetable waste (4)	34.153	8.567	6.820	Recycling
Non-hazardous electrical and electronic waste	0.699	3.443	1.415	Recycling
Plastics	7.535	4.957	12.014	Recycling
Glass	0.075	0.176	0.040	Recycling
Vegetable cooking oils	5.860	4.800	5.640	Recycling/Regeneration
Alkaline batteries - Non Mercury	0.000	0.033	0.040	Recycling
Total	**1,531.010**	**2,180.272**	**2,111.046**	

(1) In 2013, a computer application for the control and monitoring of scrap metal transfer data was introduced. Although the data collated is included, it will not be added to the waste total until all historical data is available. Closure date: 30 January 2015.
(2) The management of toner and ink corresponds to the company that supplies and services the printer. Only units purchased directly by Red Eléctrica are taken into account.
(3) Increased due to improved segregation practices and delivery to a waste management company at the logistics centres.
(4) Not taken into account in the calculation of total non-hazardous waste. This is a non-representative value since most of this waste is incorporated into the land or given to landowners. The table includes only the waste delivered to the waste management company.
** Default Procedure for the contractors responsible for waste management.*

Hazardous waste:

- Noteworthy is the increase of hazardous electrical and electronic equipment waste: *Equipment with oil*, compared to the previous year mainly due to the actions for the renovation and upgrading of substations acquired from EDE in the Canary Islands Regional Area (328 t), removal of a damaged transformer at the Puentes García Rodriguez substation (188 t) and the incorporation of logistics centres into the total figure (89 t).

- Increase in gas-pressurised containers. The implementation of the new procedures for the management of SF_6 gas in 2013 and the change of supplier in that same year have resulted in an increase in the removal of bottles containing this gas, although the increase is becoming more moderate with regard to the first year of implementation.

- Considerable decrease in the mix of water with hydrocarbons as a result of the periodic maintenance of containment pits for power transformer leaks and spillages, mainly due to the reduced requirements of adequacy of containment systems for power transformers.

- Continuing the trend of the past two years, the amount of transformers, equipment and oils with PCBs (polychlorinated biphenyls) is now stabilised as a result of the completion of the plan for the elimination/decontamination of auxiliary and power transformers, and equipment containing PCBs. The quantities generated nowadays come from the replacement of sealed equipment, manufactured before 2000, which ends up contaminated at the end of its useful life.

- Decline in the volume of soil/earth contaminated with hydrocarbons, mainly due to reduced requirements for adequacy of containment systems for power transformers.

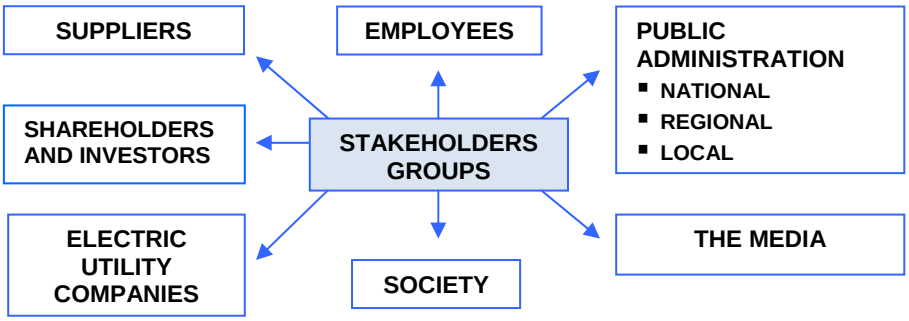
- In general terms, the rest of the hazardous waste continues the trend of previous years, with the logical variations resulting from the execution of the corresponding periodic maintenance.

Hazardous waste	Quantities managed (t)			
	2012	2013	2014	Type of management*
Used oil	433.156	287.967	315.235	Regeneration/Valuation
Oils with PCBs	0.426	0.137	0.160	Valuation /Elimination
Oil/water mix	466.030	929.592	362.868	Valuation
Diesel/water mix	0.000	0.400	0.021	Valuation
Transformers and equipment with PCBs	19.906	10.477	23.175	Valuation/Elimination incineration
Hazardous electrical and electronic waste: equipment containing oil	353.745	307.077	1,248.046	Valuation
Hazardous electrical and electronic waste: Other	49.070	59.897	132.724	Valuation
Nickel-cadmium accumulators	105.866	112.035	73.102	Recycling
Lead batteries	1.703	15.062	2.131	Recycling
Earth impregnated with hydrocarbons	504.032	383.033	195.348	Controlled elimination
Containers that have contained hazardous substances	7.620	5.077	7.057	Valuation
Absorbent materials, filtering materials, cleaning rags/cloths and protective clothing contaminated with hazardous substances	9.379	47.057	3.964	Valuation
Silica gel and other inorganic chemical products	0.000	0.848	0.000	Valuation
Non-halogenated solvents	0.134	0.047	0.004	Valuation
Halogenated solvents	0.005	0.108	0.000	Valuation
Water-based cleaning liquids	0.085	0.000	0.059	Valuation
Paint waste	0.843	0.372	0.284	Valuation
Insulation material (with or without asbestos)	9.656	1.244	1.154	Valuation/Controlled elimination
Laboratory chemical products containing hazardous substances	0.974	0.354	0.344	Valuation
Gases in pressurised containers	0.592	8.522	7.690	Regeneration
Anti-freeze containing hazardous substances	0.301	0.029	0.080	Valuation
Florescent tubes	0.459	0.974	0.517	Recycling
Batteries	0.096	0.028	0.015	Elimination
Fuel oil and diesel	1.065	0.000	1.041	Valuation
Cables with hydrocarbons	87.180	0.000	0.000	Valuation
Total	**2,052.323**	**2,170.337**	**2,375.019**	

(1) Once the elimination/decontamination plan for transformers, equipment and oil containing PCBs was completed in 2010, the amounts that are now generated are caused by the removal of old sealed equipment that is contaminated at the end of its useful life.
(2) The increase is linked to renovation and improvement actions regarding substations acquired from another company in the Canary Islands' regional office, the elimination of the damaged transformer and the waste generated in the logistics centres.
(3) These wastes deal with used SF_6 gas that is out of specification. The treatment of these wastes, consisting of the regeneration of gas for reuse, takes place outside Spain. This means that 0.32% of total hazardous waste has been transported internationally.
** Default Procedure for the contractors responsible for waste management. The total amount of waste destined for recycling has been estimated at 48.6%.*

6.6 Stakeholder Groups

Conscious of the social interest in the activities we carry out, we provide constant information to, and maintain dialogue with, all stakeholders.



6.6.1 Attention to Enquiries and Grievances

We monitor and attend to all enquiries and grievances of an environmental nature which are sent to us by interested parties via electronic mail or the DÍGAME service (Stakeholder Attention Centre) specifically provided for this purpose on our website www.ree.es.

The claims filed are classified by their nature: attention (including complaints, enquiries, suggestions, requests for information and recognition) or grievances.

In 2014, **39 claims of an environmental nature** were managed in Red Eléctrica through the DIGAME service, **including 15 grievances**.

Of those directly managed by the Environmental Department (22) only 13 were as a result of the works, facilities or management by REE.

All the grievances submitted in 2014 were addressed and resolved in the same period, but two of them related to the felling and cutting back of trees, are still awaiting resolution (as at 31/12/2014).

The areas for which stakeholder groups have contacted Red Eléctrica in the last three years were as follows, highlighting the claims received by the different organisational units as a result of the felling and pruning of flora:

	Evolution of claims			Evolution of grievances [2]		
	2012	2013	2014 (*)	2012	2013	2014(**)
Birdlife	3	7	2	0	0	0
Electromagnetic fields	9	5	3	0	0	1
Consumption/Energy efficiency	2	1	0	0	0	0
Environmental costs	0	0	0	0	0	0
Emissions/Climate change	2	6	1	0	0	0
Impact on the landscape	0	0	1	0	0	1
Facilities	4	3	0	1	2	0
General environmental information	4	8	7	0	0	0
Waste	1	1	5	0	0	2
Noise	1	0	2	0	1	0
Environmental management system	0	0	0	0	0	0
Flora	2	1	18	2	0	11
Total	**28**	**32**	**39**	**3**	**3**	**15**

[2] *Claims/Cases with sanctioning proceedings are detailed in section 9 of this statement.*

(*) The result includes all claims received (Attention + Grievances). In 2014, the type of classification changed and all claims not classified as grievance are classified in the same group called Attention. The different types of attention are: Complaints, enquiries, suggestions, request for information notification and Recognition.
(**) Only includes grievances in accordance with procedure IQ002.

6.6.2 Supply Chain

Red Eléctrica considers its suppliers as an essential link in the execution of their activities and, therefore, its commitment to the environment extends to each and every one of them.

In this regard, suppliers have been identified who are considered to have the greatest environmental impact. These are service providers that can generate a direct impact on the environment (construction activities, forestry works (felling, cutting back vegetation) and the maintenance of equipment in substations) and those that provide equipment whose manufacturing process is intensive in the use of natural resources.

Red Eléctrica requires all these suppliers to have a documented Management System, or one that is certified by a third party. In addition, it is important to note that the required contractual documentation associated to carrying out the contracted work sets out the environmental requirements to be fulfilled (in terms of training and the carrying out of works).

In this regard, for construction activities (likely to generate an environmental impact), there is a process of environmental work certification, linked to the fulfilment of environmental requirements, that conditions a part of the payment for the work. This process involves a thorough monitoring of the activities performed to verify compliance with all requirements.

Given that the monitoring of works is primarily carried out by external supervisors, in 2013 a system of personal accreditation of these supervisors was launched which ensures they have the training and knowledge necessary to perform said task in accordance with Red Eléctrica's criteria.

In addition to this, since 2011 work has been carried out on the calculation of the water and carbon footprint of Red Eléctrica's suppliers.

❖ Carbon footprint of suppliers

REE continues to work on the calculation of the carbon footprint associated with its value chain. The information, as in previous years, was collected through a dedicated portal. For those providers with a greater weight in our indirect emissions (in the sectors of construction and the manufacturing of equipment) a detailed monitoring was carried out. The aim is that through collaboration with these suppliers, the calculation process will improve year on year and thus monitoring can be performed on the improvements that the aforementioned suppliers implement regarding the reduction of emissions, and in addition promote the development of said improvements.

❖ Water consumption in the value chain

	2012	2013	2014
Water consumption in the value chain (m^3)	13,414,362	11,545,107	10,407,760

Water usage intensity in the value chain: 20 m^3*/million euros in 2012, 24* m^3*/million euros in 2013 and 22* m^3*/million euros in 2014.*

The water usage intensity depends on the type and number of purchase orders that have been placed during the year; therefore, a strict comparison cannot be made between different fiscal years. Of all the activities, construction of facilities and the manufacturing of equipment have the most intensive water consumption. Of the study carried out, it can de deduced that 60% of the water consumption in the value chain is associated to 25 suppliers.

6.6.3 Internal training and awareness

We consider environmental training as a strategic line to form a team which is increasingly more aware of environmental protection. The training given is beyond merely a professional level; its aim is also to contribute to improving environmental habits in both the daily work and family life of each employee.

The percentage number of staff of Red Eléctrica who received environmental training during 2014 was 3.5% (compared with 17.16% in 2013) and a total of 2,046 hours of training was received (compared with 6,244 hours in 2013).

The decrease in the number of people trained and training hours given is due to the fact that in 2014 environmental training was quite specialised. Also during 2014, greater effort was given to developing an educational recycling plan for job profiles, with the aim of strengthening the level of knowledge regarding the environmental aspects associated with the job's activities.

Areas of Environmental training
Environmental monitoring of substation dismantling
Carbon Footprint Versus Environmental Footprint
Calculating the Carbon Footprint M-34
Lighting Energy Efficiency
Waste management
Waste management studies and plans
Corporate Responsibility in grid development
SF_6 handling

Noteworthy in 2014 was the campaign which was carried out aimed at raising awareness for staff that have the greatest influence on energy use.

6.6.4 Stakeholder relations

❖ **Agreements with the Public Administration**

Through collaboration agreements we work with institutions to carry out activities related to the environment and sustainable development that are of interest to both parties.

At present there are **11 agreements in force with organisations** from 9 Autonomous Communities (*Andalusia, Aragón, Castilla La Mancha, Extremadura, the Balearic Islands, Navarra, the Canary Islands, Basque Country, Valencia*) related to the **prevention of forest fires**. The total budget has reached €1.1 million.

The main actions carried out in 2014 within the framework of these agreements are the following:

Territorial scope	Noteworthy projects in 2014 linked to collaboration agreements
ARAGÓN	Pilot project (2013 and 2014) for the placement of cameras to detect fires in Aragón.
	Pilot test of a forestry waste collection and compactor vehicle, machinery used to remove and compact waste vegetation from forestry management activities in the highlands of Aragón.
CASTILLA LA MANCHA	Training sessions in Toledo on the current and future problem of forest fires in Castilla La Mancha and the need for the personal involvement of society as a whole. (1000 participants).
EXTREMADURA	Supply of 55 sets of personal protective gear for forest fire fighting volunteers of the Regional Government of Extremadura.
	Pilot test of fire retardant products to stop the spread of forest fires.
COMMUNITY OF VALENCIA	Pilot project for the control of biomass through controlled grazing.
	Engineering Handbook for the prevention of forest fires.
COMMUNITY OF MADRID	Reforestation in the municipality of El Molar.
BALEARIC ISLANDS	Creation of a fire-break strip in a municipality located in a forestry environment: the 30-metre wide fire-break strip will be located in the town of Sa Pobla (Balearic Islands).
CANARY ISLANDS	Campaign to raise awareness regarding the prevention of forest fires in populated areas near to forested areas and for the general public making use of the forests on the island of Tenerife. (1,500 participants).
BASQUE COUNTRY	Works to improve forest trails on the Monte de 'Pagoeta' highlands.
	Archaeological assessment of the megalithic monuments of Eskatxabel I (Galdames) and Kanpazaulo (Gueñes) in order to increase the value of the highlands of Vizcaya.
	Refurbishment of tracks of the forest trail network in Vizcaya.

With respect to biodiversity, Red Eléctrica has signed **14 biodiversity agreements** with Autonomous Communities for the implementation of actions. Only two of them (Andalusia and Navarra) have no associated project.

The mapping project of bird flight paths allows a continuing relationship to be maintained with the biodiversity area of the 17 Autonomous Communities.

❖ Participation in working groups

Working groups	Organiser
WG C3.12: 'Methodologies for the calculation and reporting of carbon inventories in electricity transmission and distribution companies'	CIGRE
WG C3.14 Environmental responsibility	
Study committee C·3. (Environment): Secretaryship of the committee	
National CIGRE committee (Environment committee)	
WG AIM (*Asset Implementation and Management*) Subgroup 'Environmental Impact Assessments': Convener	ENTSO-E
Twinning Project with NEPCO (Jordanian TSO) Twinning Project JO/12/ENP/EY/21	Institution Building for the National Electric Power Company (NEPCO) in Jordan
Environment committee	AEC
Working group on electromagnetic fields	UNESA
SF_6 Voluntary Agreement Monitoring Group	UNESA, AFBEL and MAGRAMA
Conservation Centres Working Group Environmental Impact Assessment Working Group Environmental Inspection and Monitoring Working Group Carbon footprint technical committee Industrial Emissions Directive/Contaminated Soils Working Group	CONAMA Foundation
Biodiversity Management Observatory Consultation Committee	CES
Energy Efficiency Observatory	Club de Excelencia en Sostenibilidad
The Company and Biodiversity	CONAMA coordination: Global Nature Foundation

WG - WORKING GROUP

❖ Congresses and informative sessions

Congresses and informative sessions	Organiser
Summer course in El Escorial: REE presentation of 'Birds and power lines: Mapping of bird flight paths'	Complutense University of Madrid
Summer course in the University of Cádiz. REE presentation of 'Birds and power lines: Mapping of bird flight paths'	University of Cádiz
International Fair on Doñana Birdlife. REE stand	SEO/Birdlife
Forética. REE: 'Red Eléctrica Forest' stand	Forética

6.6.5 Communication and dissemination of environmental information

In 2014, the number of visits to the environmental section of the corporate website (*www.ree.es*) totalled 17,992. During this year, a new methodology for counting visits was used, the so-called *tags* for web analytic trends for Google Analytics, so the number of visits in this year is not comparable with the number of hits obtained in previous years.

The main publications in 2014 were:

- **Corporate Responsibility Report 2013**
- **Environmental Report 2013** (‘*EMAS Environmental Statement’*)

The distribution of environmental publications in electronic format was as follows:

- Environmental brochures and publications: 18,025 views/downloads.
- Corporate Responsibility Report: 4,799 views/downloads.
- Publications related to electric and magnetic fields: 6,705 views/downloads.
- Environmental Report (EMAS Environmental Statement): 3,806 views/downloads.
- Environmental Report (Environmental commitment - PDF summary): 1,966 views/downloads.
- Electric Vehicle brochures / Consumer Guide: 3,685 views/downloads.

In addition, throughout 2014 a total of 34 press releases and 16 photonews on environmental topics were issued, that had visibility through various media. The impact of information related to REE of an environmental nature in the written press was as follows:

- Natural heritage: 69 news reports
- Energy efficiency/climate change/R&D+i: 26 news reports
- Cultural heritage: 29 news reports
- Economic and social development: 81 news reports
- Corporate Responsibility: 76 news reports

In 2014, the Company was awarded the prestigious European Environmental Award which generated a huge impact in the press as shown below:

- Written press: 4 news reports
- Digital press: 69 news reports

During 2014, as latest additions to the website, noteworthy was the re edition of the map of projects and the inclusion of a new section entitled ‘Noteworthy Projects’ which included monographics dedicated to the ‘REE Forest’ and ‘Birds and power lines: Mapping of bird flight paths’ projects.

In addition, the following videos have been produced and uploaded:

- Birds and power lines: Mapping of bird flight paths.
- Reintroduction of the Bonelli's Eagle in Majorca.
- Recovery of the Bonelli's Eagle in Aragón.
- Commitment to Birdlife.

The production of new videos was started in 2014 to be published during 2015:

- Conservation of the Lesser Grey Shrike in Catalonia.
- Reintroduction of the Black Vulture in Catalonia.
- Archaeological site in the Torrent substation in Ibiza.
- Migration and Global Change Centre in Tarifa.

Finally, published in paper format were:

- Birds and power lines: Mapping of bird flight paths brochure.
- Travel guides: Travelling through Extremadura (On the occasion of the commissioning of the Almaraz-Guillena line).

❖ Internal communication

26 news articles / reports of an environmental nature were published through the Company intranet (miRED). The environmental section and the Red Eléctrica Eficiente section are amongst the ten most visited sections.

	2014
Environmental section	6th position 69 visits
Red Eléctrica Eficiente section	4th position 775 visits

6.7 Research and development

During 2014, R&D+i expenditure of an environmental nature totalled 363,315.53 euros. This amount represents **4.39%** of the total expenditure on R&D+i.

With the collaboration of all involved areas, the following R&D+i projects are noteworthy:

❖ **Birdlife**

- **Bird-nesting deterrent system based on ultrasound**: Selection of an experimental method using ultrasound applied to the White stork, laboratory and field testing. Collaboration with the Forestry and Natural Environment School of Engineers of the Polytechnic University of Madrid.

- **System and methodology of timely inspection of overhead electricity lines by the use of multicopters:** The objective of this project is to deepen the knowledge of Unmanned Aerial Vehicle technology based on multirotor systems to develop a methodology that allows us to take advantage of these devices for inspections carried out on electricity lines.

  Firstly, it aims to make an analysis of the advantages and disadvantages that may affect our activity by using the UAV equipment that exists in the market. Additionally, it will adapt and test one of these devices for specific functions for the timely inspection of overhead lines.

❖ **Biodiversity**

- **The use of seeds and fragments of Posidonia oceanica for its recovery in areas affected by the activity of REE**: Project duration: 2013-2016. *Collaboration: Mediterranean Institute for Advanced Studies, joint research centre between the National Council for Scientific Research (CSIC) and the University of the Balearic Islands (UIB).*

  The purpose of the study is to define and develop an experimental technique to reduce the impact caused by the laying of submarine electricity cables in *Posidonia oceanica* seagrass meadows by the replanting of laboratory-germinated seeds of this species and fragments of this species obtained as a result of natural fragmentation.

  During 2014, fragments of Posidonia have been collected, the implementation of a Posidonia cultivation system (aquarium tank) was carried out and the commencement of the cultivation of Posidonia fragments on the island of Majorca: the training of staff to start works in Ibiza was also completed.

❖ Forestry management

- **R&D Monitoring system for forest fires caused by lines**: The aim is to develop an autonomous system of forest fire detection in the vicinity of overhead high voltage electricity lines. During 2013, a fire detection system was developed and a study of 3D graphical views was carried out for the installation of a thermal system for monitoring forest fires in different locations along an electricity line in the province of Huesca. In 2014, the pilot system was installed and once operational tests of the system could check its correct functioning in detecting forest fires using the pre-established parameters for the system, which is 2,500 metres, it became operational, although a review of the recording software module that avoids unscheduled downtime of the system is necessary.

7 OBJECTIVES - ENVIRONMENTAL PROGRAMME

In order to perform continuous improvement of environmental performance and processes, Red Eléctrica annually defines an environmental programme in which the objectives derived from the different strategies of the Company are specified and specific work actions are defined.

The Environmental Programme of Red Eléctrica contains the set of environmental improvements which we intend to carry out throughout the term of one year. This Programme describes the environmental objectives which may be annual or multi-year, and includes the milestones throughout the year for achieving each of these objectives.

Due to the degree of complexity of the activity carried out by Red Eléctrica, the geographical distribution and the multiplicity of actions, the Environmental Programme defines objectives which are directly linked to the improvement of environmental aspects and other objectives which contribute to environmental improvement of the processes.

The total fulfilment of the Environmental Programme is the result of the completion of the different objectives planned for each year. The contribution of each objective to the environmental programme is weighted according to its importance based on a total of 100 points.

To achieve each objective, a set of milestones are defined. The annual fulfilment of each objective is the sum of the fulfilment of the milestones which are foreseen to be carried out in the period of time established.

The global fulfilment of the Environmental Programme 2014 was 78%.

The following is a table which summarises the objectives addressed during 2014 indicating the contribution of each one of them to the Programme and their level of fulfilment within the year.

ENVIRONMENTAL PROGRAMME 2014

Responsible environmental investment / Landscape integration of facilities

Aspect group / Associated processes	Scope of environmental improvement	Objectives	Character/ term	Weighting	Fulfilment	%
Presence of facilities. Definition of the project.	Prevention of impacts on the environment	Methodology to carry out the Landscape and Visual Impact assessments within the Environmental Impact Assessments *(Objective 1)*	Annual	12	8	**66**
Presence of facilities. Definition of the project.	Prevention of impacts on the environment	Definition of the environmental process associated with the dismantling of electricity facilities *(Objective 2)*	Annual	8	8	**100**
Maintenance process	Prevention of impacts on the environment	Incorporation of environmental criteria of Red Eléctrica in the maintenance process for electricity lines safety corridors (existing at 31/12/10) *(Objective 10)*	Multi-year (2011-2015)	5	5	**100**

Climate change, energy efficiency and the saving of resources

Aspect group / Associated processes	Scope of environmental improvement	Objectives	Character/ term	Weighting	Fulfilment	%
Emissions	Reduction of greenhouse gas emissions	Improvement in the calculation of Red Eléctrica's carbon footprint and extending its scope *(Objective 3)*	Multi-year (2014-2016)	16	10	**62.5**
		Drafting of a Climate Change Action Plan *(Objective 4)*	Annual	15	15	**100**
		Improvement of Red Eléctrica's ranking in climate change related indexes *(Objective 5)*	Multi-year (2014-2016)	6	6	**100**
		Reduction of SF_6 gas emissions *(Objective 6)*	Multi-year (2011-2014)	6	6	**100**
Energy efficiency	Activities regarding significant environmental aspects	20% reduction in energy consumption by 2020 *(Objective 7)*	Multi-year (2011-2020)	10	8	**80**

Biodiversity

Aspect group / Associated processes	Scope of environmental improvement	Objectives	Character/ term	Weighting	Fulfilment	%
Biodiversity	Prevention of impacts on the environment	Reduce the risks of the existing facilities/installations on birdlife *(Objective 8)*	Multi-year (2011-2015)	8	4	**50**
		Establish agreements to prevent and fight forest fires *(Objective 9)*	Multi-year (2011-2015)	5	0	**0**

Improvement in the relationship with stakeholders

Aspect group / Associated processes	Scope of environmental improvement	Objectives	Character/ term	Weighting	Fulfilment	%
Communication / Awareness	Activities regarding other aspects	External dissemination of environmental actions *(Objective 11)*	Annual	8	8	**100**
TOTAL FULFILMENT				**100**	**78%**	

❖ **Summary of the execution of environmental objectives**

- **Environmental course of action: Environmentally Responsible Investment / Integration into the territory**

OBJECTIVE 1 Methodology for carrying out the Landscape and Visual Impact Assessment in the Environmental Impact Assessments

Description: Establish a methodology for conducting the Landscape and Visual Impact Assessment in the Environmental Impact Assessments for both substations and electricity lines. The methodology will apply the European Landscape Convention for the different projects of substations and lines in a homogenous manner and allow the identification of lesser impact alternatives from a landscape point of view.

Actions 2014: The methodology for both electricity transmission lines and substations via individual documents has been defined. The implementation of the methodology for lines in an impact assessment has not been completed.

Status: Delayed with respect to schedule. It will continue in 2015 through the implementation of the methodology through the impact assessment of the Benahadux-Tabernas 220-kV line.

Fulfilment: 66%

Actions in previous years:

- 2011: the design for the landscaped integration of 8 types of substation buildings was carried out.
- 2012: the engineering for the landscaped integration of 11 types of building was carried out: High mountain GIS (*Gas Insulated Switchgear*); High mountain open-air; Balearic Islands GIS; Balearic islands open-air; South coast GIS; South coast open-air; Valley GIS; Valley open-air; Canary Islands GIS; 'Ingenio' GIS and Coastal Plain GIS.
- 2013: the engineering was performed for the design of these latest models: 'Candelaria', North coast, Volcano and Desert. The implementation of the model began by incorporating the Desert design at the Sabinal Substation.

OBJECTIVE 2 Definition of the environmental process associated with the dismantling of electricity facilities.

Description: Drafting of guidelines for the technical environmental criteria for dismantling electricity lines and substations**.**

Actions 2014: Technical and environmental criteria guidelines have been drafted for the dismantling of lines and substations. The agreed guidelines are the end result of two working groups who worked during 2014, in which the organisational units involved in the task of dismantling participated. The guidelines set out the basis for future more comprehensive and specific documents that may become adapted for incorporation into the internal regulations of Red Eléctrica.

Status: Finalised (annual objective).

Fulfilment: 100%

OBJECTIVE 10 Incorporate REE's environmental criteria in the safety-corridor maintenance process for electricity lines (existing at 31/12/2010)

Description: Integrate the environmental variable in the safety-corridor maintenance process for electricity lines.

Actions 2014: For those Autonomous Communities in which this type of action requires authorisation for the in the implementation of action plans, 100% of the tree-felling plans have been digitised: Catalonia, Valencia, Aragón, Basque Country, Castilla la Mancha Andalusia, Extremadura, the Canary Islands and the Balearic Islands.

Status: After the goals set in the past four years, the objective is considered completed and it is not considered necessary to extend it further. **Finalised.**

Actions in previous years:

- 2011: Environmental criteria was defined and standardised for the safety-corridor maintenance process for electricity lines. The environmental variables of the safety-corridor maintenance process were included in the corporate geographic information system and a risk, implementation and development of indicators methodology document was drafted.

- 2012: Continuing with the works started, existing forest sections were identified in 50% of electricity lines in service and the process for collecting and processing remote sensing data was standardised (LIDAR and optical).

- 2013: Conflictive spans of line were identified, the cost of the selected spans was analysed and the lines to carry out the LIDAR flight were selected. Similarly, the forestry management for island facilities and substations were incorporated into the proposal of the 2nd edition of the Forestry Guide.

- **Environmental course of action: Climate change energy efficiency and the saving of resources**

OBJECTIVE 3 Improving the calculation of the carbon footprint of Red Eléctrica and expanding the scope.

Description: To develop a methodology to calculate the carbon footprint of Red Eléctrica with sufficient reliability to define, where appropriate, measures to reduce emissions.

Actions 2014: verification of the Company's carbon footprint, including the calculation methodology, has been carried out by a third party (PWC) in accordance with ISAE 3410 "*Assurance Engagements on Greenhouse Gas Statements*".

It has not been possible to develop a methodology for calculating the carbon footprint of the useful life of an electricity transmission line. The methodology to be designed must be consistent with the methodology used to calculate the carbon footprint of the Company. The delay in the verification of the carbon footprint of the organization, and an inadequate estimate of the time necessary for the execution of the target, has resulted in the non-fulfilment of this goal.

Fulfilment: 62.5%

Status: Delayed with respect to schedule. This objective will continue in 2015 on a multi-year basis and in phased steps going forward.

Actions in previous years:

- 2011: the methodology was developed for calculating indirect emissions and CO_2 not released into the atmosphere due to the transmission grid.
- 2012: the model for the collection of emission data and the methodology for identifying and offsetting emissions associated with the institutional events of Red Eléctrica was developed and was applied to three events. In addition, the initial calculation of emissions from the supply chain was done. The only milestone that did not reach a critical level in 2012 was the conducting of an emissions inventory, for the regional offices, due to the lack of the necessary data.
- 2013: the calculation of emissions from the supply chain was done, for which 10 key suppliers were used for the calculation.

OBJECTIVE 4 Drafting of an Action Plan on Climate Change

Description: Drafting of an Action Plan on Climate Change that encompasses the objectives to be met on climate change.

Actions 2014: An action plan has been drafted and submitted to the General Manager of Transmission for signing which includes specific measures to be taken to carry out the courses of action grouped according to those lines of action defined in the Climate Change Strategy. The Plan will be reviewed annually with the aim of incorporating the quantitative data resulting from the projects and analysis that will be carried out, as new measures are deemed necessary to achieve the objectives set.

Fulfilment: 100%

Status: Finalised (annual objective)

OBJECTIVE 5 Improvement of Red Eléctrica's ranking in climate change related indexes

Description: Improvement of the score in the area of Disclosure of the CDP (Carbon Disclosure Project)

Actions 2014: A score of 83B was obtained, exceeding the 71B obtained in 2013, improving the score by **18%**

Fulfilment: 100%

Status: Will continue in 2015

OBJECTIVE 6 Reduction of SF_6 emissions

Description: Reduce the rate of SF_6 emissions in Red Eléctrica through the improvement of the process associated to the comprehensive management of the gas.

Actions 2014: Emissions from all Regional areas were recorded and inventoried for 2014, and the methodology for obtaining and recording data associated with the management of SF_6 was validated and established.

Fulfilment: 100%

Status: The term of the objective has been extended until 2020 (initially it was set to finish in 2014). The SF_6 emission rate fell in the period 2011-2014 going from 1.16 to 1.05. A target of 0.8 has been set for 2020.

Actions in previous years:

- 2011: The collection of data for the emissions inventory began along with the implementation of a comprehensive management process of the gas without reaching the established critical level. Replacement of old equipment with more efficient ones in accordance with that planned was carried out.

- 2012: The objectives from the prior year were continued, but no progress was made. Red Eléctrica was accredited as a training and assessment body on SF_6, nevertheless it was not possible to begin training the staff. Progress continued on replacing old equipment with more efficient ones in accordance with that planned.

- 2013: Progress was made in obtaining the inventory for the Regional areas based on the mass-balance, but the data collection phase was not concluded and therefore it was not inventoried. Both the plan to provide efficient management devices and measures as well as the training of employees on the handling of this gas was carried out.

Fulfilment: 100%

OBJECTIVE 7 Reduction of energy consumption

Description: Establish measures to reduce electricity consumption in Red Eléctrica's facilities.

Actions 2014: A Guide has been drafted for the improvement of energy efficiency in substations identifying opportunities and proposing improvement actions. It has been possible to implement passive measures to reduce consumption in work centres, such as the installation of motion-sensor lighting control systems for elevator accesses in basements and incorporating control systems in toilet areas of the head offices. In addition this year in the head offices, as an awareness raising measure, signs were posted detailing best practices regarding energy efficiency matters for the personnel of outsourced works such as maintenance, kitchen and cleaning work.

Against expectations, it was not possible to integrate into the intranet all energy management equipment installed in Company premises as the new miRED 2.0 intranet is not yet operational.

Fulfilment: 80%

Status: Will continue in 2015. With the actions implemented so far REE has reduced electricity consumption, measured in kWh, by 2.82% in relation to the base year (2010).

The reduction effort is not distributed evenly throughout the entire period (2010-2020), it was estimated that by the year 2014 a reduction of 3.5% should have been achieved.

The progress of the fulfilment of the objective up until 2014 is estimated at 80% of that forecasted (2.82% of true reduction compared to an objective of 3.5% expected reduction by 2014).

In view of the results obtained and the percentage reduction in consumption achieved so far, once the studies are available and subsequently the plans to reduce consumption in maintenance work centres this could lead to a redefinition of the 2015 objective.

Actions in previous years:

- 2011: The actions in substations were geared towards, on the one hand the identification of consumption points that could be improved in substations (transformers, lighting and HVAC equipment) and on the other the commencement of the standardisation of criteria for lighting. In buildings, an energy audit plan began in order to implement passive measures for reducing consumption. To encourage good practices, a communication plan was drafted and the start of mobility plan was proposed that has not yet come to fruition.

- 2012: the work started in 2011 for the standardisation of lighting in substations, on energy audits of buildings and the implementation of passive measures (1 centre) was continued.

- 2013: Standardisation documentation was obtained concerning the optimisation of lighting in open air switchyards. Against expectations, no passive measure to reduce consumption in work centres was implemented.

- **Environmental course of action: Biodiversity**

OBJECTIVE 8 Reduce the risks of the existing facilities/installations on birdlife

Description: To have an in-depth knowledge of the sensitive areas throughout Spain in which birds may be prone to colliding with electricity lines due to the characteristics of the flight paths they use throughout the areas, in order to more precisely determine the sections of line to be marked and act in the identified areas so that the risk of birdlife collisions with these facilities is reduced. In addition, the objective is to implement a methodology for the collection and analysis of data of accidental bird collisions.

Actions 2014: the "Birds and power lines: Mapping of bird flight paths" project continued in the rest of the regions in which it was pending execution. The design of the multi-year plan for the prioritisation of marking all lines on the Spanish peninsula with bird-flight diverters has not been concluded as it was not possible to complete the collection of data on the quality and management of this objective for all Autonomous Communities.

In the case of island systems (Balearic Islands and Canary Islands) it has been possible to establish the Plan.

On the other hand, 100% of the environmental supervisors received training on the methodology and protocols necessary for the collection and analysis of accidental bird collisions with electricity lines, so as to allow the systematisation and standardisation of sampling and the monitoring of the different geographical areas nationwide. This methodology allows for a robust set of national data to enable conclusions to be drawn about the impact of the transmission grid on bird populations.

Fulfilment: 50%

Status: Will continue in 2015 with the gradual establishment of multi-year prioritisation plans per Autonomous Community.

Actions in previous years:

- 2011: A risk map of bird collisions was drafted which was later redefined in the "Birds and power lines: Mapping of bird flight paths" project.

- 2012: The "Birds and power lines: Mapping of bird flight paths" project was continued with although with a slight delay due to issues associated with the contracting of external services. Electricity lines located in sensitive areas with a risk of bird electrocution were analysed to establish an adaptation plan.

- 2013: The "Birds and power lines: Mapping of bird flight paths" project was rolled out in 5 of the Autonomous Communities where it was pending execution. Sections of 5 electricity lines in the Community of Madrid were marked as they are located in conservation areas for the Great Bustard.

OBJECTIVE 9 Establish collaboration agreements for the prevention and fight against forest fires

Descriptions: Develop a collaboration framework regarding the prevention and fight against forest fires in the Autonomous Communities in which Red Eléctrica's facilities are present.

Actions 2014: Just one agreement was signed, with the island of La Palma. It was not possible to sign those corresponding to Madrid, Cantabria and Castilla y Leon, amongst others.

Status: Delayed.

The decision was taken not to continue the objective in 2015. In any case, work will continue to obtain agreements in those Autonomous Communities that do not yet have one and to implement those already signed.

Since 2011, the Company has managed to sign a total of 11 agreements, with different organisms belonging to 9 Autonomous Communities, for the prevention and fight against forest fires.

Actions in previous years:

- 2011: The designed proposals were not formalised in any signed agreement.
- 2012: An agreement signed with the Community of Valencia.
- 2013: Agreements signed with: the Balearic Islands, Castilla La Mancha, Extremadura, Guipúzcoa, Navarra and Tenerife.

- **Environmental course of action: Improvement in the relationship with stakeholders**

OBJECTIVE 11 External dissemination of environmental actions

Description: draw up a map that graphically represents REE's projects nationwide and its commitment to the environment.

Actions 2014: A map of REE's contribution to society has been drawn up and has been published on the Company's website.

Status: Finalised (annual objective).

Actions in previous years:

- 2011: design of a new format of the environmental section on the external website.
- 2012: dissemination of offsetting/compensation measures of Red Eléctrica's projects.
- 2013: a total of 27 press releases of an environmental nature were published in the media.

8 ACCIDENTS WITH ENVIRONMENTAL IMPACT

We are well aware of the consequences that an accident may have on the environment, and for this reason, we apply preventive measures to reduce the likelihood of them happening, or in the event they might occur; minimise the impact on the environment. Thanks to the application of these measures, the consequences of the accidents which have occurred in our facilities have only been of minor importance.

Incidents notified	2012		2013		2014	
	Accidents	Incidents	Accidents	Incidents	Accidents	Incidents
Construction activities	**0**	**9**	**1**	**39**	**0**	**22**
Fires due to fault in lines	0	0	0	0	0	0
Fires due to fault in substations	0	0	0	0	0	1
Leaks and spillages of oil due to error in the filling of transformers	0	0	0	0	0	0
Leaks and spillages of oil and hydrocarbons due to minor breakdowns during the use of machinery during construction works	0	9	1	33	0	19
Leaks and spillages of hazardous substance	0	0	0	6	0	1
Effects on flora (**)	-	-	-	-	0	1
Maintenance activities (*)	**12**	**25**	**7**	**19**	**4**	**21**
Fires due to fault in lines	1	0	1	1	0	1
Fires due to fault in substations	1	0	0	1	0	0
Towers brought down due to severe weather conditions	0	0	0	0	0	0
Leaks and spillages of oil and hydrocarbons during the use and maintenance of substation equipment	6	24	3	15	2(***)	17
Oil leaks in lines	0	1	0	0	1	
Floods	0	0	0	0	0	0
SF_6 leaks due to explosion of equipment or other accidents	4	0	2	0	1	1
Leaks and spillages of hazardous substances	0	0	1	2	0	1
Effects on flora (**)	-	-	-	-	0	1

(*) Bird collisions with electricity lines in service are not dealt with in the table (3 accidents and 2 incidents in 2014).

(**) A new category of accidents included in 2013 called 'Effects on flora'.

(***) An accident that was not registered at the time of publishing the 2013 EMAS Environmental Statement now incorporated.

In the construction phase **there have been no accidents during 2014**. The most representative construction incidents in 2014 (86.3%) continue to be leaks and spillages of oils and hydrocarbons. These are of very little consequence and are related to broken machinery hoses or small spillages of oil or fuel during transfer and temporary storage.

As for the maintenance phase **four accidents have occurred**, three of them in substations and another in a line. These are linked to the leak and spillage of oils and fuels (3) and SF_6 leakage (1) and 100% obtained the **significant level** (*intermediate level on a scale of 1 minor - 5 serious*) being evaluated depending on their level of seriousness.

❖ **Birdlife collisions**

Regarding birdlife collisions with electricity lines, in 2014 the following were identified:

- **Through the environmental monitoring programmes (EMP) for newly constructed electricity lines and their commissioning:** 256 bird collisions, of which 4 were Little Bustards (*Tetrax tetrax*), 1 Blake Kite (*Milvus migrans*) and 17 Great Bustards (*Otis tarda*), all catalogued species.

  The need for the application of corrective/mitigating measures will be analysed at the end of said EMP.

- **For installations in service**: 20 bird collisions, including the following catalogued birds: 4 Great Bustards (*Otis tarda*), 1 Canarian Houbara Bustard (*Chlamydotis undulata*), 1 Canarian Egyptian Vulture (*Neophron percnopterus majorensis*). Also noteworthy was 1 Golden Eagle collision (*Aquila chrysaetos*).

  In the case of collisions in the Canary Islands, the sections of line where collisions have occurred have been included in the 2015 marking plan. The rest of the sections concerned have been included in the multi-year marking plans of the corresponding Autonomous Communities, or marking has been carried out through the use of bird-safety devices.

9 LEGAL COMPLIANCE ASSESSMENT

In order to identify and assess the applicable legal requirements, Red Eléctrica has in place a process that systematically covers all the phases of the activity; planning/project, construction and maintenance, and considers not only the requirements originating from European, national, regional and local regulations, but also those obligations derived from the Environmental Impact Statement and other administrative authorisations.

The annual legal compliance assessment performed indicates that Red Eléctrica complies with the applicable environmental requirements established by current legislation.

Those practices considered inadequate that result in cases/claims that are admitted to process, are resolved in all cases with administrative sanctions of low, or very low monetary value.

The following table details the type of infringement committed and the total cost of the same (as a result of the claims/cases resolved with a sanction) in the period 2010-2014.

	2010		2011		2012		2013		2014	
Type of infringement	**Nº of claims/ cases**	**Amount (€)**	**Nº of claims/ cases**	**Amount (€)**	**Nº of claims/ cases**	**Amount (€)**	**Nº of claims/ cases**	**Amount (€)**	**Nº of claims/ cases**	**Amount (€)**
Fire risk [1]	2	200	7	2,314	4	1,082	6[3]	6,522	1	100
Unauthorised felling and pruning	2	1,067	3[2]	22,477	1	300	3	1,487	1	100
Felling, pruning and clearing without preventive measures	1	722								
Fire due to line discharge	3	13,923	1	3,848	1	3,948				
Works in areas without authorisation / Obstruction of water way	1	300	2	3,100			1	1,200	1	3,000
Activities that could contaminate soils	5	1,050								
Accumulation of biomass waste							1	100		
Fauna in captivity without authorisation							1	100		
Works in protected areas without authorisation	1	6,010								
Unauthorised works					2	62,153	1	2,000		
Total nº claims-cases/€	**15**	**23,273**	**13**	**31,739**	**8**	**67,483**	**13**	**11,409**	**3**	**3,200**

(1) Fire risk due to lack of maintenance, vegetation or abandonment of material.
(2) 1 new case resolved in 2014 is included
(3) 1 new case resolved in 2014 is included

The items of data marked in red are those that have been affected by the cases resolved in 2014.

10 ENVIRONMENTAL EXPENDITURE

During 2014, environmental investments totalling **2,651,608** euros were made in new facilities, equating to **0.53%** of the total investments carried out in the transmission grid. These investments correspond to the execution of Environmental Impact Assessments of all projects, implementation of preventive and corrective measures, environmental monitoring of electricity facilities under construction and the application of compensatory measures related to environmental aspects.

Similarly, during 2014 expenditure totalling **19,795,259 euros** was made in the improvement and protection of the environment, representing **2.17%** of the total operating costs.

The evolution of environmental expenditure over the last three years can be seen in the following table:

	2012	2013	2014
INVESTMENT (€)	**5,154,305**	**2,752,119**	**2,651,609**
Engineering and construction of facilities (1)	**5,154,305**	**2,752,119**	**2,651,609**
EXPENDITURE (€)	**16,380,072**	**20,620,761**	**19,795,259**
Development of methodology and systems (2)	**25,153**	**49,980**	**50,082**
Environmental studies and analyses	**200,429**	**167,746**	**125,502**
Environmental actions in facilities in service	**14,053,007**	**18,564,425**	**17,502,652**
Prevention of contamination (3)	1,890,198	1,547,452	1,376,552
Protection of biodiversity/landscaping/prevention of fires (4)	11,187,670	16,039,821	14,914,991
Climate change (5)	475,360	277,067	494,335
Energy efficiency and saving of resources (6)	236,043	206,834	277,153
Waste reduction and management	263,737	493,250	439,622
Research and development	**147,799**	**305,867**	**363,316**
Training and communication	**402,004**	**163,180**	**256,722**
Environmental training and awareness programmes	11,590	26,394	54,310
Communication (7)	390,414	136,785	202,412
Environmental taxes and levies	**117,392**	**6,601,617**	**6,893,725**
Municipal and Autonomous Community taxes	117,392	105,162	280,223
Environmental taxes (*)	--------	6,496,455	6,613,501
Expenditure of personnel dedicated to environmental activities	**1,434,287**	**1,264,401**	**1,216,762**

(*)This concept is not taken into account in the overall accounting of expenditure
(1) Carrying out environmental impact assessments for all projects, implementation of preventive and corrective measures, environmental monitoring of electricity facilities under construction and the implementation of environmental improvement measures.
(2) Certifications, audits, environmental consulting.
(3) Adaptation of facilities, equipment repair, analysis etc.

(4) Fire prevention (inspection of facilities, forestry works to maintain the safety distances, projects related to the prevention and fighting of forest fires), marking of lines with bird-flight diverters, nesting deterrents, nest management, landscaping adaptation projects for biodiversity conservation etc.
(5) REE Forest, improved management of SF_6, replacement of equipment with R-22
(6) Installation of meters, energy audits, activities to improve energy efficiency.
(7) Affiliations, congresses, brochures and reports, stands, advertising, sponsorship and partnership agreements.

The following table shows the evolution of the environmental expenditure and investments in environmental aspects as a percentage of the total expenditure, and the investment in the transmission grid, respectively:

Percentage of investment and expenditure on the Environment		2012	2013	2014
% of investment on the environment	**Environmental investment / total investment in the transmission grid**	0.77	0.49	**0.54**
% of expenditure on the environment	**Environmental expenditure / total operating costs**	1.80	2.33	**2.17**

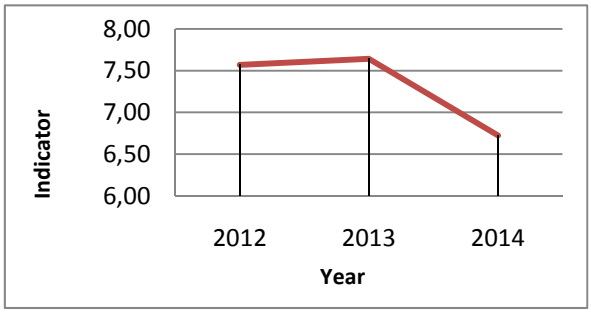
11 INDICATORS

By way of introduction, the following is a numerical representation of the information that is deemed most relevant, and which is detailed throughout this Report.

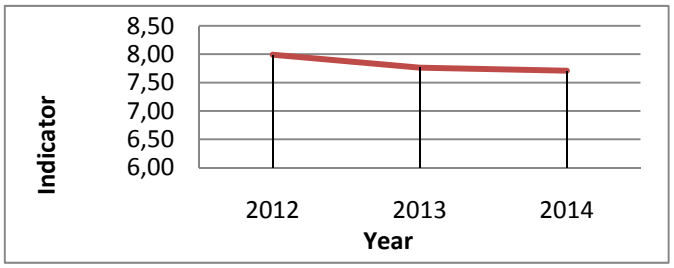
Core indicators

Electricity consumption at Head Office			
A	MWh consumed		
B	Nº employees at Head Office (*)		
Indicator	A/B		
Year	**2012**	**2013**	**2014**
A	8,788	8,566	8,399
B	1,161	1,121	1,249
Indicator	**7.57**	**7.64**	**6.72**

(*) *La Moraleja and Albatros buildings including interns, temporary employment agency workers and collaborators*

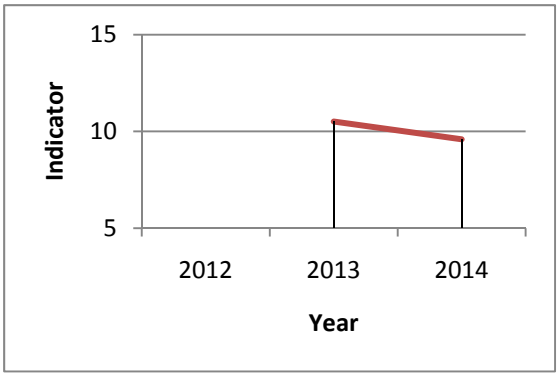


REE Electricity consumption (*)			
A	MWh consumed		
B	Nº employees REE		
Indicator	A/B		
Year	**2012**	**2013**	**2014**
A	16,000.43	15,171.05	16,180.97
B	2,002	1,954	2,099
Indicator	**7.99**	**7.76**	**7.71**



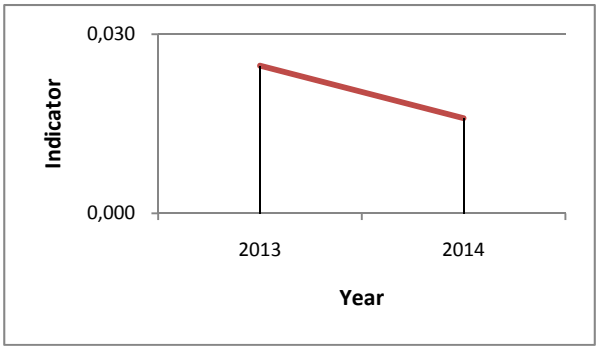
(*) Work centres with a special characteristic are included. In these, electricity control centres are housed that operate 24 hours 365 days a year and have a special energy consumption, and work centres where mainly maintenance personnel are located. In the period 2012-2013 only the main work centres of regional areas (7 centres) were included. In 2014, the consumption of 38 additional work centres was included.

Average vehicle consumption (l/100 km)			
A	Total fuel [1]		
B	Total Km travelled		
Indicator	A/B *100		
Year	**2012**	**2013[3]**	**2014**
A	517,796	475,818	399,387
B	-	4,527.709	4,164.362
Indicator [2]	--	**10.51**	**9.59**

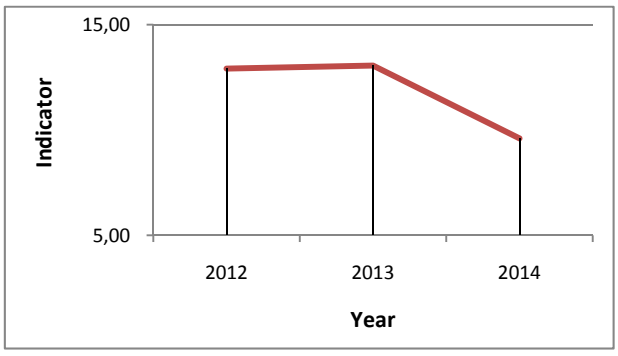


(1) Includes consumption of fleet vehicles, cherry pickers and management vehicles until 2013. The figure for 2014 does not include management vehicles (shared leasing) or cherry pickers (no mobility).
(2) Average of the different types of vehicles. 2013 data was recalculated after the launch of a new control methodology for the km travelled.
(3) Data corrected after the verification of the carbon footprint process 2013.

Paper consumption			
A	Tonnes (t) consumed		
B	Total Nº of employees		
Indicator	A/B		
Year	**2012**	**2013**	**2014**
A	----------	48.333	33.443
B	----------	1,954	2,099
Indicator	----------	**0.025**	**0.016**

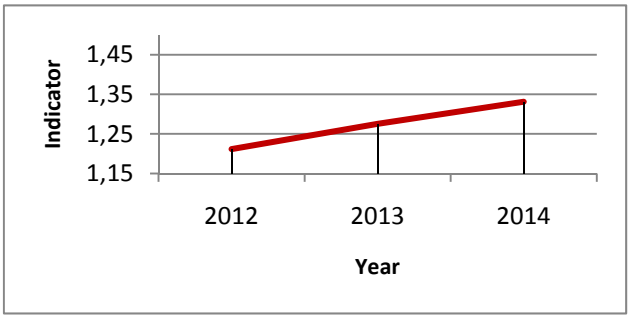


Water consumption at Head Office			
A	m^3 consumed		
B	Nº of employees at Head Office (*)		
Indicator	A/B		
Year	**2012**	**2013**	**2014**
A	10,947	10,983	9,177
B	848	841	956
Indicator	**12.91**	**13.06**	**9.60**



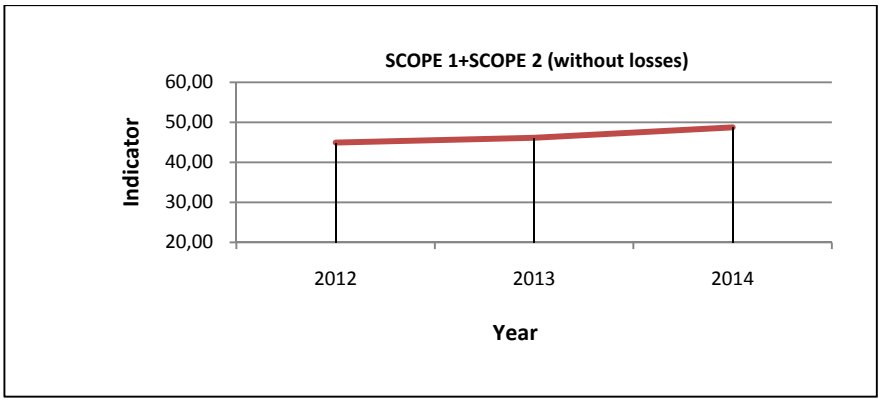
(*) The 'La Moraleja' buildings including interns, temporary employment agency workers and collaborators. The 'Albatros' building is not included as it is shared with other organisations.

Hazardous waste			
A	Tonnes (t) of hazardous waste generated		
B	Revenue (millions of euros)		
Indicator	A/B		
Year	**2012**	**2013**	**2014**
A	2,052.323	2,170.337	2,375.019
B	1,694.3	1,701.7	1,783.9
Indicator	**1.21**	**1.28**	**1.33**



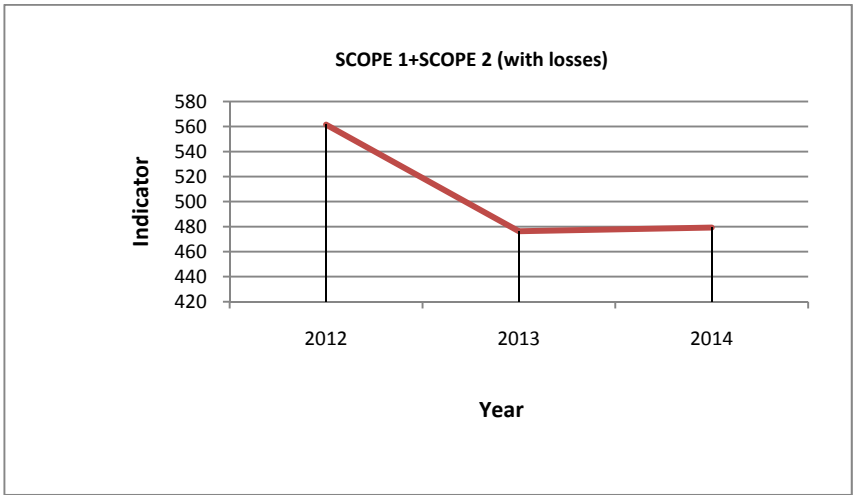
Direct emissions of greenhouse gases (SCOPE1) + Emissions from electricity consumption (SCOPE 2 without losses)			
A	t CO_2 eq (SCOPE 1+ Emissions from electricity consumption)		
B	Revenue (millions of euros)		
Indicator	A/B		
Year	**2012**	**2013**	**2014**
A	76,119	78,545	86,992
B	1,694.3	1,701.7	1,783.9
Indicator	**44.93**	**46.16**	**48.76**

Note 1: Values for 2013 and 2014 were submitted to independent review in accordance with ISAE 3410. The change in the values of 2012 and 2013 with respect to those published in the 2013 report are due to corrections made during this process.
Note 2: The series show variations from those published in previous years because the emissions associated with electricity generator sets and air conditioning have been included.



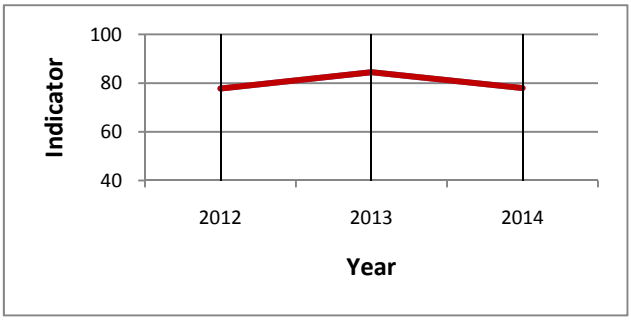
Emissions SCOPE 1+SCOPE 2 including transmission grid losses			
A	t CO_2 eq (**SCOPE 1+SCOPE 2**)		
B	Revenue (millions of euros)		
Indicator	A/B		
Year	**2012**	**2013**	**2014**
A	951,378	810,570	854,899
B	1,694.300	1,701.700	1,783.922
Indicator	**562**	**476**	**479**

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



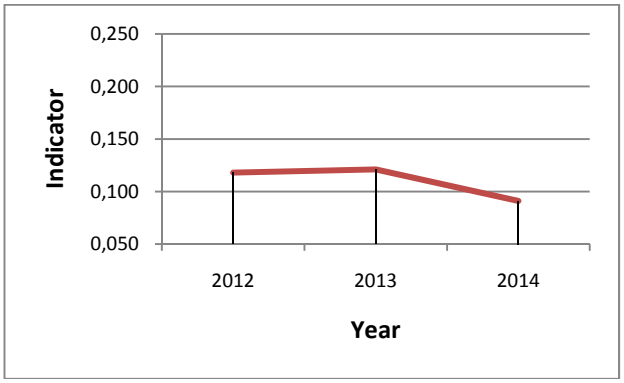
Environmental performance indicators of the activity

% Fulfilment of the Environmental Programme			
A	Environmental objectives fulfilled		
B	Total contribution of the programme		
Indicator	A/B x100		
Year	**2012**	**2013**	**2014**
A	77.79	84.50	78.00
B	100	100	100
Indicator	**77.79**	**84.50**	**78.00**



Biodiversity: Occupation of lands (*)			
A	Area of land in Red Natura occupied by facilities (m^2) (1)		
B	Total area of Red Natura (m^2)		
Indicator	A/B x 100		
	Facilities		
Year	**2012**	**2013**	**2014 (**)**
A	$175.402*10^6$	$176.112*10^6$	$179.898*10^6$
B	$147,820.73*10^6$	$145,454.09*10^6$	$195,851.84*10^6$
Indicator	**0.11**	**0.12**	**0.09(***)**

(*) Own source of information



Red Natura includes: SCI (Site of Community Importance) and SPA (Special Protection Area for birds).

(1) Surface occupied by the lines and substations. The area occupied by the lines is calculated assuming an occupation of 20 metres on each side of the line. It is necessary to note that the occupation is aerial; there is only actual land occupation in the case of the towers.

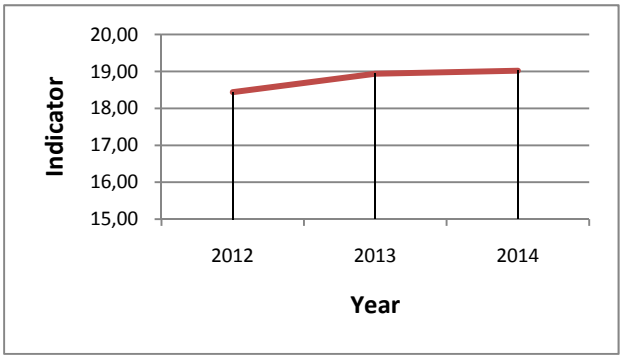
(**) Includes submarine cables as of 2014.

(***) For the calculation of the ratios of 2014 the base published in July 2014 has been used. (The surface area of Red Natura on the islands is significantly higher to that mapped in previous years, which explains the variation in the indicators identified).

NOTE 1. For the calculation of the ratios of 2012 and 2013 the database of Red Natura 2000, published in 2011 and 2012 respectively, has been used. To calculate the 2014 ratios the base published in July 2014 has been used. (The surface area of Red Natura on the islands is significantly higher to that mapped in previous years, which explains the variation in the indicators identified).

NOTE 2. The mapping of in-service facilities is improved and updated annually, which is why some variations can be derived in calculations not related to the increase or decrease of facilities.

Biodiversity: Birdlife protection			
A	km of lines in SPA's marked with bird-saving devices		
B	Total km of lines in SPA's		
Indicator	A/B x 100		
Year	**2012**	**2013**	**2014**
A	548	564	578 (*)
B	2,971.8	2,978.5	3,039.0
Indicator	**18.44**	**18.94**	**19.02**

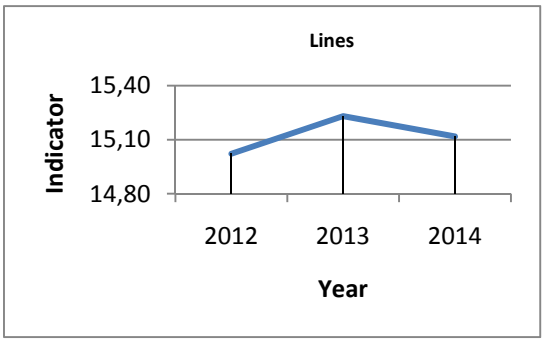


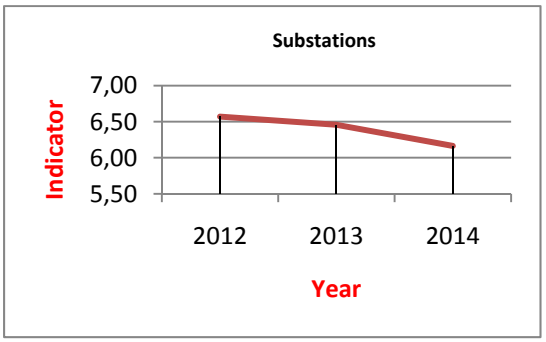
NOTE 1: Only includes km of line within SPAs on the Spanish peninsula.

The objective of the indicator is not the marking of 100% of the lines that cross SPAs (Special Protection Areas for birds) as not all bird species present in these areas are prone to colliding with the cables. At this moment the elaboration of an indicator that better reflects the marking needs is being worked on (for its calculation the areas in which species at risk of collision exist will be taken into account, whether they are in SPAs or not).

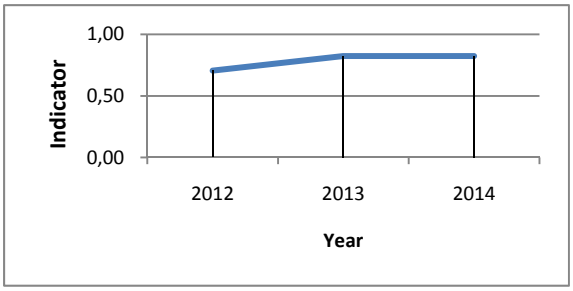
Biodiversity: Impact of facilities						
A	Km of line in Red Natura			Nº of substations in Red Natura		
B	Total km of line			Total Nº of substations		
Indicator	A/B x 100			A/B x 100		
	Lines			**Substations**		
Year	**2012**	**2013**	**2014 (*)**	**2012**	**2013**	**2014**
A	4,369.48	4,388.57	4,584.97	41	41	40
B	29,086.65	28,814.26	30,328.13	624	635	649
Indicator	**15.02**	**15.23**	**15.12**	**6.57**	**6.45**	**6.16**

(*)Included for the first time are the total km of submarine cable and those in Red Natura



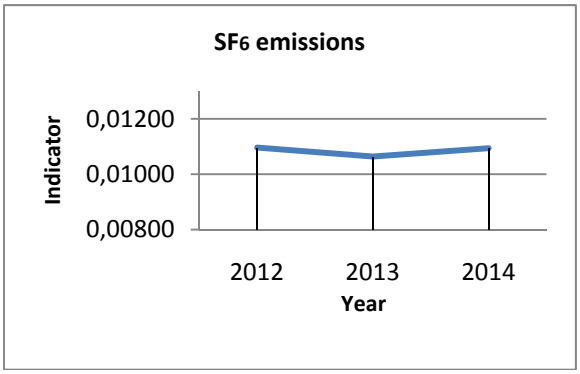


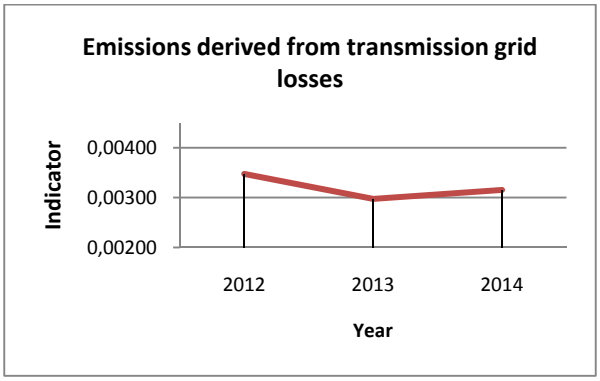
Biodiversity/Relationship with stakeholders			
A	Nº of Autonomous Communities with biodiversity projects		
B	Total Nº of Autonomous Communities		
Indicator	A/B		
Year	**2012**	**2013**	**2014**
A	12	14	14
B	17	17	17
Indicator	**0.71**	**0.82**	**0.82**



Emissions						
A	t SF_6 emitted (*)			Indirect emissions derived from transmission grid losses (t CO_2 eq)		
B	t SF_6 installed			MWh transported		
Indicator	A/B			A/B		
	SF_6 emissions			**Emissions derived from transmission grid losses**		
Year	**2012**	**2013**	**2014**	**2012**	**2013**	**2014**
A	3.07	3.17	3.55	875,259	748,945	767,907
B	280.017	297.694	324.696	251,901,014	246,206,000	243,395,000
Indicator	**0.01096**	**0.01064**	**0.01094**	**0.00347**	**0.00304**	**0.00315**

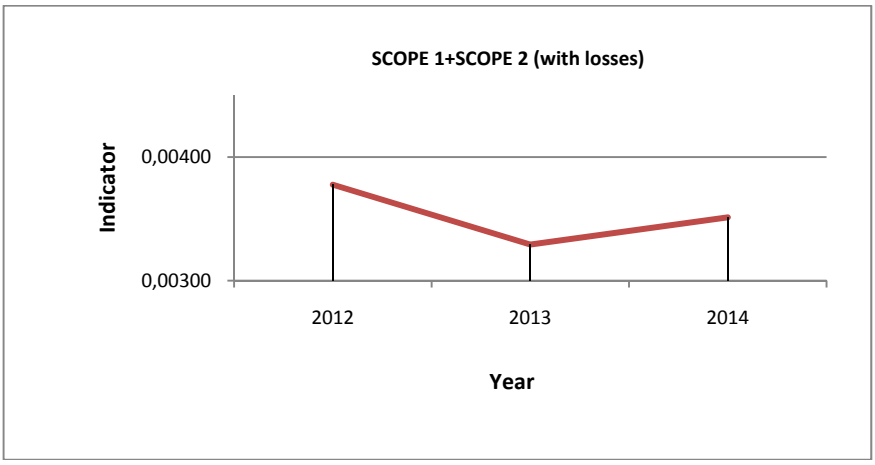
Note: The emissions most representative of the activity are emissions of SF_6 (direct) and emissions from transmission grid losses. It includes t of SF_6 and t emitted due to accidents.
(*) To assess SF_6 gas emissions in relation to the total SF_6 gas installed, it is considered more appropriate to use t of SF_6 emitted as the unit of measure, rather than calculate it in tonnes of CO_2 equivalent.



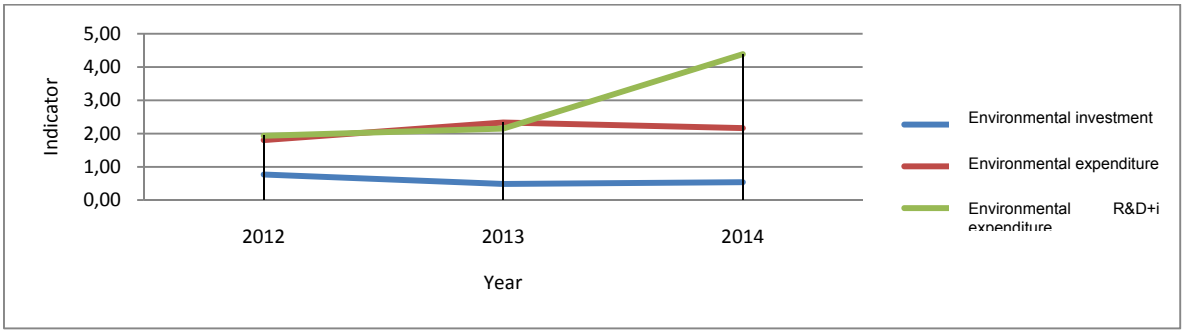


Emissions SCOPE 1+SCOPE 2 including transmission grid losses			
A	t CO_2 eq (**SCOPE 1+SCOPE 2**)		
B	MWh transported		
Indicator	A/B		
Year	**2012**	**2013**	**2014**
A	951,378	810,570	854,899
B	251,901,014	246,206,000	243,395,000
Indicator	**0.00378**	**0.00329**	**0.00351**

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

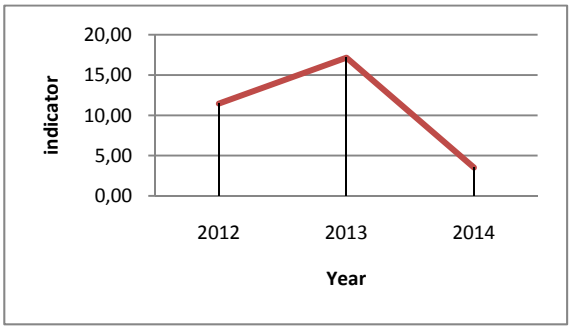


Environmental costs									
A	Environmental investment			Environmental expenditure			Environmental R&D+i expenditure		
B	Total investment			Total expenditure			Total expenditure on R&D+i		
Indicator	A/B x 100			A/B x 100			A/B x 100		
	Environmental investment			**Environmental expenditure**			**Environmental R&D+i expenditure**		
Year	**2012**	**2013**	**2014**	**2012**	**2013**	**2014**	**2012**	**2013**	**2014**
A	5,154,305.26	2,752,119.26	2,651,608.67	16,380,072.06	16,380,072.06	20,620,761.00	147,799.26	305,867.75	363,315.53
B	671,597,000	564,224,000	492,628,000	907,757,000	907,757,000	884,078,000	7,638,254	14,230,765	8,283,000
Indicator	**0.77**	**0.49**	**0.54**	**1.80**	**1.80**	**2.33**	**1.93**	**2.15**	**4.39**



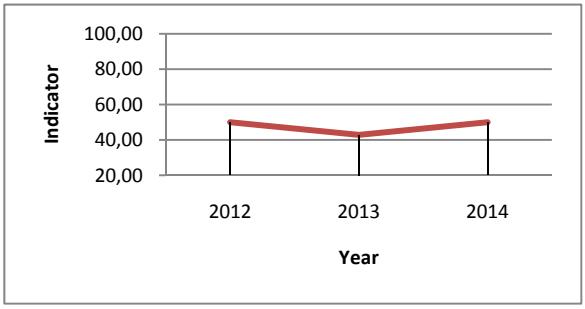
Training and awareness			
A	Nº of employees who received environmental training		
B	Nº of employees (*)		
Indicator	A/B x 100		
Year	**2012**	**2013**	**2014**
A	189	287	59
B	1,649	1,672	1,682
Indicator	**11.46**	**17.17**	**3.50**

(*) Only Red Eléctrica personnel



Accidental spillage of hydrocarbons			
A	Nº of accidents involving oil or fuel spillages from in-service transformers and equipment		
B	Total Nº of accidents		
Indicator	A/B x 100		
Year	**2012 (*)**	**2013**	**2014**
A	6	3	2
B	12	7	4
Indicator	**50.00**	**42.86**	**50.00**

(*) Improvement of the classification system for incidents



12 FREQUENCY OF THE ENVIRONMENTAL IMPACT STATEMENT

This Report is published annually and acts as an Environmental Statement. Its purpose is to provide information to all stakeholders concerning Red Eléctrica's environmental behaviour regarding those activities carried out during 2014.

The Spanish Association of Standardisation and Certification (AENOR), with Head Offices at Génova 6 - 28004 Madrid, and Accredited Certifying Body Number E-V-0001, is the entity that verifies that the Environmental Statement of Red Eléctrica complies with the requirements set forth in Regulation (EC) No 1221/2009 of the European Parliament and of the Council of 25 November 2009 on the voluntary participation by organisations in a Community Eco-management and Audit Scheme (EMAS).

The next Statement will be presented and published during the first half of 2016.

GLOSSARY OF TERMS

BIRD-SAVING DEVICES OR "SPIRALS"	A white or orange spiral made of polypropylene (PVC) in the shape of a spiral, measuring 30-35 centimetres in diameter and with a length of 1 metre, which is coiled around the grounding cable or conductor to mark it and alert birds to the presence of the lines in order to reduce the risk of collisions. *(Own definition REE).*
ELECTRIC FIELD:	In a point in space, the force exerted on a static load located at that point. Expressed in volts per metre (V/m). *(50 Hz. Electrical and Magnetic fields REE and UNESA, 1998)*
ENVIRONMENTAL ASPECT:	An element of the activities, products or services of an organisation having or which may an impact on the environment. *(Regulation (EC) No 1221/2009 of the European Parliament and of the Council of 25 November 2009 on the voluntary participation by organisations in a Community eco-management and audit scheme (EMAS)).*
ENVIRONMENTAL BEHAVIOUR INDICATOR:	Specific performance indicators providing information on an organisation's environmental behaviour. *(Standard UNE-EN ISO 14031 Environmental management. General Guidelines).*
ENVIRONMENTAL IMPACT:	Any change in the environment, either adverse or beneficial, that is caused in full or in part by the activity, products or services of any organisation. *(Regulation (EC) No 1221/2009 of the European Parliament and of the Council of 25 November 2009 on the voluntary participation by organisations in a Community eco-management and audit scheme (EMAS)).*
ENVIRONMENTAL MANAGEMENT SYSTEM:	That part of the general management system that includes the organisational structure, planning of activities, responsibilities, good practices, procedures, processes and resources to develop, apply, achieve, revise and maintain the environmental policy and manage the environmental aspects. *(Regulation (EC) No 1221/2009 of the European Parliament and of the Council of 25 November 2009 on the voluntary participation by organisations in a Community eco-management and audit scheme (EMAS)).*
ENVIRONMENTAL OBJECTIVE:	A general environmental objective, which originates from the Environmental Policy and is set out as a goal to be fulfilled by the organisation and which, insofar as is possible, is measured. *(Regulation (EC) No 1221/2009 of the European Parliament and of the Council of 25 November 2009 on the voluntary participation by organisations in a Community eco-management and audit scheme (EMAS)).*
ENVIRONMETAL POLICY:	The general management and intentions of an organisation with respect to its environmental behaviour, put forward officially by its management teams, including the compliance with all the regulatory provisions applicable to environmental matters, as well as the commitment to continuously improve environmental behaviour. It constitutes a framework for the company's actions and for establishing environmental targets and objectives. *(Regulation (EC) No 1221/2009 of the European Parliament and of the Council of 25 November 2009 on the voluntary participation by organisations in a Community eco-management and audit scheme (EMAS)).*
MAGNETIC FIELD:	In a point in space, the force exerted on a live element located at that point. Expressed in amperes per metre (A/m). The international measuring unit is Tesla (T) or any fraction thereof, and in particular the microtesla (μT). *(50 Hz. Electrical and Magnetic fields. REE and UNESA, 1998).*

NESTING DETERRENT:	A device comprised of several elements made of galvanised steel, and of different sizes, that deters birds from nesting or perching in the places where it is installed or on the actual device itself. *(Own definition of REE).*
RED NATURA 2000	The European Natura 2000 Ecological Network is a coherent environmental network comprised of Sites of Community Importance whose management shall take into account the economic, social and cultural requirements, as well as the special regional and local characteristics. These sites are later designated as either Special Areas of Conservation (SACs) or Special Protection Areas (SPAs) for Birdlife. (Law 42/2007 of 13 December, on Natural Heritage and Biodiversity).
	.
SIGNIFICANT ENVIRONMENTAL ASPECT:	An environmental aspect that has, or which may have, a significant impact on the environment. *(Regulation (EC) No 1221/2009 of the European Parliament and of the Council of 25 November 2009 on the voluntary participation by organisations in a Community eco-management and audit scheme (EMAS)).*
SPECIAL AREA OF CONSERVATION (SAC):	An area which, based on the biogeographic region or regions to which it belongs, contributes greatly to maintaining or restoring a type of natural habitat (…) in a favourable state of conservation so that it can help considerably in establishing the cohesion of Natura 2000 (…) and/or contributes noticeably to maintaining biological diversity in the biogeographic region or regions in question. For the animal species occupying large areas, the special areas of conservation will usually correspond to specific locations inside the area in which that species is naturally distributed, presenting the physical or biological elements that are essential for them to live and reproduce. *(Directive 92/43/EC, of May 21, on the Conservation of Natural Habitats and Wild Fauna and Flora).*
SPECIAL PROTECTION AREA (SPA) FOR BIRDLIFE:	An area of community interest for the protection of bird species listed in Annex I of the Council Directive 79/409/EEC of 2 April 1979, on the conservation of wild birds.
VISUAL SIMULATION:	An infographic technique (based on computer applications for graphic representation) applied in order to obtain a visual representation of a project, providing an approximate idea of what it will truly look like once completed, and showing the elements that it is comprised of, as well as its integration into its environment. *(Own definition REE).*
WASTE:	Any substance or object belonging to any of the categories established in the appendix to the Waste Act, in which the owner disposes of or has the intention/obligation to dispose of. In all cases, the items listed in the European Waste Catalogue (EWC) will be classified as such. *(Law 10/1998, 2 April, on Waste).*

VALIDATION

DECLARACIÓN MEDIOAMBIENTAL VALIDADA POR

AENOR Asociación Española de Normalización y Certificación

DE ACUERDO CON EL REGLAMENTO (CE) Nº 1221/2009

Nº DE ACREDITACIÓN COMO VERIFICADOR MEDIOAMBIENTAL ES-V-0001

Con fecha:

Firma y sello:

Avelino BRITO MARQUINA
Director General de AENOR

ANNEX **ENVIRONMENTAL ACTIONS 2014**

DEFINITION OF PROJECTS

Environmental authorisation for **31 projects**:

Positive Environmental Impact Statement [1]
Falca 66 kV substation Falca-Catalina 66 kV line
Torrejón de Velasco-L/Morata-Villaviciosa 400 kV line Torrejón de Velasco-L/Añover-Pinto 220 kV line Torrejón de Velasco-L/Villaverde-Almaraz 220 kV line Torrejón de Velasco-L/Pinto-Nueva Yeles 220 kV line Torrejón de Velasco-L/Torrijos-Villaverde 220 kV line
Voltage change and modification of a section of the Grado-Soto 400 kV line Modification of a section of the La Robla-Soto de Ribera 400 kV line Modification of a section of the Narcea-Soto de Ribera 400 kV line Modification of a section of the Carrio-Soto de Ribera 220 kV line
Enlargement of the Parralejo 220 kV substation Parralejo-Puerto Real 220 kV line
Santa Anna 400 kV substation Santa Anna-L/Benejama-Rocamora 400 kV line
Enlargement of the Jijona 220 kV substation Jijona-Montebello 220 kV line
Atarfe-El Fargue 220 kV line
Beniferri-La Eliana 220 kV line
Santa Anna-Torrellano 220 kV line
Candedo 400 kV substation Naraío 400 kV substation Candedo-Naraío 400 kV line Modification of the As Pontes-Xove 400 kV line Modification of the As Pontes-Ludrio/Compostilla 400 kV line Modification of the As Pontes-Mesón do Vento 400 kV line Modification of the As Pontes-Silleda 400 kV line
Renedo-L/T. Mudarra-Palencia 220 kV line
La Oliva 132/66 kV substation Puerto del Rosario 132/66 kV substation Puerto del Rosario-La Oliva 132 kV line Salinas-Puerto del Rosario 66 kV circuit Corralejo-La Oliva 66 kV circuit
Los Vallitos-L/Chayofa-Los Olivos 66 kV line
Macher 132 kV set of facilities Playa Blanca 132 kV set of facilities Playa Blanca-Macher 132 kV line

(1) Authorisation resulting from the complete Environmental Impact Assessment (Environmental Impact Study)

Environmental resolution [2]
Modification of the Son Moix- Son Reus-Valldurgent 220 kV line Modification of the Son Reus-Valldurgent 220 kV line
Replacement of towers of the Salinas-Corralejo 66 kV line
Repowering of the Cártama-Tajo de la Encantada 220 kV line
Repowering of the Casillas-Lancha 220 kV line
Repowering of the Almodóvar del Río-Casillas 220 kV line
Modification of the Ardoz-T. Vicalvaro 220 kV line (42-47)
Repowering of the Almaraz-Villaviciosa 400 kV lines 1-2
Repowering of the Alcores-Don Rodrigo 220 kV line Repowering of the Dos Hermanas-Carmona220 kV line Repowering of the Alcores-Carmona 220 kV line Repowering of the Don Rodrigo-Dos Hermanas 220 kV line
Repowering of the Santiponce-Carmona 220 kV line
Repowering of the Guillena-Carmona220 kV lines 1-2
Repowering of the Guillena-Santiponce 220 kV line
Moncayo-L/Magallón-Trévago 220 kV line
Repowering of the Cártama-Los Montes 400 kV line (Tower 26-Los Montes substation)
Repowering of the Quintos-Don Rodrigo 220 kV line
Repowering of the Aljarafe-Don Rodrigo 220 kV line
Enlargement of the Escatrón 400 kV substation
Alcalá II 220 kV substation Arroyo de las Monjas 220 kV substation Anchuelo 220 kV substation Enlargement of the Anchuelo 400 kV substation Anchuelo-Arroyo de las Monjas 220 kV line Alcalá 2-L/Anchuelo-Arroyo de las Monjas 220 kV line Arroyo de las Monjas-Meco 220 kV line

(2) Authorisation resulting from the processing of the Environmental Document (Environmental Impact Study Summary)

Projects exempt from the regulated environmental process (after issuing the consultation document)
Repowering of the La Roca-Vic 220 kV line
PRM Rubí-Vandellós 400 kV line

Construction or modification of facilities

❖ Protection of flora and fauna

Protection of flora: Preventive and corrective measures	
Modification of the project design during works	
Brovales-Guillena 400 kV line	Modification of access roads to reduce effects on tree flora (Oaks) in the vicinity.
Boimente-Pesoz 400 kV line	Study and modification of access roads to the towers to reduce the impact on flora and land
Signage and protection of habitats and areas with protected species	
Solórzano-Cicero 220 kV line	Marking off of towers 12,13,14,15 and 16 in compliance with the EIS
Mérida-San Serván 400 kV line	Staking out of access routes and setting a boundary for the area of occupation, selection of access routes while respecting the existing tree flora
Nueva Escombrera-Rocamora 400 kV line	Signage to indicate the European fan palm (*Chamaerops Humilis)* for access routes to towers 10 and 23
Boimente-Pesoz 400 kV line	Staking out of access routes and setting a boundary for the area of occupation, selection of access routes while respecting the existing tree flora. Continual monitoring of works to prevent the protected vegetation being affected. Controlling that the felling and pruning of flora is strictly limited to that authorised. Conducting inventories of trees felled in the Asturian area which is done by counting the numbers present per plot.
L/400 kV E/S en Grado de L/Soto-Tabiella	Thorough monitoring of works to prevent the protected flora being affected: Yew (*Taxus baccata*), Holm Oak (*Querqus ilex*) and Butcher's-Broom (*Ruscus aculeatus*) and controlling that the felling and pruning of flora is strictly limited to that authorised.
Brovales-Guillena 400 kV line	Thorough study of the areas of action in zones with the presence of catalogued flora (T-40, T-41 and T-42). Holm Oak (*Querqus ilex*) controlling that the felling and pruning of flora is strictly limited to that authorized. (Affecting flora: pruning of 17 Holm Oaks and 5 Olive trees in the IBA 272 Valuengo reservoir. Pruning of 1 Holm Oak in the IBA 271 Bienvenida-Usagre-Ribera del Fresno. Pruning of 69 Holm Oaks in the IBA 268 Fuente de Cantos-Montemolín. Pruning of 85 Holm Oaks and 6 Cork Oaks in the Sierra Norte Natural Park, (SAC - *Special Area Conservation* and SPA - Special Protection Area for birds) and IBA 236 Sierra Morena de Sevilla).
Hoisting with a boom crane (*)	
Solórzano-Cicero 220 kV line	Towers 6,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24.
Modification of the Penagos-Gueñes 400 kV line (Ap.126-Ap.147)	Areas with steep slopes and surrounding flora. All towers apart from tower 127 that has not yet been erected
Mérida-San Serván 220 kV line	54% of the towers hoisted with a boom crane
Brovales- Guillena 400 kV line	87% of the towers hoisted with a boom crane. Hoisting with this method has noticeably reduced the affect and damage on flora.
Boimente-Pesoz 400 kV line	Hoisting with a boom crane of those towers whose access is difficult due to the terrain and the introduction of the crane represents the opening up of access routes and has a strong impact on the landscape

Bescanó-La Farga-Santa Llogaia 400 kV line	Assembly with a boom crane to minimise pruning for the platforms of towers 4, 6, 28, 29, 30 and 38
Hoisting and hanging by helicopter (*)	
Modification of the Penagos-Gueñes 400 kV line (Ap.126-Ap.147)	Hoisting and hanging by helicopter of sections T144 to T150 and section T132 to T144. A total of 8,000 metres.
Bescanó-La Farga-Santa Llogaia 400 kV line	Hoisting and hanging by helicopter of various stretches of all the following sections: T1:1-19, T2:27-32 and 46-48, T3: 48-55,2, 55-74 in protected or sensitive areas. A total of 20.483 km
Hanging by hand	
Solórzano-Cicero 220 kV line	Spans 14-18 and 19-24
Planting of trees	
L/400 kV E/S Abanto-L/Penagos-Gueñes	Reforestation of the safety corridor open prematurely for one span, on completion of the junction of the two lines and the aforementioned safety corridor was not required
	Planting of Holm Oak and Strawberry tree (60 trees), to recover the side slopes affected by the introduction of the A-18, and strengthening the slopes
Abanto 400 kV substation	Planting of a barrier of vegetation between the road and the substation. (80 *Laylandis* trees)
Grado 400 kV substation	20 Cherry trees, 35 Holm Oaks, 12 Apple trees, 10 Strawberry trees, 24 Willow trees, 25 Fig trees, 50 Holly trees and 25 Chestnut trees were planted
Aparecida 400kV substation	Planting of up to 2,500 trees of Creeping Juniper to improve the stability of the existing slope and ensure the stability of the artificial meshing installed.
L/220 kV E/S SE Palencia 220 kV line	Accompanying measure not associated with the carrying out of felling: Planting of 600 Holm Oaks (*Querqus ilex*) and Stone Pines (*Pinus pinea*), in the municipality of Magan. This year supervision of planting has been carried out, with 50% taking root.
Mudarra- San Sebastián de los Reyes 400 kV line (refurbishment of accesses)	Accompanying measure not associated with the carrying out of felling: Planting of 12 Willow trees of 1.60-1.80 m in height in four different areas near the runway.

(*) Although they have been classified as measures for the protection of flora, in general they prevent impacts on the land, waterways and other elements.

Protection of fauna: Preventive and corrective measures	
Biological stoppages	
Modification of the Penagos-Gueñes 400 kV line (T-26 – T-147)	Egyptian Vultures and Raptors: 15 February to 1 September between towers T134 to T142; European mink, and aquatic species: 15 March to 31 July between towers T132-T133 and T142-T143
Mérida-San Serván 220 kV line	Biological stoppage between 1 March and 15 July between tower 17 and 25 due to the nesting of Imperial Eagle (*Aquila adalberti*) and Bonelli's Eagle (*Aquila fasciata*)
Brovales-Guillena 400 kV line	• Towers 71 to 83 due to the presence of Steppe birds 15 March to 15 July. • 132 to 134 due to being the nesting grounds of Black stork (Ciconia nigra) from 1 March to 15 July. • 151 to 152 due to the presence of Golden Eagle (*Aquila chrysaetos*) and Black Stork (*Ciconia nigra*) from 1 March to 15 July. • 157 to 184 due to the presence of Golden Eagle (*Aquila chrysaetos*) from 1 January to 31 July. • 185, due to the presence of Golden Eagle (*Aquila chrysaetos*) and Black Stork (*Ciconia nigra*) from 1 January to 5 July. • 186 due to the presence of Black Stork (*Ciconia nigra*) from 1 April to 5 July. • 187 to 188, due to the presence of Black Stork (*Ciconia nigra*) from 1 April to 23 August. • 189 to 191 due to the presence of Black Stork (*Ciconia nigra*) from 1 April to 5 July. • 192 to 196 due to the presence of Black Stork (*Ciconia nigra*) from 1 April to 23 August
Boimente-Pesoz 400 kV line	Biological stoppage from 1 May to 31 August. Marking of accesses and limiting access zones. Works stoppage on span 137-139 from April to September due to a pair of nesting Egyptian vultures.
Installing of nests	
There were no actions of this type in 2014	
Installing of bird-saving devices	
During 2014, 171 km of line was marked from a total of 335.3 km of newly constructed line (modification of 1.6 km of existing line), 14 km in SPAs, 99 km within other protection areas for birds and 24 km located in areas identified as bird flight-path routes representing **50.75%** of the lines built	

❖ Socio-economic and landscape scope

Protection measures of the socioe-conomic scope	
Modification of the project design during works	
Solórzano-Cicero 220 kV line	Modification of tower 5 to give continuity to a registered right of way.
Boimente-Pesoz 400 kV line	Relocation and modification of the height of towers 60 and 61 in order to respect a mound, according with Cultural guidelines of the Regional Government of Galicia (Xunta).
	Modification of 39 access routes.
Grado 400 kV substation	Construction of a riprap drainage system on a slope at the beginning of the access road with a metal closure at the top. Installation of drainage at the beginning of the access with a metal grille, gravel and a collection pit at the exit.
Ludrio 400 kV substation	Modifying the access to the substation and modifying the drainage.
Hoisting with a boom crane	
Mérida-San Serván 220 kV line	For 54% of the towers. Reducing the effect on olive and grape crops.
Brovales-Guillena 400 kV line	87% of the towers were hoisted with a boom crane. When hoisting in this way damage caused to roads and areas surrounding the towers is reduced.
Hanging by helicopter	
Modification of the Penagos-Gueñes 400 kV line (Ap.126-Ap.147)	Impacts on pineland farms used for logging purposes were avoided
Others	
Modification of the Penagos-Gueñes 400 kV line (Ap.126-Ap.147)	Two forest tracks were opened up at the request of the DFB mountain service. One is 400 metres in length and the other 950 metres.
	All the main and secondary tracks used in civil works have been repaired. Even though in many cases there had been little or no damage caused.
E-S Abanto-L/Penagos-Gueñes 400 kV line	Creation of a riprap. 39m in length and 3m high, to ensure a deteriorating forest road used for construction work was passable and which was worsened by last winter's weather conditions causing the banks of the track to slide.
	Asphalting of local tracks in the towns of Carlés, Nava and Valbona in the municipality of Salas, La Piedra in that of Grado and in the vicinity of San Claudio in Oviedo.
Salas-Grado 400 kV line and the E/S Grado substation Soto –Tabiella 400 kV line	Asphalting of local tracks in the towns of Carlés, Nava and Valbona in the municipality of Salas, La Piedra in that of Grado and in the vicinity of San Claudio in Oviedo.
Mudejar-Morella-Entronque 400 kV line	A forest track was opened up (joining the accesses to two adjacent towers) at the request of the mountain service.

Landscape restoration	
Substations under construction	
Campanario 220 kV substation	Installation of geocell meshing and weed-resistant meshing and gravel similar to that used on exterior slopes. Installation of coconut meshing on interior slopes. Creation of a space outside the facility with weed-resistant meshing and coloured crushed marble stone.
Santa María de Grado 400 kV substation	Spreading of topsoil, sowing seeds on embankments, the planting of trees and shrubs. Installation of weed-resistant meshing on slopes and the planting of 3,150 Ivy plants.
Aparecida 400 kV substation	Adaptation of the new embankment through the supply of deep drainage outlets in the direction of the general drainage of the substation, installation of weed-resistant meshing and the planting of 2500 Creeping Juniper. Cleaning of exterior guttering.
Substations undergoing maintenance	
Abanto 400 kV substation	Landscaping adaptation works, replanting the plant barrier in the exposed areas. Planting of 80 *Laylandis*
Rocamora 400 kV substation	Restoration of the existing gardened area by removing the palms affected by weevils and the planting of Olive trees (over 100 years old), installation of weed-resistant meshing and coloured crushed marble stone. Tidying up of existing Orange trees and the installation of drip irrigation.
Lines under construction	
Boimente-Pesoz 400 kV line	Geomorphological restoration of the land, removal of excess materials to landfill sites, sowing of seed, repair of roads, opening up of water culverts and stone walls.
	Adaptation of embankments generated in the access to the platform of tower 145 and the platform of tower 35 through the installation of coconut meshing, and through the addition of topsoil and the sowing of grass seeds.
Salas-Grado 400 kV line and the E/S Grado substation Soto – Tabiella 400 kV line	Geomorphological restoration of the land, removal of excess materials to landfill sites, sowing of seed, repair of roads, opening up of water culverts and stone walls. Topsoil was added, seeds were sown and shrubs were planted.
E-S Abanto-L/Penagos-Gueñes 400 kV line	Reforestation of the safety corridor open prematurely for one span 32-32 bis (1.5 ha), on completion of the junction of the two lines and the aforementioned safety corridor was not required (with 1,705 different leafy plants). Concreting of various municipal roads within the commitment made with the municipalities affected. Planting of climbing plants (160 bindweed) to hide the embankment generated in the implementation of tower 6, and Oaks and Strawberry trees to shield the verge created on the side of an access (30 trees). Planting 60 trees Strawberry and Holm Oak on slopes affected by the implementation of the A-18.
Lines under construction	
Siero-Puente de San Miguel 1 220 kV line	In summary the number of plants, supply of topsoil and the surface area sown with seed in the towers in question are the following: ● Tower 234: 25 plants, 48 m^3 of topsoil and 1250 m^2 of scarifying (process to encourage germination), sowing of seed and the incorporation of fertilizer. ● Tower 241: 16 m^3 of topsoil and 1,450 m^2 of scarifying, sowing of seed and the incorporation of fertilizer. ● Tower 249: 75 plants, 68 m^3 of topsoil and 1,800 m^2 of scarifying,

Landscape restoration	
	sowing of seed and the incorporation of fertilizer. ● Tower 287: 190 plants, 2,300 m² of scarifying, sowing of seed and the incorporation of fertilizer. ● Tower 288: 100 plants, 1,000 m² of scarifying, sowing of seed and the incorporation of fertilizer. ● Tower 289: 125 plants, 1,000 m² of scarifying, sowing of seed and the incorporation of fertilizer. ● Tower 290: 80 floors, 900 m² of scarifying, sowing of seed and the incorporation of fertilizer. In the following towers scarifying has taken place, the sowing of seed and the incorporation of fertilizer: 236, 238, 239, 240, 247, 248, 250, 251, 254, 255, 257, 258, 286,

❖ Archaeological heritage

Protection of archaeological – ethnological heritage	
Solorzano-Cicero 220 kV line	A Mesolithic hand-held stone cutting tool was discovered. A report was drafted that was submitted to the administration together with the final report of the works.
Mudejar-Morella-Entronque* 400 kV line	Archaeological sites were marked off: Foya Los Pilones 1, 2 and 3 next to towers 26, 27 and 28.
Brovales-Guillena 400 kV line	Archaeological supervision throughout the section that runs through the province of Badajoz (towers 1 to 156) and in the section of Seville for towers 162, 163, 164 and 165. The supervision encompasses both the accesses and the towers. Tower 187: Despite not being specifically within the EIS, there has been continuous supervision by an archaeologist during the civil works, as an ethnographic element (corral) was located a few metres from one of the tower legs. Towers 14, 19, 21 and 31: continuous archaeological supervision during civil works, as ethnographic elements (stone huts) are located close to the access and the tower. Tower 52: Staking out (as a preventive measure) of an existing Roman road near the entrance to the tower. Tower 58: Staking out (as a preventive measure) of existing farmland close to the tower. Tower 69: Staking out (as a preventive measure) of an existing stone livestock enclosure, a pig pen with rectangular stones and a rectangular existing hut structure also close to the access to the tower. Tower 51: Staking out of (as a preventive measure) of an existing enclosure by the platform of a tower and Intensive monitoring during the civil works
Majorca-Ibiza 132 kV Interconnection	ıntensive monitoring carried out, horizontal drilling was done to avoid remains and, in another section, the course was altered
Torrent 132 kV substation	At the commencement of works 38 prospection surveys were done on the platform of the substation, through which it was possible to detect indications of archaeological remains, so the zone was marked off and a manual excavation was performed. 18 tombs were found (necropolis of Byzantine origin from the 6th and 7th Century), which have been dismantled. An area also appeared with a late Punic town and a rural settlement (1,200 m²). On the perimeter of the substation (off the platform) a Roman aqueduct was discovered.

Protection of archaeological – ethnological heritage	
	The marking off of the areas was performed, where archaeological evidence was detected. The competent authority authorised the dismantling the necropolis, but the area of the town must be re-buried and construction is not allowed above that, so the implementation of the substation had to be modified so as to not affect any element.

❖ Restoration of affected areas

Restoration of areas affected by works	
Solórzano-Cicero 220 kV line	Recovery of work sites and accesses, areas used for overhead line stringing equipment, as well as spaces used for installing anchoring points of said equipment.
Modificaction of the Penagos-Gueñes 400 kV line (T-126-T-147)	Recovery of work sites in the civil engineering phase
E-S Abanto-L/Penagos-Gueñes 400 kV line	Recovery of slopes from the implementation of T-18, creating deep drainage, placement of precast concrete to retain access slopes and the planting of climbing pants to mask the walls created.
Brovales-Guillena 400 kV line	As the hanging phase is finishing, the remodeling stage of access roads is beginning, the creation of water outlets, soil compacting on the platforms of the towers eliminating the gullies generated by rainfall, (towers T-151 and T-152). A protective meshing has been placed on the slope generated due to tower T-152
Mérida-San Serván 220 kV line	Restoration of platforms and accesses.
Pinilla-Campanario 400 kV line	Restoration of platforms and accesses.
	Decompaction of plots of land and farm tracks.
Nueva Escombreras-Rocamora 400 kV line	Tower 10, 21 and 23. Reconfiguration of the land affected by eliminating ridges and smoothing ground surfaces so that the natural flow of the terrain is restored.
Salas-Grado 400 kV line and the E/S Grado substation Soto –Tabiella 400 kV line	Geomorphological restoration, removal of excess materials to landfill sites, sowing of seed, repair of roads, opening up of water culverts and stone walls. Topsoil added, seeds were sown and shrubs were planted.
Boimente-Pesoz 400 kV line	Geomorphological restoration, removal of excess materials to landfill sites, sowing of seed, repair of roads, opening up of water culverts and stone walls.
Santa María de Grado 400 kV substation	Spreading of topsoil, sowing seeds on embankments, the planting of trees and shrubs. Installation of weed-resistant meshing on slopes and the planting of 3,150 Ivy plants.

English Translation by:
Wayman English International · www.waymanenglish.com

This English version is a translation of the original and authentic Spanish text found in RED ELÉCTRICA'S *"DECLARACIÓN AMBIENTAL EMAS 2014",* originally issued in Spanish. In the event of discrepancy, the Spanish-language version shall prevail.