# Environmental report 2008

RED ELÉCTRICA DE ESPAÑA

# Index

# 00 Presentation

The factors which nowadays determine the management of companies are more related than ever to values such as ethical behaviour, excellence, transparency and best practices in economic, environmental and social spheres. All these elements acquire a special relevance in the current context, where one of the major challenges of our time, not only for companies but also for society, is the challenge which sustainable development and the fight against climate change represents.

In Red Eléctrica we are conscious of this fact and therefore we work every day with the attitude of orientating our efforts and resources to that end, undertaking commitments which allow us to contribute to a more secure, more efficient and environmentally more sustainable electricity supply.

In this way, our main contribution in meeting this challenge is the firm backing we maintain for the promotion of renewable energies. This is done by investment in networks within the grid which facilitate the evacuation and development of these clean energies and, especially, through the important daily role which our Special Regime Control Centre (CECRE) carries out, by making it possible to integrate, under secure conditions, the maximum production of renewable energy into the system. Thanks to this control centre, it has been possible to increase the role that this type of energy plays in covering the electricity demand and, therefore, reduce the $CO_2$ emissions derived from the generation of electricity.

This firm commitment which we undertake regarding sustainability shows in other activities oriented towards preserving the natural and social environment where our facilities are located.

One of our objectives is to construct a robust and reliable meshed transmission grid, whose development is carried out in a sustainable way with the maximum respect for the environment. To achieve this, all of our new facility projects are submitted to an environmental evaluation process with the purpose of determining the best locations and routes which represent the least environmental and social impact.

In addition, we actively work to avoid or to reduce the effects that our activities and facilities have on flora and fauna, and we collaborate with specialised organisations in the development of diverse studies and research projects oriented towards conservation of the biodiversity.

Our environmental concern also extends to the prevention of contamination. To this end, we have signed an agreement with the Ministry of the Environment destined to reduce the emissions of sulphur hexafluoride (SF6) which is used in our facilities and we also attempt to reduce fuel consumption as much as possible in company vehicles.

Additionally, we are working in the implementation of energy saving and efficiency measures with the introduction of initiatives directed to reduce the use of natural resources, especially the reduction in the electricity and paper consumption by employees. These initiatives are complemented with training and environmental awareness campaigns targeted towards employees and collaborators, with the purpose of promoting best environmental practises in the performance of their daily tasks.

All these efforts and activities we dedicate to the protection of the natural environment, not only reiterate but also confirm our commitment to considering environmental activity as a basic activity of our business management, since we understand that respect for the environment must be taken on board as a high-priority objective and assumed as a key corporate value in a responsible, committed and sustainable company as is the case of Red Eléctrica de España.

Luis Atienza Serna
Chairman

# 01 Who is Red Eléctrica

**We are responsible for the technical operation and management of the Spanish electricity system. We own 99% of the Spanish high-voltage electricity transmission grid and are the only company in Spain specialised in the activity of electrical energy transmission.**

As the Spanish electricity system operator (peninsular and extrapeninsular), our main function is to guarantee the continuity and security of the electricity supply and the correct co-ordination of the generation and transmission systems, working in co-operation with the operators and individuals/companies of the Iberian Market for electrical energy, under the principles of transparency, objectivity and independence.

As the manager of the transmission grid, we perform our function as sole transmission agent guaranteeing the expansion and development of the facilities carrying out their improvement and maintenance following homogeneous and coherent criteria; managing the flow of electricity between exterior systems which is carried out when using the Spanish electricity transmission grid; providing the operator of any other interconnected grid with sufficient information to guarantee a secure functioning and guaranteeing access to the grid by third parties under a regime of equality.

Our transmission infrastructure is comprised of: the electricity control systems which direct and supervise the system operation, a circuit of 34,322 kilometres of high voltage transmission lines and 3,162 bays in substations with a transformer capacity of 62,122 MVA.

## Evolution of the facilities

| | | 2006 | 2007 | 2008 |
|---|---|---|---|---|
| **Lines (km of circuit)** | **Kilometres of circuit** | **33,503** | **33,669** | **34,322** |
| | 400 kV | 17,005 | 17,134 | 17,686 |
| | 220 kV and less | 16,498 | 16,535 | 16,636 |
| **Substations** | **Number of bays** | **2,916** | **3,043** | **3,162** |
| | 400 kV | 950 | 1,004 | 1,055 |
| | 220 kV and less | 1,966 | 2,039 | 2,108 |
| | Transformer capacity (MVA) | 56,072 | 58,522 | 62,122 |

All the activities we carry out are done in accordance with a strict environmental policy, based on an ethical commitment to society and integrating environmental protection into our business management, with the objective of creating value on an ongoing basis. To do this we hold the Environmental Management Systems UNE-EN ISO 14.001:2004 certified in May 1999 and registered in the EU Eco-Management and Audit Scheme (EMAS) under registration number ES-SB-000013. This has been held since October 2001

We are the first business group in the Spanish energy sector to hold the triple integrated ISO certification for quality, environmental and occupational health and safety for all its companies.

In December 2008, our Environmental department comprised of 19 professionals, with widely varying educational backgrounds. They are experts in environmental matters and they actively support all the organisational units in the development of their daily activities. Additionally, as of the end of 2008, the different territorial areas count on 17 new technical professionals whose function is to control, on-site, all the environmental aspects which every Red Eléctrica facility undergoes during each phase: project, construction and maintenance.

Respect for the environment is the task of all our employees and collaborators in the development and execution of our daily activities, and hence contributes to the conservation

220 kV Line
La Pobla-Escalona.

of the habitat, correct waste management and minimises the consumption of natural resources.

Red Eléctrica has consolidated its position in the main Dow Jones Sustainability Indexes (DJSI). The score obtained in Fiscal Year 2008 was 71 points out of a total score of 100. The best in the sector, at a global level, obtained a score of 83. These indexes review the social, environmental and economic management through the use of more than fifty different general and specific criteria for each sector.

The Special Regime Control Centre (CECRE) project was awarded the 2007-2008 European Environmental Awards, Spanish section, in the category of "Sustainable Development Product".

The European Environmental Awards, targeted to those companies that stand out due to their outstanding environmental behaviour, are the most prestigious recognition in the field of corporate sustainable development. It seeks to acknowledge and highlight the policies, practices, processes and products of all the business sectors within the European Union that contribute to a sustainable development.

# 02 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 carries out their daily work with the maximum respect for the environment, through ongoing improvement in carrying out their responsibilities and functions.**

The principles of our environmental policy are as follows:

- Guide the Group towards **sustainable development**, seeking commensurate balance between respect for the environment, the promotion of progress, social well-being and economic interests with the objective of creating value on a permanent basis.
- Ensure **leadership** in environmental issues in all the companies in the Group in their areas of activities.
- Ensure **compliance with the environmental legislation, regulations and norms** applicable to the activities they carry out.
- Guarantee **ongoing improvement and prevention of contamination** through the updating and monitoring of the environmental management systems, as well as the environmental objectives and goals.
- Promote **research, development** and design of new technologies and processes with the objective of preventing or minimising environmental impact.
- **Integrate the environmental variable** in the design and development of new plans and projects for facilities and activities or in the modification of existing ones.
- Incorporate environmental requirements into the selection and evaluation process of **suppliers and contractors**.
- Develop and provide ongoing **training, awareness and motivation** actions regarding environmental protection in order to achieve a more active involvement on behalf of the employees.
- Develop means and channels of **communication** for informing and communicating with all interested parties on activities related to the environment.

** Document approved by Chairman's Office May 2007.*

# 03 Indicators

By way of introduction, the following is a numerical representation of the information that is deemed most relevant, and which is expanded on throughout the Environmental Report on the pages indicated.

## Objectives

| | 2006 | 2007 | 2008 | Page |
|---|---|---|---|---|
| **Compliance with the Environmental Programme** | | | | |
| Environmental objectives fulfilled / Total nº environmental objectives (%) | 60.90 | 54.84 | 53.08 | 13 |

## Presence of facilities in Red Natura 2000

| | 2006 | 2007 | 2008 | Page |
|---|---|---|---|---|
| **Land surface area located in biodiversity-rich habitats** | | | | |
| Km of lines in SAC/ total km of lines (%) | 12.45 | 14.28 | 13.5 | 35 |
| Surface area of lines in SAC/Total surface in SAC in Spain (%) | 0.099 | 0.12 | 0.12 | 35 |
| Km of lines in SPAs / total km of lines (2) (%) | 9.31 | 11.6 | 10.8 | 35 |
| Surface area of lines in SPAs/Total surface in SPAs in Spain (%) | 0.10 | 0.14 | 0.12 | 35 |
| No. of substations in SAC/ Total No. of substations (%) | 7.06 | 8.98 | 11.8 | 35 |
| No. of substations in SPAs/ Total No. of substations (%) | 5.70 | 7.3 | 9.6 | 35 |
| **Impacts on biodiversity** | | | | |
| km of lines built in SAC in the year / km of lines built in the year (%) | 1.18 | 5 | 10.48 | 27 |
| km of lines built in SPAs in the year / km of lines built in the year (%) | 1.18 | 0 | 0.25 | 27 |
| No. of substations built in SAC in the year / No. of substations built in the year (%) | 0 | 0 | 0 | 27 |
| No. of substations built in SPAs in the year / No. of substations built in the year (%) | 0 | 0 | 0 | 27 |

## Waste generation

| | 2006 | 2007 | 2008 | Page |
|---|---|---|---|---|
| **Total waste generated** | | | | |
| kg of hazardous waste | 247,343 | 764,741 | 605,167 | 42 |
| kg of non-hazardous waste | 1,169,021.87 | 2,195,127 | 3,286,559 | 42 |

## Restoration and protection of habitats and species

| | 2006 | 2007 | 2008 | Page |
|---|---|---|---|---|
| **Habitat restored** | | | | |
| No. of new facilities constructed in the year including the restoring of landscapes* / No. of new facilities constructed in the year* (%) | 55 | 54 | (1) | 25 |
| No. of new facilities in which archaeological surveys in the year during construction has been conducted / No. of new facilities built in the year (%) | 73 | 75 | (1) | 24 |
| **Objectives and programmes to protect and restore eco-systems and indigenous** | | | | |
| km of lines marked with bird-saving devices | 686 | 779 | 890(2) | 22, 31, 35 |
| km of lines marked with bird-saving devices / km of existing lines (%) | 2.89 | 3 | 3.3 | 22, 31, 35 |
| km of lines marked in SPAs / total km of lines installed in or that cross SPAs (%) | 9.38 | 7.1 | 8.8 | 31, 35 |

** New facilities built whose construction was completed within the year*

*(1) In 2008, as part of the construction analysis process the convenience of keeping this indicator is being evaluated*

*(2) In 2008, 107km have been marked (The total amount has been modified due to the updating process of the inventory of the georeferencing of facilities)*

## Consumption of natural resources

| | 2006 | 2007 | 2008 | Page |
|---|---|---|---|---|
| **Consumption of natural resources** | | | | |
| Electricity consumption | | | | |
| Control Centres (kWh) (*) | 2,859,298 | 2,931,339 | 3,028,521 | 37 |
| Work Centres (kWh) (*) | 8,806,546 | 10,985,124 | 10,872,067 | 37 |
| Water consumption ($m^3$/employee) | | | | |
| Head offices | 14.22 | 12.46 | 19.89 | 38 |
| Work Centres | 38.5 | 27.52 | 25.18 | 38 |
| Paper consumption (kg/employee) | | | | |
| All work centres | 63 | 48 | 37.5 | 39 |
| Fuel consumption of fleet vehicles (litres/100 km) | | | | |
| Off-Road vehicles/Lorries | 10.22 | 19.81 | 19.74 | 40 |
| Company Cars | 7.70 | 6.89 | 7.28 | 40 |

** Following the energy audit, carried out in 2007, it has been considered appropriate to modify the indicators in order to better reflect the real situation.*

## Accidents

| | 2006 | 2007 | 2008 | Page |
|---|---|---|---|---|
| **Oil and fuel spillages** | | | | |
| No. of accidents involving oil and fuel spills in the year, arising from maintenance activities | 14 | 14 | 4 | 46 |
| No. of accidents involving oil and fuel spills in the year, derived from construction activities | 6 | 2 | 1 | 46 |

## Research and Development

| | 2006 | 2007 | 2008 | Page |
|---|---|---|---|---|
| **Environmental R+D+i** | | | | |
| Expenditure on Environmental R+D+i / Total Expenditure on R+D+i (%) | 11.56 | 6.10 | 7.07 | 47 |

## Training and Awareness Programmes

| | | | | |
|---|---|---|---|---|
| **Environmental Training** | | | | |
| Employees who have received environmental training in the year / Total employees (%) | 3.66 | 3.34 | 8.66 | 50 |

## Communication with Stakeholders

| | | | | |
|---|---|---|---|---|
| **Environmental Communication** | | | | |
| No. of visits to the environment section of the corporate website | 88,915 | 89,039 | 98,164 | 53 |
| No. of downloads of environmental publications from the corporate website | 131,044 | 244,242 | 290,208 | 58 |

## Collaborators

| | | | | |
|---|---|---|---|---|
| **Supplier behaviour in environmental matters** | | | | |
| Suppliers with USG certificate (ISO 14.001 o EMAS) (%) | 38 | 40 | 41 | 60 |

## Sanction proceedings and Fines

| | | | | |
|---|---|---|---|---|
| **Incidents and fines for non-compliance with environmental norms** | | | | |
| No. of sanction proceedings resolved with a fine in the year | 5 | 4 | 12 | 60 |
| Total amount of fines in the year (Euros) | 9,074.56 | 822 | 2,364.15 | 60 |

*Regarding the annual reports of previous years, data has no traceability since it incorporates information from sanction proceedings resolved with a fine and the amount of these once resolved. There are still unresolved cases from 2006, 2007 and 2008.*

## Environmental Costs

| | | | | |
|---|---|---|---|---|
| **Environmental Investment** | | | | |
| Environmental investment (€) | 6,293,732.62 | 2,086,624.86 | 5,078,780.39 | 62 |
| Environmental investment /Total investment (%) | 1.22 | 0.35 | 0.82 | 63 |
| **Environmental Expenditure** | | | | |
| Environmental expenditure (€) | 9,321,594.39 | 15,359,789.82 | 17,150,041.92 | 62 |
| Environmental expenditure / Total expenditure (%) | 2.03 | 2.11 | 2.76 | 63 |
| Environmental taxes (€) | 971,902.75 | 1,102,378.74 | 1,097,240.05 | 63 |

# 04 Objectives

**The Environmental Programme of Red Eléctrica contains an overview of the combination of the environmental improvements which Red Eléctrica intends to carry out throughout the year. The programme describes the environmental objectives, which may be annual or multiannual, and includes the targets 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 that are directly related to the improvement of environmental aspects, and other objectives which contribute to long term improvement. In the different chapters of this report, information is provided on how the environmental aspects are associated to the various activities, as well as the contribution of the objectives to environmental improvement.

The overall compliance of the Environmental Programme 2008 has been 53.08%. The following table summarises the objectives addressed during 2008 indicating their weighting within the Programme and their level of fulfilment within the year.

Villalcampo-Villamayor line

| Action areas | Objectives | Character / Term | Weighting | Fulfilment | % | Page |
|---|---|---|---|---|---|---|
| **Improvement activities associated to the prevention of affecting the environment** | | | | | | |
| **Improvement in environmental management system** | Portal for inventory and management of environmental information regarding Red Eléctrica's assets | Multi-annual (2007-2009) | 10 | 5 | 50 (1) | 28 |
| | Improvement in the design of new substations | Annual | 8 | 8 | 100 | 19 |
| | Revision of environmental criteria in the construction process | Annual | 10 | 2 | 20 (2) | 22 |
| **Birdlife conservation** | R+D+i Projects regarding nature conservation: birdlife (two) | Multi-annual (2007-2009) | 8 | 8 | 100 | 47, 48 |
| **Environmental inventory** | Update of the information regarding the environmental state of Red Eléctrica's assets: 60 substations and incorporation of environmental criteria in the line maintenance route sheets | Multi-annual (2007-2010) | 8 | 0 | 0 (2) | 33 |
| **Improvement activities associated to the prevention of contamination** | | | | | | |
| **Improvement in the control of emissions** | Improvement in the integral Management of $SF_6$. Reduction of emissions | Multi-annual (2008-2010) | 8 | 4 | 50 (2) | 35 |
| **Improvement activities associated to significant environmental aspects** | | | | | | |
| **Reduction of the risk of accidental spills** | Improvement activities in substations for the prevention of ground contamination power equipment oil, transformers, expansion tanks and inadequate waste storage. | Multi-annual (2007-2010) | 20 | 8.08 | 40.4 (2) | 33 |
| **Control of consumption** | Creation of the "Red Eléctrica Eficiente" group | Annual | 8 | 8 | 100 | 38 |
| **Improvement activities associated to other significant aspects** | | | | | | |
| **Relationship with suppliers** | Environmental awareness of suppliers: training e+5 for supplies with level 4 qualification and training work supervisors and facultative directors | Annual | 6 | 0 | 0 (3) | 59 |
| **Relationship with interested parties** | Environmental awareness of interested parties: SEPRONA | Multi-annual (2007-2009) | 5 | 5 | 100 | 52 |
| **Communication / Awareness** | Promoting environmental best practises for contractors and personnel | Annual | 9 | 5 | 55.6 (1) | 40, 60 |
| **TOTAL** | | | **100** | **53.08** | | |

*(1) Will be completed in 2009, outside the Environmental Programme.*
*(2) Will continue in 2009, within the Environmental Programme.*
*(3) e+5 Training not continuing, work will continue along other lines, the remainder of the objective will continue in 2009 within the Environmental Programme.*

Distribution tower between
Puebla de Guzmán and the Portuguese border.

The total fulfilment of the Environmental Program is the sum of the contributions (percentage of the degree of fulfilment) of the objectives to the programme, according to the weighting initially assigned to each of them.

The causes which have led to some of the objectives not reaching a 100% fulfilment may be summarised as follows:

- Delay in the development and/or implementation of IT tools: *Web Portal for inventory and management of environmental information regarding Red Eléctrica's assets; Update of the environmental inventory of assets of Red Eléctrica.*
- Adjustments in the planning and/or budget: *Improvement activities in substations for the prevention of soil contamination; Revision of the environmental criteria in the construction process; Improvement of the integral management of $SF_6$. Reduction of emissions; Promotion of the environmental best practices between contractors/service providers.*
- Reframing of objective for non-viability in the context of Red Eléctrica: *Supplier environmental awareness: e+5 Training*

Overall, the decline in fulfilment of the Environmental Programme compared to previous years has been mainly due to internal organisational changes which have in turn resulted in the redefinition of tasks and responsibilities within the environmental scope.

The following table summarises the environmental objectives approved by Management /the Board for 2009.

| Action areas | Objectives | Character / Term | Weighting |
|---|---|---|---|
| **Improvement activities associated to the prevention of affecting the environment** | | | |
| **Improvement in environmental management system** | Revision of environmental criteria in the construction process | | |
| **Integration of facilities into the environment** | Integration of in-service substations into the environment: Nature school | | |
| **Environmental inventory** | Update of the information regarding the environmental state of Red Eléctrica's assets: 180 substations and incorporation of environmental criteria in the line maintenance route sheets | | |
| **Birdlife conservation** | R+D+i Projects for nature conservation: experimental application of the bird collision detector prototype on electricity lines. | Multi-annual (2007-2010) | 5 |
| **Improvement activities associated to the prevention of contamination** | | | |
| **Improvement in the control of emissions** | Control and compensation of emissions in Red Eléctrica: Improvement of the integral management of $SF_6$ and creation of the project "Red Eléctrica Forest" | Multi-annual (2008-2010) | 10 |
| **Improvement activities associated to significant environmental aspects** | | | |
| **Reduction of the risk of accidental spills** | Auxiliary improvement activities in substations for the prevention of ground contamination power equipment oil, transformers, expansion tanks and inadequate waste storage. | Multi-annual (2007-2010) | 30 |
| **Control of consumption** | Improvement in the efficiency in consumption of natural resources: electricity, water and fuel. | Annual | 17 |
| **Improvement activities associated to other significant aspects** | | | |
| **Relationship with suppliers** | Environmental awareness of suppliers: training work supervisors and facultative directors | Multi-annual (2008-2009) | 5 |
| **Relationship with interested parties** | Environmental awareness of interested parties: Generalitat de Cataluña | Annual | 5 |
| **Communication / Awareness** | Promoting environmental best practises. | Annual | 6 |
| TOTAL | | | 100 |

# 05 Environmental activities

**We work with the commitment to integrate environmental protection in the execution of our day to day tasks and activities.**

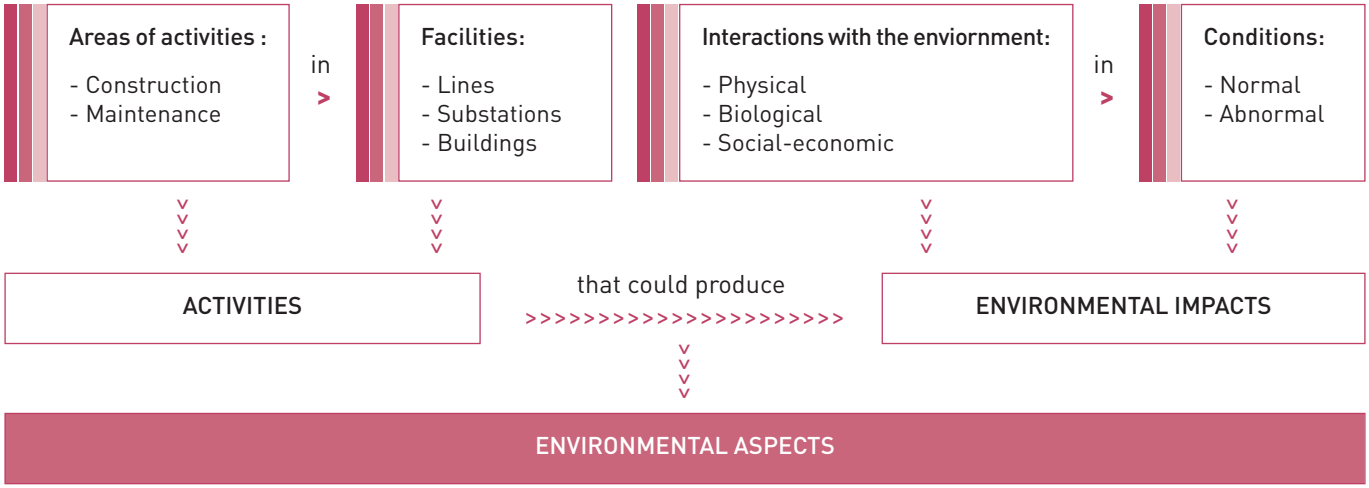
During the **design phase** we perform environmental studies on all our facilities and define the alternatives, which are technically and economically feasible and have the least possible impact on the environment and society.

During the **construction phase** we conduct comprehensive environmental monitoring of all the works being executed, both for new facilities as well as for modifications to existing ones.

During the **maintenance phase** we carry out systematic, periodic reviews and audits on the facilities in service which allow us to define and implement preventive and corrective measures, detect potential environmental incidents and verify the effectiveness of the measures put in place during the construction phase.

In all the project and construction activities, as well as the maintenance activities, conducted on facilities in service, we identify and assess the direct and indirect environmental aspects that could interact with the environment, and which could lead to any kind of negative impact, both in normal and abnormal operating conditions.

Infographic simulation of the construction of the new La Matanza substation.




## 5.1. ENVIRONMENTAL ACTIVITIES REGARDING FACILITIES IN THE PLANNING PHASE

We continue to actively collaborate with the Ministry of Industry, Tourism and Trade (MITYC) in the Strategic Environmental Evaluation Process regarding the planning of the electricity sector. One of the priority objectives of this planning is to reconcile the preservation of environmental quality with the principles of efficiency, security and diversification of the generation, transformer, transmission activities and use of energy.

During 2008, we have continued working jointly in the definition and calculation of indicators that allow the evaluation of environmental effects (positive and negative) derived from the execution/construction of the planned facilities included in the strategic investment plan.

We have also conducted environmental impact studies of all new projects or facilities whether or not they are subject to the environmental impact assessment procedure or not.

During the preparation of the studies, we consult with the environmental agencies of the corresponding autonomous communities and agree on the alternative of lesser impact for each project.

In 2008, the environmental impact statement for eleven line and substation projects was obtained from the Spanish Ministry for Environment and Rural and Marine Affairs:

## Positive Environmental Impact Statement (EIS) (1)

| |
|---|
| L/400 kV Segovia Junction - Galapagar Junction |
| Substation Carmona 400/220 kV |
| L/400 kV Carmona-L/Guillena-Don Rodrigo |
| L/220 kV Carmona-L/Dos Hermanas-Guillena |
| L/220 kV Carmona-L/Santiponce-Villanueva del Rey |
| L/220 kV Carmona-L/Guillena-Alcores |
| Substation Cártama 400/220/25 kV |
| L/400 kV Cártama-L/Guadalquivir Medio-Tajo de la Encantada |
| L/220 kV Cártama-L/Alhaurín-Tajo de la Encantada |
| L/220 kV Cártama-L/Los Ramos-Casares |
| L/220 kV Cártama-L/Alhaurín-Los Montes |
| Substation Torrente 400 kV |
| L/400 kV Torrente-L/La Eliana-Catadau |
| L/400 kV Soto de Ribera-Penagos (Nava route) |
| L/400 kV Soto de Ribera-Penagos (Siero route) |

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

## Positive Enviromental Resolution (2)

| |
|---|
| Substation Argamasilla de Calatrava 220 kV |
| L/220 kV Argamasilla de Calatrava-L/Picón-Puertollano |
| L/220 kV Los Pradillos-Illescas |
| Substation Camino Congosto 220 kV |
| L/220 kV Camino Congosto-C/Coslada-Villaverde |
| Substation Retiro 220 kV |
| L/220 kV Arganzuela-Retiro |
| L/220 kV Retiro-La Estrella |
| Substation Nueva Dumbría 220 kV |
| L/220 kV Nueva Dumbría-L/Mazaricos-Vimianzo |
| L/220 kV Nueva Dumbría-L/Mesón do Vento-Dumbría |

*(2) Authorisation resulting from processing of a Environmental Document (summarised Environmental Impact Study)*

At year end, an additional 207 projects were involved in the processing stages of the environmental processing phase. (See Annex: Planned Facilities in Environmental Processing Phase)

The revision of the basic requirements for substation engineering was performed in 2008, reviewing and incorporating determined environmental criteria into its design. Additionally, environmental criteria have also been integrated in the engineering standardisation, for the following phases: land movements and civil works, as well as for substations. (Objective regarding improvement in the design of new substations as included in the 2008 Environmental Programme, 100% fulfilment).

## 5.2. ENVIRONMENTAL ACTIVITIES IN FACILITIES UNDER CONSTRUCTION

Hoisting of tower with crane.

We carry out environmental monitoring of the construction of new electricity lines and substations as well as extensions, renovations and upgrading of those facilities already in service. This supervision consists mainly of checking the implementation of preventive and corrective measures defined in the project and verifying their effectiveness.

In 2008 this environmental supervision has been reinforced. The greatest effort has been carried out in the supervision of new lines and has been focused on the communication of the environmental requirements and guidelines to be followed by the different contractors in the execution of their respective works.

In order to obtain a continued environmental supervision, in 2008 specialised companies have been contracted to give continuous support at the site and their activity is subject to our constant revision.

This permanent environmental supervision has covered 65% of line works carried out in 2008, corresponding to 27 new lines and 17 new substations. (See Annex: *New facilities under construction*).

## Supervision of construction activities

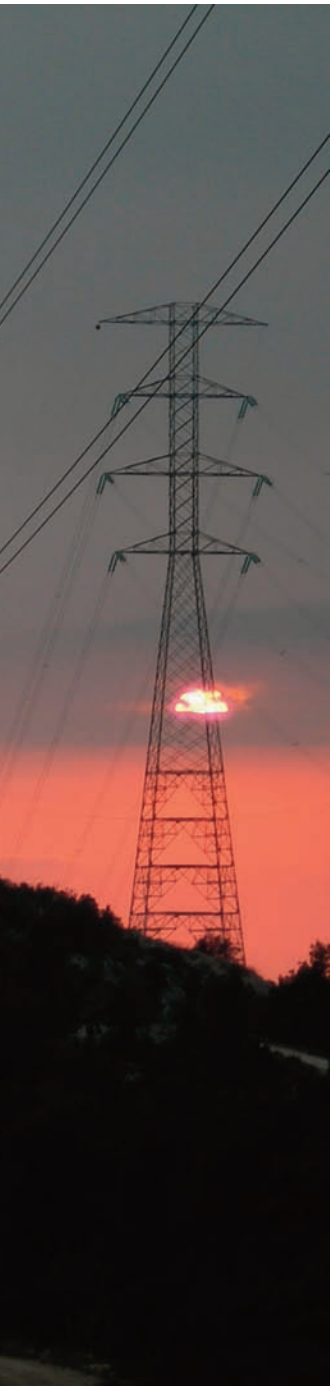
| | Total works supervised | Permanent environmental supervision (contracted) |
|---|---|---|
| Substations | 17 | 2 |
| Lines | 27 (1,154.5 km) | 11 (753.76 km) |

New line and substation construction activities susceptible to generating environmental aspects are the following:

## Activities generating environmental aspects

| |
|---|
| Storage and transfer of oils and fuels |
| Waste storage and management |
| Work camps (substations) |
| Compaction |
| Clearing, pruning and felling |
| Excavation and filling work |
| Concreting and container cleaning |
| Hanging/laying of conductor and ground cables (lines) |
| Equipment assembly (substations) |
| Use of machinery |

The environmental aspects which are significant in the construction of new lines and substations are those detailed in the following table:



Ascó-Begues Line.

## Significant environmental aspects in the construction of lines and substations

| | Environmental elements susceptible to impact | Impact |
|---|---|---|
| Affecting the fauna | Biological | Altering population behaviour |
| Affecting vegetation | Biological | Eliminating vegetation |
| Affecting the soil | Physical | Possible modification of physical characteristics of soil, erosion etc. |
| Affecting the historical heritage | Socioeconomic | Potential landscaping impact, affecting deposits, crops, etc. |
| Risk of fire | Physical/Biological/ Socioeconomic | Potential degradation |
| Risk of oil and fuel spillage during use of machinery | Physical | Potential contamination of soil and water sources |
| Risk of dumping oil and fuel during storage and transfer of oil and fuels | Physical | Potential contamination of soil and water sources |
| Risk of oil spills during assembly of equipment | Physical | Potential contamination of soil and water sources |
| Risk of affecting water during land movements | Physical | Potential contamination of soil and water sources |
| Risk of affecting birdlife | Biological | Potential collisions |
| Non-hazardous waste | Physical | Generation of waste |
| Hazardous waste | Physical | Generation of waste |

During 2008, we have applied preventive and corrective measures in new line and substations in an attempt to attenuate the effect that the construction of this facility causes to the environment.

## Preventive measures

- Archaeological survey
- Hoisting of towers with boom crane
- Storing of topsoil
- Installation of bird-saving spiral
- Transference of nests

## Corrective measures

- Restoring of slopes via hydro-sowing and top soil
- Regeneration of paths/walkways
- Landscaping
- Forest repopulation

Also, during this year the revision of the environmental criteria of the construction process was begun, with a revision of the documentation to be included in the projects and to be given to contractors and also the revision of internal documentation associated to the process. Within these activities, the implementation of the environmental work certification was included, which has yet to be addressed. (Objective regarding revision of the environmental criteria pertaining to the construction process as included in the 2008 Environmental Programme, fulfilled 20%).

## PROTECTION OF FLORA AND FAUNA

During 2008, 107 km of lines have been marked with bird-saving spirals, 51 of them corresponding to newly constructed lines (Andalusia, Catalonia, Extremadura, Galicia and Valencia).

L/220 kV Pobla-Escalona.

Noteworthy measures during the year have been the following:

## Protection of flora and fauna

### L/ Pesoz - Salas

| | |
|---|---|
| **The hanging of cables by helicopter** 16.071 km (2 of them in the protected Sierra de Carondio and Valledor) for the protection of leafy native species (birch, maple and ash) pine trees and eucalyptus. | |
| **Hoisting with a boom crane** in protected areas: Sierra de Carondio and Valledor and SAC Sierra de los Lagos to reduce the impact on «non-high priority habitats heath-gorse shrub-lands and heather shrub-lands; broom-hare and formations of white heather; leafy native species (birch-maple and ash); and to "sites of community importance" code UE4030: dry heaths. | |

### L/Penagos- Güeñes

| | |
|---|---|
| **Biological stoppage** from February to August due to nesting of the African Vulture. | |
| **Stoppage of works** on a tower in the River Asón (SAC) during the salmon spawning season. | |
| **Adequate design of accesses:** 15 km of new access paths have been opened, passing to some extent through the San Bartolomé de los Montes (Voto) beech grove and no mature trees have been cut (only some pruning was done). | |
| **Construction of a path** (as of the prolongation of two accesses), by request of the Forestry Service of Cantabria to facilitate the access of Fire fighting Brigades. | |

### L/ Senmenat- Vic- Bescanó

| | |
|---|---|
| **Setting up a Monitoring Committee** with the Environmental Department. | |
| **Minimising the creation of new accesses:** all the accesses and towers have been agreed on with the forestry service of the autonomous community and the use the existing network of roads and paths has been maximised. (Reduction of impact impossible to determine) | |
| **Reduction of the width of the felled area** (from 40x40 m to 16x20 m) to protect vegetation | The felling of 8,700 trees was avoided, primarily pine trees (Pinus sp), holm-oak (Quercus ilex), oak (Quercus humilis) y chestnut (Castanea sativa) |
| **Boom crane for hoisting** operations in the wooded areas to minimise the impact on vegetation. | |
| **Over-elevation of 91 towers** to protect the wooded areas (approximately 96% of the line towers). | The felling of 81,000 trees was avoided. (Species indicated in the previous paragraph) |
| **Hanging by helicopter** of 5.2 km. (This is the total hung this year) | The felling of 1,660 trees was avoided; primarily pine trees (Pinus halepensis). |
| **Transplantation of holly trees** (Ilex Aquifolium) (with administrative authorisation), situated in the locations of the towers. | |

### L/ Tordesillas- Segovia

| | |
|---|---|
| **Hoisting** of 50 towers with **boom crane** | The felling of 1,950 pine trees (Pinus Pinaster y Pinus Pinea) was avoided. |
| **Manual hanging** of rigging rope (20 km) | |
| **Hanging by helicopter** of 8.5 km | |

## PROTECTION OF ARCHAEOLOGICAL HERITAGE

During 2008, archaeological supervision was carried out during the movement of earth for construction works for 10 lines and 2 substations. (L/Penagos-Güeñes; L/Soto-Penagos; L/Muruarte-Cordovilla-Orcoyen; L/Cabra-Guadame, L/Arcos- La Roda; L/E/S en Cártama de la L/Tajo-Cabra; L/Aparecida-Tordesillas; L/Tordesillas–Segovia; L/Segovia-Galapagar; C/Zal-Zona Franca (cable); SE. de Penagos y SE. de Cártama).

The following activities are noteworthy:

### Protection of archaeological heritage

| | |
|---|---|
| **L/ Sentmenat-Vic-Bescanó** | |
| | Possible deposit sites next to works being carried out have been **marked out**, so that they are not affected by the activities going on in their surroundings. |
| | Excavation works and the protection of a Roman road in the vicinity have been carried out. (municipal limits of Centelles) |
| **L/ Pesoz –Salas** | |
| | With the aim of protecting «Castro de Perluces», a **modification of the project** was made to change the positioning of a tower. A study was carried out to compare alternatives for the new location of the tower and a new access route was submitted to PEIA (Preliminary Environmental Impact Assessment), obtaining a positive result (Environmental and of the Principality). |
| | At the request of the Principality a study regarding the effects an access to one of the towers might have on heritage, was carried out. |
| **L/Penagos-Gueñes** | |
| | Complementary archaeological works for the opening of a new access in the vicinity of «la cueva de Cobrantes» took place. |
| **ROMULO Project** | |
| | **Survey of the underwater cables to the Balearic Islands:** In the vicinity of Sagunto Port, the analysis of the two stretches of cable was undertaken on the seabed (in carrying out the EIA the main cable had been exclusively studied). Said analysis has carried out by means of the development of an underwater archaeological survey in the coastal section (up to 4.5 km) for which trials were carried out every 25m (more than 310 soundings) and by means of complementary geophysical analyses with the objective of confirming the nonexistence of sunken archaeological remains on the seabed (rising from the bottom with lateral sweeping sonar, use of a proton magnetometer and a silt penetrator). |

400 kV Line Setmenat-Vic-Bercarnó. Hanging of cable by helicopter

## LANDSCAPING:

This has been carried out on 5 substations and 1 line with the objective of reducing the visual impact and integrating the facilities into the surroundings.

| Facility | Action |
|---|---|
| SE. Brovales | Restoration of the plot of land with topsoil and planting of 14,000 specimens of: oak, cork oak, ash, wild olives, yellow elder, mastic, rosemary, rose bushes and oleander. |
| SE. Pesoz | Construction of a jetty wall. Modification of the drainage points of the substation to avoid soil erosion. Hydro-sowing of all slopes of the substation. |
| SE. Sala | Providing of topsoil and sowing seeds on all slopes of the substation. |
| SE. Salteras | |
| SE. Totana | Landscaping by providing plantations of trees indigenous to the area: olive trees and palm trees. |
| L/Penagos -Güeñes | Reinforcement of slopes and hydro-sowing of herbaceous and bush-like plants. |

## PROGRAMMES OF SOCIAL AND ENVIRONMENTAL INTEGRATION OF THE NEW FACILITIES:

> **REMO Project**: Second interconnection cable Spain-Morocco

Work continues on the compensatory measures initiated in 2006 of the second Spain-Morocco interconnection. The project, declared of Communitarian interest by the European Union and financed by the EIB (European Investment Bank) and by the ABD (African Bank for Development), which crosses a protected area categorised as SAC, denominated El Estrecho Natural Park (Tarifa), and which is included in the Natura 2000 Network zones.

## Compensatory Measures

**Assessment of the influence of the underwater activities on the seabed of El Estrecho (The Strait) Natural Park.**

Development state and forecasted conclusion:
Pending authorisation of Culture department to continue with the installation of the anchorages.

**Protection and regeneration of coastal areas with threatened flora: elimination of invading species and restoration by means of sowing or plantation of native species: junipers (Juniperus communis macrocarp), wild olives, (Olea europaea) etc. In addition, it will include the complementary measures for their protection: fencing, adjusting cattle trails, beach paths, signalling, etc.**

Development state and forecasted conclusion:
Elimination of invading species (carpobrotus and eucalyptus) completed.
The conclusion of the restoration is scheduled for the first quarter of 2009.

**Activities for the conservation of rivers and coastal streams in the southern half of the province of Cadiz.**

Development state and forecasted conclusion:
Finalised the characterisation of the river basins and identification of wells.
Study of Aphanius baeticus from the Cyprinodontidae family - Species in danger, according to the red list of the UICN - pending final conclusions in January 2009. Pending development measures for wells in agreement with land proprietors.

**Study of the incidence of the marine electricity interconnection between Spain and Morocco in the biological communities linked to the seabed.**

Development state and forecasted conclusion:
Developed first stage of the study, its development includes campaigns and works that include 2009.

**Socioeconomic analysis of the industry of the observation of cetaceans in Andalusia, with the purpose of analysing the possibility of adjustment of part of the Voracera fleet to the activities of active and ecological tourism in El Estrecho (The Strait) Natural Park.**

Development state and forecasted conclusion:
Finished in the first quarter of 2008.

**Studies on the black spot sea bream (Pagellus bogaraveo) in the Strait of Gibraltar**

Development state and forecasted conclusion:
Sampling campaigns finished, the closing report will be released in the first quarter of 2009.

**Study on the migration of the Atlantic tuna (Thunnus thymus) in relation to sexual maturity and spawning in the Mediterranean**

Development state and forecasted conclusion:
Sampling campaigns finished, the closing report will be released in the first quarter of 2009.

**Acquisition and management of lands of ecological importance. Analysis, results and economic balance of the said lands.**

Development state and forecasted conclusion:
Pending consensus with the Autonomous government of Andalusia due to the difficulty of acquisition of lands which meet the required conditions.

**Construction of water purifiers.**

Development state and forecasted conclusion:
Finalised with the commissioning the water purifier in the summer of 2008.

Other data of interest in relation to the minimisation of the effects on the biodiversity are the following:

- During 2008, 30km of line in the Natura 2000 Network was commissioned, in which precautions relating to construction work were maximised. This assumes that 10.48% of the total was constructed in SAC and 0.25% in SPAs.
- None of the substations constructed in 2008 are located in the Natura 2000 Network zones.

## 5.3 ENVIRONMENTAL ACTIVITIES IN FACILITIES IN OPERATION

The following lists the activities carried out in facilities in service capable of generating environmental issues.

| Activities generating environmental aspects |
|---|
| Presence of the building |
| Presence of the line |
| Presence of the substation |
| Energy transmission and transformation |
| Maintenance of gardens/green areas and switchyards |
| Maintenance of line corridors |
| Maintenance of towers |
| Use of machinery in maintaining lines: |
| Use and maintenance of equipment: |
| Generators |
| Fuel tanks |
| Evaporative condensers |
| Air conditioning equipment |
| Intensity transformers and capacitor banks |
| Power machines |
| Auxiliary transformers |
| Oil collection pits |
| Equipment with sulphur hexafluoride |
| Transfer of oil for equipment maintenance |
| Collection and storage of contaminating material |
| Consumption of natural resources |
| Waste |

Of all the environmental aspects identified, those which proved most significant after the assessment in 2008 are listed below. For each one of them steps have been taken which are described throughout the publication.

| Significant environmental aspects (1) | Environmental elements susceptible to impact | Impact |
|---|---|---|
| Environmental impact by clearing, pruning and felling. | Biological | Elimination of vegetation |
| Environmental impact due to consumption of electricity and water. | Physical | Reduction of natural resources. |
| Risk of affecting the environment due to leaks or spills of oil from power machines, power machine pits and auxiliary transformers. | Physical | Potential contamination of soil and water. |
| Risk of affecting the environment due to fire and/or explosion of power machinery and auxiliary transformers. | Physical | Potential contamination of soil and water. |
| Risk of affecting the environment due to leaks or spills of oil in equipment containing PCBs. | Physical | Potential contamination of soil and water. |
| Risk of affecting the environment by spillage from fuel storage tanks. | Physical | Potential contamination of soil and water. |
| Storage and disposal of hazardous waste. | Physical | Waste generation. |

| Significant environmental aspects occasionally detected (2) | Environmental elements susceptible to impact | Impact |
|---|---|---|
| Effect on birdlife due to the removal of bird nests | Biological | Alteration of species behaviour. |

*(1) Significant aspects in the majority of work centres.*
*(2) Significant aspects in just two work centres.*

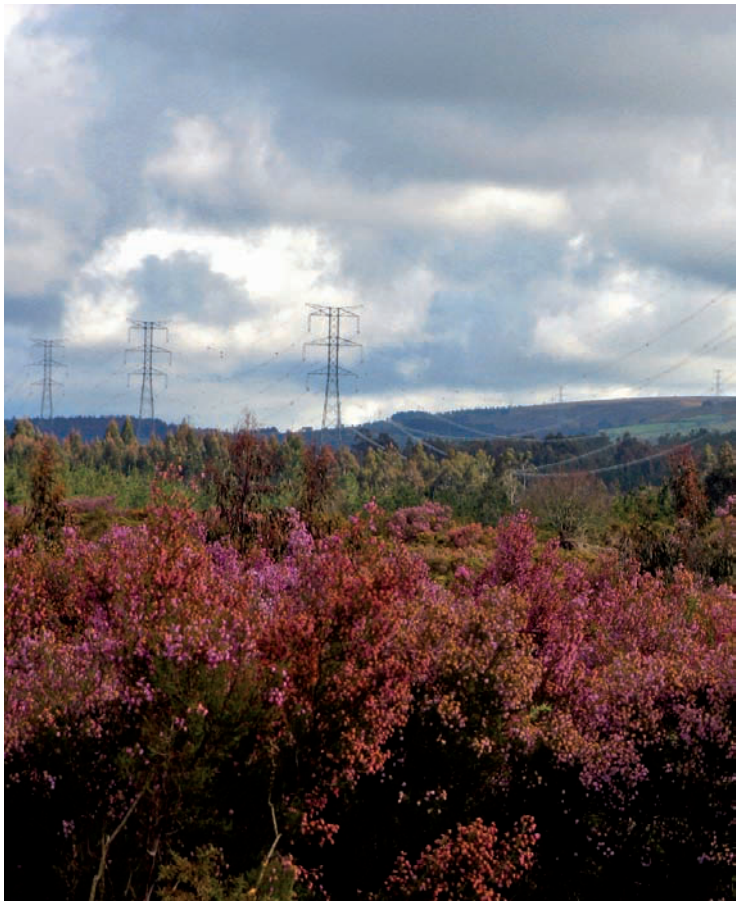
The activities carried out during the year associated to the improved management of environmental information of Red Eléctrica's assets, have concentrated on implementing a Geographical Information System (GIS) of Red Eléctrica facilities. This system allows the necessary georeferenced cartographic data to be obtained for its correct environmental management by spans and by towers. Along this same line of action for the development of a "Portal" for inventory and management of environmental information regarding assets, work is being done on updating the IT management system for the information associated to the Environmental Management System, but to date the rate of progress has been slower than expected. (Objective regarding the development of a Web Portal for the management and inventory of information regarding Red Eléctrica's assets as included in the 2008 Environmental Programme, 50% fulfilment).

Of all of the environmental activities carried out during the maintenance of facilities in 2008, the following are noteworthy:

## ACTIVITIES DIRECTED TO THE PROTECTION OF BIODIVERSITY

### Vegetation

During 2008, action plans for felling of trees and pruning of vegetation in Andalusia and Castilla-La Mancha have been drawn up, as established in the relevant collaboration agreements. With these plans it has been possible to expedite the administrative authorisations, identify fire risk zones and come closer to the personnel of the autonomous communities.



Even so, the demands regarding environmental authorisations are very high. In Castilla-La Mancha, since Law 4/2007 on Environmental Evaluation came into force, all the activities regarding opening corridors must be put through this process, which lasts approximately 6 months, because these activities imply the elimination of natural vegetation cover which affects over 1,000 metres in total or in an accumulation of sections of lines .

In addition, in the majority of the Autonomous Communities, the maintenance activities which affect stream vegetation require authorisation by the corresponding Hydrographic Confederations. Some, as in the case of Castilla-La Mancha, ask for a favourable report from the Department of Culture.

Also, of the 85 modifications to facilities in-maintenance and which were environmentally analysed in 2008, 29 have not required any processing, 25 require environmental communication in Castilla and Leon, 23 still require processing (not yet initiated) and for 8 the processing has begun, but to date no resolution has been obtained.

Other noteworthy measures are the following:

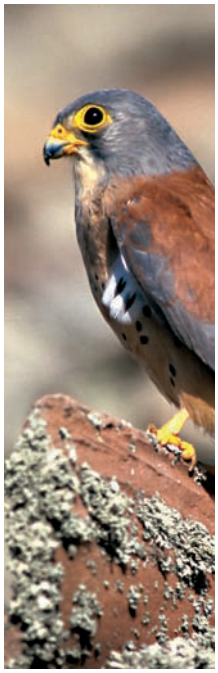
**Protection of vegetation**

| | |
|---|---|
| L/Cartuja-Pinar del Rey | |
| | **Stoppage of works during forest fire risk season** in the National Park of Los Alcornocales. |
| | **Analysis of crane** placement to minimise possible effects on the area. |
| L/Begues-Vandellòs | |
| | **Increase of tower height** to avoid the felling of a 110 year-old pine tree situated in Vilallonga del Camp, declared a national monument in 1987: «El pi del Mestre». |
| All maintenance lines (depending on need) | |
| | **Selective felling of woodland** whilst maintaining security corridors, respecting underbrush and small sized arboreal species of slow growth and carrying out pruning (instead of felling) of protected species. |

### Birdlife

In addition to the R+D+i programmes associated with the protection birdlife *(see chapter 6)*, the following actions are worth highlighting:

> **Programme of re-introduction of the black vulture (Aegypius monachus) in Catalonia.** Coordinated by the Native Fauna and its Habitat Rehabilitation Group (GRENF) and the Autonomous government of Catalonia (in collaboration with the Autonomous government of Extremadura, the Community of Madrid and Caixa Catalunya). The project is developed in the pre-Pyrenean area of Lerida and considers not only carrying out actions in the outdoors (ringing and monitoring, surveillance cameras etc.) but also actions of dissemination and education. (November 2008-September 2012). This has arisen from the programme for the recovery of vultures in Europe, which began in France with Spanish tawny vultures and continued with the development of recovery programmes with several administrations of Italy, France and Spain. The aim of the re-introduction in Cat-



*Falco naumanni.*

alonia is to create new colonies forming natural corridors in the Mediterranean basin. The participation in this programme originates from possible future electricity facility projects in the Pyrenees area located in the Lerida region.

> **Lesser Kestrel** (*Falco naumanni*, vulnerable species according to the red list of the UICN): carried out in 2008, in collaboration with GREFA the Native Fauna and its Habitat Rehabilitation Group. It consisted of the captive breeding of this species and the introduction of specimens in various areas of the Community of Madrid in order to improve the populations.

> **Native flora of El Estrecho (The Strait) Natural Park and Kentish Plover** *(Charadrius alexandrinus)*: As a complement to the monitoring plan of the Birdlife in the Natural Landscape of Los Lances Beach, a series of complementary measures of an informative nature have been carried: placing of indicator notices and the publishing of explanatory leaflets.

> **Monitoring of collisions with lines**:

The collision of birds with transmission lines is usually occurs with ground cables (which protect the lines from electrical discharges during storms), and as they are of less diameter than the transmission lines they are less visible. Therefore, actions aimed at reducing the risk of collision are based on the marking of these cables with devices that increase their visibility.

During 2008, 107 km of lines have been marked with bird-saving spirals, 56 of them corresponding to lines already were in operation.

The marking of lines is a result of the work carried out in collaboration with the different administrations. A diagnosis of the lines present in the territory is carried out, identifying the risk points and requesting the lines be made suitable. This year, lines have been marked in Andalusia, Aragon - Life-Nature Project *"Adapting electricity lines in the SPAs of Aragon"* – Navarra, Basque Country – multi-year contracts signed with the Provincial council of Alava and Vizcaya for the adjustment of lines – and La Rioja.

To date a total of 890 kilometres of line have been marked of which 255 are located in special protection areas for birds (SPAs) and the rest in areas close to nesting or feeding sites of sensitive species, migratory routes, ultimately in those areas where species likely to collide are detected.


400 kV Line José María Orioñ-Arañuelo.
Works on facilities without removal of nest.

> **Monitoring of nesting on the towers:**

The towers for power lines are used by many species of birds in those areas without other suitable places, for hunting – as a place for perching or for taking apart the prey-, for rest areas -roosts-, for breeding -supports for the nests-, or as shelters.

> **White stork** *(Ciconia ciconia)*: The monitoring of towers where storks build their nest during the nesting season is carried out annually. In 2008, a total of 863 towers have been inventoried, these being distributed in 41 lines located in the communities of Andalusia, Castilla-La Mancha, Castilla and Leon, Extremadura and Madrid. The global efficiency of the measures has been calculated at over 56% (percentage of nests located in non-conflictive points in towers protected by nest building deterrents).

In agreement with the data of the last census, the evolution of the White Stork population in Spain is shown in the following table:

**Evolution of the white stork population in Spain**

| Census year | Nº of pairs registered |
|---|---|
| 1992 | 10,000 |
| 1994 | 16,643 |
| 2004 | 33,217 |

*Information - extracted from "The White Stork in Spain. VI International census (2004)" (SEO/BirdLife)*

Other species of birds exist, such as Corvidae and predatory birds, which constantly use the towers and substations.

## ACTIVITIES REGARDING THE PREVENTION OF POLLUTION:

During 2008, improvements have been made to facilities (Objective regarding improvement activities in substations to prevent contamination of soil as included in the 2008 Environmental Programme, 40.4% fulfilment)

- Adjustments to the system for containing oil spills from power machines in eleven substations.
- Adjustments to oil spill containment systems in auxiliary machines in six substations.
- Construction of five fuel storage containers.
- Repairing of two pieces of equipment which showed oil leakage.
- Cleaning works for gravel and soil contaminated by hydrocarbons in four substations.
- Improvements in waste storage in ten substations.
- Revision of the state of compressors in six substations.
- The Plan for the decontamination/elimination of equipment contaminated with PCBs is being executed. At present Red Eléctrica has inventoried 18 pieces of equipment (power machines and auxiliary transformers with more than 50 ppm). During this year the decontamination of a power machine was carried out.

Fitting of oil collection pits in power machine.

These improvement activities were proposed based on the data obtained through the analyses of the environmental state of substations, which began in 2007, and on the environmental supervision visits which are carried out by environment technicians, recently incorporated in the territorial areas. In 2008, the progress in the updating of information regarding the environmental state of the assets of Red Eléctrica was low. This was due to the lack of the implementation of the corresponding IT application which would allow the recording and analysis of information, which is still a work in progress. (Objective regarding updating the environmental inventory as included in the 2008 Environmental Programme, fulfilment 0%).

Installation of acoustic screens

## ACTIVITIES REGARDING NOISE CONTAMINATION

During 2008, work has been carried out regarding the standardisation of the design of substations. In this standardisation, the requirements have been defined so that the facilities are prepared, from an engineering point of view, for the installation of acoustic screens next to the transformer banks – should they be necessary. (Facilities which at first, due to their location, do not require of noise reduction measures may, due to changes in circumstances, generally by city-planning developments, begin to cause annoyance and require corrective measures).

## ACTIVITIES REGARDING THE CONTROL OF ELECTROMAGNETIC FIELDS

Over recent years, electric and magnetic fields have generated an enormous amount of social unrest and Red Eléctrica is fully conscious of this. Although it is certain that this unrest has been calmed considerably (thanks to the dissemination of information and investigation by the scientific community and international organisations), Red Eléctrica remains fully alert to the new innovations which appear on this matter at a world-wide level. It is also participating in various working groups and is maintaining a high commitment to the population, dealing with public concern and collaborating with both the Administration and Institutions.

During 2008, electromagnetic measurements have been performed as a result of consultations extended to Red Eléctrica in Galapagar, Montecarmelo, Algaba (Seville) and Los Ramos (Malaga), having recorded levels much lower than those established by the EU.

More information regarding this environmental issue can be found in chapter 6.

## EMISSION CONTROL

In March 2008, REE signed a Voluntary Agreement with the Ministry of the Environment for the reduction of sulphur hexafluoride (SF6) emissions in the electricity sector, along with the Grouping of Manufacturers of Electrical Equipment Goods (SERCOBE) and the Spanish Electric Industry Association (UNESA).

The Agreement is within the activities covered in the "Plan of Urgent Measures" contemplated in the Spanish Climate Change and Clean Energy Strategy, Horizon 2007-2012-2020, proposed by the National Council for Climate whose objective is to achieve the reduction in greenhouse gas emissions allowing Spain to fulfil the commitments derived from the Kyoto Protocol for the period 2008-2012.

The work of REE in relation to SF6 is carried out within the framework of this Voluntary Agreement and is oriented towards satisfying all the agreed points.

During 2008 an internal working group was created "Integral Improvement of the SF6 Management and Emission Reduction". At present a complete revision of the SF6 management is being carried out (inventory, control of emissions and management of the gas at the end of its useful life), with the purpose of identifying the possible areas for improvement and to define emission reduction objectives. (Objective regarding the improvement in emission control as included in the 2008 Environmental Programme, 50% fulfilment)

## OTHER INDICATORS

### Environmental behaviour indicators

| | 2006 | 2007 | 2008 |
|---|---|---|---|
| Surface area situated in areas with a rich biodiversity (*) | | | |
| km of line in SAC/km of total lines (%) | 12.45 | 14.28 | 13.5 |
| Area of line in SAC/total area of SAC in Spain (%) | 0.099 | 0.12 | 0.12 |
| km of line in SPAs/km of total lines (%) | 9.31 | 11.6 | 10.8 |
| Area of line in SPAs/ total area of SPAs in Spain (%) | 0.10 | 0.14 | 0.12 |
| Nº of substations in SAC/ total nº of substations (%) | 7.06 | 8.98 | 11.8 |
| Nº of substations in SPAs / total nº of substations (%) | 5.70 | 7.3 | 9.6 |
| Objectives and programmes to protect and restore ecosystems and native species in degraded areas | | | |
| km of lines marked with bird-saving devices | 686 | 779 | 890 |
| km of lines marked with bird-saving devices /km of existing line (%) | 2.89 | 3 | 3.3 |
| km of lines marked with bird-saving devices in SPAs/ total km of line passing through SPAs (%) | 9.38 | 7.1 | 8.8 |

*(*) During 2008, work has continued regarding the update of the georeferenced inventory of facilities. Many of the variations in the displayed indicators are related to the increase of inventoried facilities.*

## 5.4. EFFICIENCY IN THE USE OF NATURAL RESOURCES

In our daily work we consume natural resources which form part of our environment and excessive consumption will lead to depletion. We are aware of this fact, and therefore try to work with a focus on reducing consumption of basic consumables such as water, electricity, paper, fuel, etc.

With the aim of raising awareness amongst Red Eléctrica employees regarding the efficient use of natural resources, during the last quarter of 2008 the **Eco-advice Campaign** was started in order to internally disseminate and promote information regarding best practices *(More information in chapter 7).*

### ELECTRICITY CONSUMPTION

Electricity consumption at the head office, the building in Tres Cantos and the extrapeninsular systems (Canary Islands and Balearic Islands), are not comparable to that of an average office. The head office comprises of a four-building complex dedicated to standard office activity. One of them houses the Electricity Control Centre (CECOEL) - where the coordinated operation and supervision in real-time of the generation and transmission facilities of the Spanish electricity system are conducted and also the Special Regime Control Centre (CECRE) - to control special regime facilities (renewable energies and co-generation). Tres Cantos houses the Grid Control Centre (CECORE), a back-up system to the CECOEL system in the Head Office. The three control centres require electronic equipment and air conditioning which continuously operates 24 hours a day, seven days a week. The extrapeninsular systems are comparable to that of CECORE (Tres Cantos).

Red Eléctrica's Head Office.

As a result of the integral energy audit carried out in 2007 at the head office, it was estimated that the consumption

of the CECOEL is 30% of the head office's global consumption. This percentage can also be extended to the centres in Tres Cantos and in the extrapeninsular systems.

The following table shows the evolution of the electricity consumption during the period 2006-2008.

| | 2006 | 2007 | 2008 |
|---|---|---|---|
| Control centres (kWh) | 2,859,298 | 2,931,339 | 3,028,521 |
| Work centres (kWh) | 8,806,546 | 10,985,124 | 10,872,067 |

| | 2006 (1) | 2007 (1) | 2008 |
|---|---|---|---|
| Emissions associated to the consumption of electrical energy (tonne (t) of $CO_2$ equivalent) | 4,599.8 | 5,487.2 | 5,481 |

* *Source used for the calculation: International Energy Agency 2006 (corresponding to Spain 2004, mixed generation)*
*(1) The data for 2006 and 2007 is different to that published in the 2007 report, since that data only took into account the centres equipped with electricity consumption meters.*

*Initiatives 2008, for the reduction of electricity consumption:*

> **Red Eléctrica eficiente**: Red Eléctrica eficiente is a "brand name" supported by a working group in which diverse areas of Red Eléctrica participate. This "brand name" will serve as an umbrella to bring together the activities oriented towards energy efficiency (which over the years have been carried out individually) and to promote new actions for improvement. This initiative tries "to label" or "brand name" all those projects or activities the company is carrying out or which promote energy efficiency. Its main objectives are:

- Make evident Red Eléctrica's strong backing for energy efficiency, with the commitment to evolve towards initiatives which contribute to reducing the effects of climate change.
- Facilitate knowledge transfer and exchange amongst the different areas, involving employees in Red Eléctrica's efficiency commitments and opening channels for the proposal of new initiatives.
- Convey to shareholders and all stakeholders Red Eléctrica's commitment to efficiency.

The projects and initiatives are grouped into different areas: Communication and awareness; Research / new Technologies and improvement projects. (Objective regarding consumption control as included in the 2008 Environmental Programme, fulfilled 100%)

> Participation in the **Spanish Energy Efficiency Technological Platform**: this platform is comprised of various working groups and amongst which other companies and institutions of the electricity sector can be found. Its aim is the innovation in energy efficiency technology, generating solutions through driving research and development of new techniques, products and services which because of their energy efficiency contribute to reducing the demand for energy.

## WATER CONSUMPTION

The table below shows the evolution of water consumption in the period 2006-2008. The water consumed at the premises of Red Eléctrica comes from diverse sources; municipal water mains, wells, and cisterns.

| | 2006 | 2007 | 2008 |
|---|---|---|---|
| Head Office ($m^3$) | 11,850 | 8,240 (1) | 18,161 |
| Head Office ($m^3$/employee) | 14,22 | 12,46 | 19,89 |
| Work centres ($m^3$) | 12.245 | 10.846 | 10.351 |
| Work centres ($m^3$/employee) | 38,5 | 27,52 | 25,18 |

*(1) The deviation of the data with regard to other years was due to a problem in the meter*

### Withdrawal by source (% of total)

| | 2006 | 2007 | 2008 |
|---|---|---|---|
| Cisterns | 0.64 | 1.17 | 0.62 |
| Wells | 3.52 | 7.25 | 30.73 |
| Municipal water mains | 95.85 | 91.58 | 68.65 |

## PAPER CONSUMPTION

The following table shows the evolution of the consumption of paper used to photocopy and print documents in all the work centres during the period 2006-2008. Red Eléctrica implemented a system based on a pay-per-use service, where the company contracted takes full care of the photocopiers installed in all the work centres and guarantees a more efficient use of them. Additionally, Red Eléctrica also has a document management system which provides easy access to information stored and reduces the number of paper copies.

| | 2006 | 2007 | 2008 |
|---|---|---|---|
| kg | 87,011 | 67,745 | 67,086 |
| kg/employee | 63 | 48 | 37.5 |

The following table shows the evolution of the consumption of paper used for publications during the period 2006-2008.

| | 2006 | 2007 | 2008 |
|---|---|---|---|
| Kg | 66,166 | 73,173 | 78,478 |
| % FSC * | - | 44.3 | 46 |

** Paper certified in accordance with the Forest Stewardship Council standards*

*Initiatives 2008, for the reduction of paper consumption:*

During 2008, several initiatives were put in place with the objective of reducing the consumption of paper in Red Eléctrica, the following are noteworthy:

- Use of 100% FSC certified paper for stationery products and paper used (A4 y A3) for printers.
- Use of USB pen-drives for the delivery and distribution, in electronic format, of the Annual, Corporate Governance and Corporate Responsibility Reports, equating to a **saving of 24,885.94 kg** of paper.
- Implementation of an IT system through which employee travel authorisations can be requested and processed, equating to a **saving of 75 kg** of paper.
- Christmas greeting cards issued exclusively in electronic format, equating to a **saving of 555 kg** of paper

## FUEL CONSUMPTION OF FLEET VEHICLES

The following table shows the evolution of the fleet vehicle fuel consumption during the period 2006-2008

| | 2006 | 2007 | 2008 |
|---|---|---|---|
| Off-Road vehicles/lorries (litres/100 km) | 10.2 | 19.81 | 19.74 |
| Company Cars (litres/100 km) | 7.70 | 6.89 | 7.28 |

| | 2006 | 2007 | 2008 |
|---|---|---|---|
| Emissions associated to the use of fleet vehicles (t of $CO_2$ equivalent) | 1,423.5 | 1,932 | 1,995 |

In addition, Red Eléctrica carries out initiatives to reduce other indirect consumptions of energy sources, such as fuel for employee transportation. A company bus service is made available to bring employees to work at the company head office (Madrid). The estimated fuel saving that this service represents is 28,190.25 L, which equates to a **reduction in emissions of 75.55 tonnes of $CO_2$ equivalent**.

Also, during 2008, holding meetings via videoconference was promoted. This initiative represented an estimated fuel saving of 28,057 L, which equates to a **reduction in emissions of 75.19 tonnes of $CO_2$ equivalent**.

*Initiatives 2008, for the reduction of fuel consumption:*

- **«Let's share a car» Campaign**: This was the winning proposal of the 2007 "Green Suggestion Box" contest. During 2008, the campaign was prepared and organised, allocating and designing a space on the company's intranet which allows users with similar work schedules and home addresses to organise themselves into groups in order to share their private vehicles to travel to work and was launched in January 2009. (Objective regarding promoting environmental best practices as included in the 2008 Environmental Programme, fulfilled 55.6%).
- **«Mobility Week» Campaign**: Coinciding with European mobility week, a contest on sustainable mobility took place and a draw was held amongst those with the correct answers, the winner received a bicycle.

## 5.5. WASTE

All the facility maintenance activities, as well as the construction of new facilities, generate different types of waste which are separated, stored and managed in the most suitable manner.

During **maintenance**, waste is derived from repairs, replacements, oil refilling, felling and pruning, accidents, etc. Given these different sources, it is very difficult to establish generation guidelines and therefore, reduction measures.

It is worth noting that the amount of waste generated in maintenance is proportional to the number of installations in service and given that this number has increased over the last few years, increases have also been reflected in the quantity of waste generated. During 2008, the most significant growth in the amount of waste, hazardous and non-hazardous, is associated to the increase in the maintenance of facilities and to the important campaign of refurbishment of assets that has been carried out. On the other hand, the decrease in hazardous waste is mainly attached to the number and characteristics of the accidents which occurred during this year

Nevertheless, we try to reduce the quantities as much as possible by carrying out the regeneration of transformer oil (extending its useful life) and trying to improve our processes.

Additionally we work to constantly improve waste management, trying to separate to the utmost, looking for the best options from our suppliers and encouraging best practices through training and awareness actions.

## Waste generated during maintenance activities (Amounts managed (kg))

| Non-hazardous Waste | 2006 | 2007 | 2008 |
|---|---|---|---|
| Mud from septic tanks | 51,412.6 | 177,148 | 73,149 |
| Scrap metal | 998,545 | 1,876,311 (1) | 1,372,185 (1) |
| Inert waste | ND | ND | 1,634,100 |
| Paper and cardboard | 73,405 | 78,652 | 76,565 |
| Toner | 343,6 | 186 (2) | 311 |
| Wood | 42,455 | 58,380 | 124,688 |
| Vegetable waste | ND | 8,801,300 (3) | 15,520 (3) |
| Non-hazardous electrical and electronic waste | 473 | 230 | 542 |
| Plastics | 187.67 | 0 | 0 |
| Vegetable cooking oils | 2,200 | 4,220 | 5,020 |
| Total non-hazardous waste | 1,169,021.87 | 2,195,127 | 3,286,559 |
| **Hazardous Waste** | | | |
| Used oil | 168,730 | 95,470 | 156,978 |
| Oil water mix | 0 | 110,960 (4) | 41,694 |
| Transformers with PCBs | 0 (2) | 2,413 | 46,834 (5) |
| Oils with PCBs | 0 | 520 | 82,874 (5) |
| Lead batteries | 311 | 338 | 582 |
| Nickel/Cadmium accumulators | 2,070 | 10,960 | 2,548 |
| Batteries | 89 | 114 | 34 |
| Hazardous electrical and electronic waste | 0 | 269 | 108,169 |
| Florescent tubes | 539 | 410 | 388 |
| Soil impregnated with hydrocarbons | 14,253 | 161,151 (4) | 161,127 |
| Containers containing hazardous substances | 1,113 | 1,604 | 985 |
| AAbsorbent matter, filtering materials, cleaning rags, protection clothes contaminated with hazardous substances | 59,287 | 371,184 (4) | 2,235 |
| Silica gel | 733 | 285 | 444 |
| Non-halogenated solvents | 35 | 325 | 0 |
| Halogenated solvents | 0 | 0 | 0 |
| Water based cleaning liquids | 0 | 50 | 200 |
| Paint waste | 183 | 0 | 0 |
| Insulation material (with or without asbestos) | ND | 8,680 | 0 |
| Laboratory chemical products containing hazardous products | ND | 8 | 75 |
| Total hazardous waste | 247,343 | 764,741 | 605,167 |

*ND – no data*

*(1) The majority of scrap generation is directly related with the refurbishment of facilities campaign.*

*(2) Since July 2006 the maintenance and replacement of equipment has been carried out by an external company, who is responsible for its correct waste management. Only toner not included in the contract has been accounted for.*

*(3) The majority of this waste was delivered to the owner, or incorporated into the soil. In addition, other vegetable waste has been generated to the same end and has not been included nor taken into account in the calculation of the total non-hazardous waste.*

*(4) It can be observed that most of the waste generation corresponds to that associated to accidents: oil water mix, contaminated soil and absorbent matter.*

*(5) Increase associated to the execution of the Plan for decontamination/elimination of equipment with PCB's.*

Waste storage.

## Type of Waste Management

| | |
|---|---|
| **Non-hazardous Waste** | |
| Mud from septic tanks | Treatment/Elimination |
| Scrap metal | Recycling |
| Paper and cardboard | Recycling |
| Wood | Valuation/Elimination |
| Vegetable waste | Incorporation into land/ Valuation / Elimination |
| Vegetable cooking oils | Valuation |
| Non-hazardous electrical and electronic waste | Recycling |
| **Hazardous Waste** | |
| Used oil | Regeneration / Valuation |
| Lead batteries | Recuperation of lead / Elimination |
| Nickel/Cadmium accumulators | Recuperation / Elimination |
| Batteries | Recycling / Elimination |
| Florescent tubes | Recycling |
| Earth impregnated with hydrocarbons | Elimination |
| Recipients containing hazardous substances | Recycling / Elimination |
| Absorbent matter, filtering materials, cleaning rags, protection clothes contaminated with hazardous substances | Valuation / Elimination |
| Silica gel | Elimination |
| Non-halogenated solvents | Regeneration |
| Paint waste | Valuation |
| Insulation material (with or without asbestos) | Elimination |
| Laboratory chemical products | Elimination |

During **construction** of a new facility or the modification of an already existing one, the waste generated is managed by the suppliers. As part of the environmental specifications of the project, they are provided with requirements regarding how to proceed in the final separation, storage and management of the waste. The compliance with these requirements is reviewed during the works supervision process and through control of documentation.

## Waste generated by construction activities

| Non-hazardous Waste |
|---|
| Excess earth from excavation |
| Forest waste |
| Rubble |
| Paper and cardboard |
| Plastics |
| Wood |
| Scrap |
| Solid urban waste |

| Hazardous Waste |
|---|
| Paint waste |
| Absorbent matter and rags contaminated with hazardous substances |
| Earth impregnated with hydrocarbons |
| Containers which have contained hazardous substances |

220 kV Line under construction. Puebla de Guzman.

## 5.6 ENVIRONMENTAL ACCIDENTS

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 that 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.

### Fire prevention measures

- Selective felling and pruning of trees and vegetation to clear paths and to maintain safety distances (in 2008, this has represented a cost totalling 12,712,352.85 Euros.)
- During the whole of 2008, contacts have continued to be established with different regional authorities to emphasis the importance of exchanging information, identifying preferential areas in which to act (depending on the fire risk) and coordinating the fire fighting actions in the event of a fire. Collaboration agreements are being signed as a result of these contacts *(See chapter 8)*.

Oil extraction from power machine.

### Preventive measures for leaks and spillages

- Preventive maintenance of equipment containing oil.
- Fitting of pits and/or trays below the equipment and/or storage of potentially contaminating substances.
- Manipulation of the equipment and contaminating substances on impermeable surfaces.
- Revision of the status of the spillage preventive measures applied to power machines (transformer and reactance units) and auxiliary transformers.

The following table is a summary of the nature of the accidents which occurred and the number of times during the last three years.

## Accidentes ocurridos

| | 2006 | 2007 | 2008 |
|---|---|---|---|
| Accidents occurred | 6 | 2 | 1 |
| Leaks and spillages of oils and hydrocarbons (1) | 6 | 2 | 1 |
| | | | |
| Maintenance activities | 15 | 24 | 7 |
| Fires due to line failure | 1 | 7 | 1 |
| Fire due to failure in substations | 0 | 2 | 1 (4) |
| Leaks and spillages of oils and hydrocarbons (2) | 10 | 7 | 4 |
| Leak of oil on the hydraulic section of the fibre optic cable | 0 | 1 | 0 |
| Transformer explosions (3) | 4 | 6 | 0 |
| Accidents causing $SF_6$ leaks | ND | 1 | 1 |
| Floods | 0 | 0 | 0 |

*ND - No data*
*(1) The volume spilt is minimal, only a few litres.*
*(2) Volume spilt is normally very small between 10 and 150 L.*
*(3) Volume of oil spilt as a consequence of explosions are not large, around 100L.*
*(4) The origin of the fire was the explosion of a transformer, it is counted as a fire due to its greater relevance.*

Finally, it should be pointed out that during 2008 a new analysis of environmental risks was conducted and the results included in Red Eléctrica´s Comprehensive Risk Management system. With this analysis, the most significant environmental risks have been evaluated and actions have been proposed to reduce them and indicators have been suggested in order to check their status.

Muruarte Substation.

# 06 Research and development

**In regard to research, development and innovation, we work with prestigious research teams and achieve objectives and results that add value to our business activities.**

7.07% of the total budget invested in R+D+I was dedicated to environmental projects, which represents an increase of practically one percentage point with regard to the prior year.

## BIRDLIFE

- **Bird flight diverter project:** Is carried out in collaboration with the Biological Station of Doñana (CSIC). Began in 2004, its forecasted conclusion is April 2009. It consist of the study of a new design of a bird flight diverter device and the analysis of the effectiveness as compared to the spiral device (yellow, white or orange). According to the preliminary results obtained from field tests (lines in Huelva and Seville), the new model would prove more effective than the devices traditionally used.
- **Collision detector:** Is carried out in collaboration with the Migres Foundation and the Research Foundation of the University of Seville. This began in September 2008 and its forecasted duration is two years. The objective is the design of a possible impact detection system to be installed on grounding cables that would allow real-time detection of possible collisions and their location in order to act swiftly in the event of accidents. (Objective regarding the conservation of birdlife through the development of R+D+I projects as included in the 2008 Environmental Programme, 100% fulfilment).
- **Steppe birds:** Developed in collaboration with the Department of Biology of Doñana's Biological research station (CSIC) together with the Gypaetus Foundation. This began in July 2008, and its forecasted conclusion date is March 2012. Its aim is to design and test measures to minimise the impact of the lines on these birds, especially on the great buzzard, *Otis tarda* (vulnerable species according to the red list of the IUCN) and to improve their habitat.

> **Bonelli's Eagle** *(Hieraaetus fasciatus)* (R+D+i): Carried out in collaboration with the Department of Animal Biology from the University of Barcelona. Began in January 2007 and finished in July 2008. The aim was to study the interactions between the Bonelli's Eagle and the cables used for the transmission of electricity. (Objective regarding the conservation of birdlife through the development of R+D+I projects as included in the 2008 Environmental Programme, 100% fulfilment)

## VEGETATION

> **Posidonia** *(Posidonia sp.)*: Is developed in collaboration with the company TECNOAMBIENTE and includes the scientific supervision by the Centre for Advanced Studies in Blanes (Council for the Extension of Studies and Scientific Research and with the Ecology Department of the University of Barcelona). The project studies the viability of the temporary removal of small portions of meadows of oceanic posidonia to be subsequently replanted in its original site after a period of time, in an attempt to minimise the impact deriving from the works on the coastline. Tests are taking place in various locations of the Mediterranean Sea under different ecological conditions (this year the works have been restricted to the coast of Tarragona). Once the results are obtained, the intention is to draft an action protocol to be applied to the Spanish Peninsula - Balearic Islands Interconnection project.

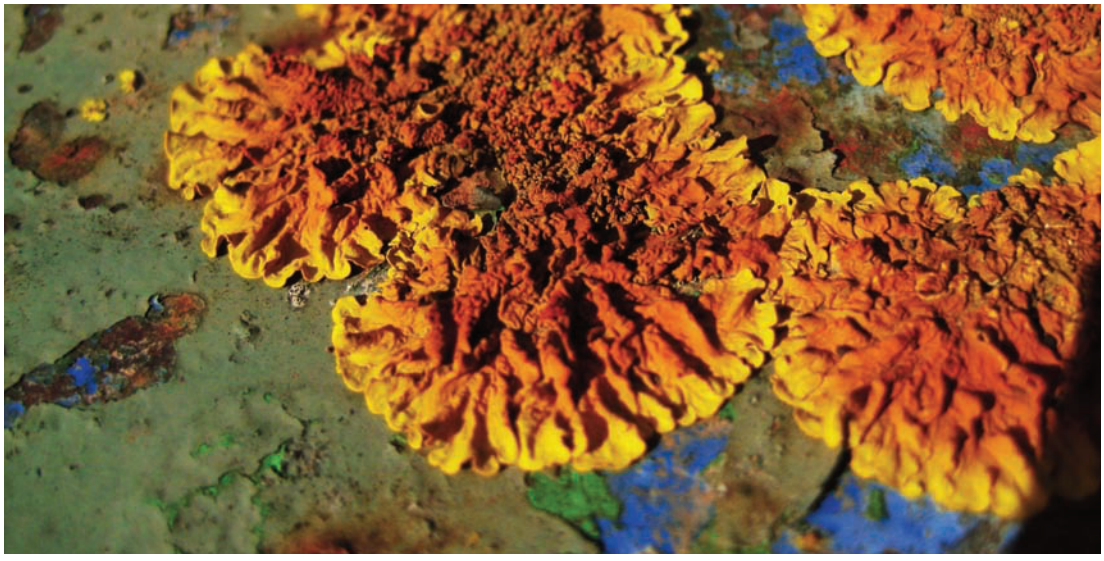
> **Project Vulcano**: Carried out in collaboration with Iberdrola, ADIF and INECO, began at the end of 2008 and its forecasted duration is until 2010. Its objective is the prevention of forest fires, by means of the development of an evaluation methodology and the prevention of conflict between electricity lines and railway networks with their surroundings, throughout their life cycle.

## ELECTROMAGNETIC FIELDS

In January 2008, results were jointly presented with the Institute of Applied Magnetism "Salvador Velayos" regarding the R+D project **"Currents induced in the human body by electromagnetic fields of Industrial Frequency"**, concluded the previous year. As a result of this project, a calculation model was obtained for calculating the density of induced current by external fields on the interior of the human organism. The second phase of the project began in 2008. This phase consists of trying to adapt the model for its application to real work situations of employees potentially exposed to "live" elements.

## ENERGY EFFICIENCY

We continue with the SOLIDI innovation project for the integration of **renewable energies and energy efficiency at the Company's Head Offices**. During 2008, a study has been carried out regarding the feasibility of installing a pergola to provide shade in the internal courtyard of the main building. From a structural point of view the design is feasible, although new designs are currently being studied to resolve problems of shade on one of the faces of the internal courtyard. The engineering aspect has been contracted for the development of the detail designs and management of the works.



# 07 Training and awareness

**We consider environmental training a strategic line in order to create a team increasingly concerned with protecting the environment. Training goes even further than the mere professional area, with the aim being to contribute to improving environmental habits in daily work and family life.**

During 2008, 8.66 % of the employees received specialised environmental training - both in classroom and on-line based courses – totalling 2,277 hours. In addition, Red Eléctrica has given a series of environmental courses to school children and university students.

The areas regarding environmental training for which courses were given are the following:

## Environmental training areas

| |
|---|
| Savings and Energy Efficiency within the office |
| Energy audits of buildings |
| How to address a Zero- $CO_2$ Project |
| Building value. Incentive for construction |
| The Climate Change Challenge. Initiative |
| Stabilising slopes |
| Iberian fauna and flora |
| Environmental Legislation Tool |
| Electricity Lines and Birdlife Protection |
| Environment |
| EFQM excellence model |
| Projects and Studies regarding environmental impact |
| The Distribution Sector and climate change |
| Environmental Awareness of the sector |
| Integrated quality, environment and risk prevention systems |
| Sustainability |

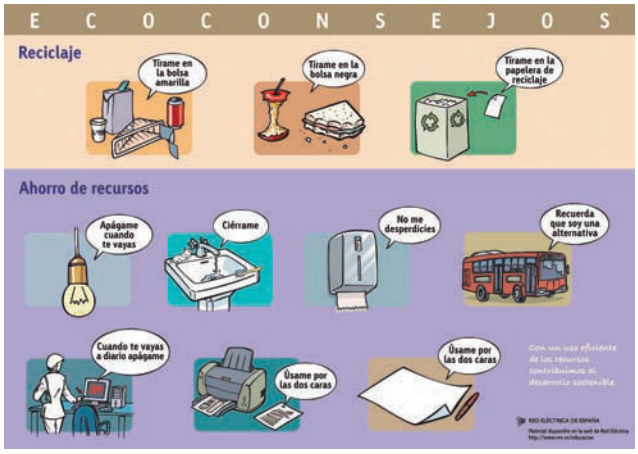
The task of awareness carried out during the year was done through the following communication channels.

> **Green Suggestion box**. Collects proposals from employees regarding sustainable practises at work and at home, with the aim of making each employee more environmentally aware. The best proposal received throughout the year is started up the following year and is awarded a prize of a weekend for two in a rural accommodation situated in a protected national space.

> **Eco-advice Campaign**. This awareness campaign regarding the efficient use of natural resources is directed towards the employees of Red Eléctrica. It began in the last quarter of 2008 and will last until the final quarter of 2009 and has consisted of:

- Publication of the 'kick off' campaign on the internal website.
- Design, publication and dissemination of eco-advice posters in all Red Eléctrica work centres. These posters are available in the educational area of the company's corporate website (www.ree.es).
- Monthly publication of the messages disseminated in the Eco-advice posters in the Agenda section of the internal website
- Publication of environmental news reports in the news section of the internal website.

> Quarterly **bulletin** of innovation on **electric and magnetic fields** 50/60 Hz. The bulletin has been published since 1999.


> **Internal portal «miRed»**. Presents user friendly information for our employees on environmental activities carried out by the company, and best practises for putting into operation in both the home and at work, external events and publications or articles on environmental topics promoted by the company.

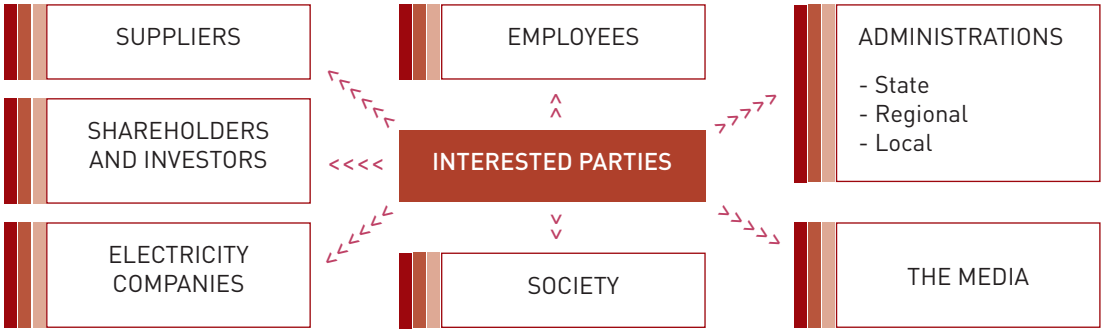
> **"Entre Líneas"**. A magazine which includes, important company events, news and activities and includes articles on the environment.

Additionally, in order to improve communication in the matter of the prevention of forest fires and fire fighting, diverse training courses have been imparted to **forest agents** of the Environmental Protection Service (SEPRONA) in: Cordoba, Granada, Huesca, Logroño, Pamplona, Santander, Seville, Soria, Teruel, Valencia, Valladolid, Zamora and Zaragoza, with a total of 473 participants..

In these courses subjects such as the identification of electricity facilities, activities of Red Eléctrica regarding fire prevention and procedures for tackling a forest fire in the vicinity of an electricity facility, as well as basic knowledge on the activities which Red Eléctrica carries out regarding the conservation of birdlife. It is forecast that this training will be extended to the rest of the autonomous communities. (Objective regarding environmental awareness of interested parties as included in the 2008 Environmental Programme, fulfilled 100%)

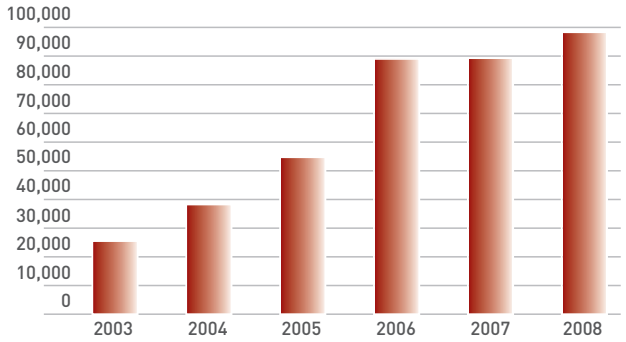
# 08 Communication

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




To do so, we make different environmental communication channels available to society. Noteworthy, is the annual publication of our environmental report and our website (www.ree.es) which contains a special section on the different environmental aspects of the company. During 2008, this section received 98,164 visits from numerous countries, representing a 10% increase with respect to 2007.

### Visits to the Environmental section




We attend to and monitor all enquiries and claims of an environmental nature which reach us via electronic mail or the DÍGAME service (Global Help Desk) specifically provided for the purpose on our website (www.ree.es).

During 2008, 197 claims were received via the DÍGAME service of which 27 were categorised as of an environmental nature (13.71% of the total), and 587 enquiries of which 216 were environmental (36.80% of the total).

The level of response to environmental claims, via the DÍGAME service, increased to 85.19% and the enquiries grew to 94.44%.

During 2008, 14 enquiries and 6 claims were received via the Environmental Department ´s electronic mail.

At present, we are working from a corporate perspective to unify the procedures by which we attend to the interested parties.

Through **collaboration agreements**, we work with institutions to carry out R+D+i projects or activities related with the environment and sustainable development, of interest to both parties.

## Collaborations with Public Administration

| | |
|---|---|
| Provincial Council of Álava | High voltage electricity facilities that reduce the prejudicial effects on birdlife. |
| Provincial Council of Vizcaya | High voltage electricity facilities that reduce the prejudicial effects on birdlife. |
| Generalitat de Catalunya (Environmental Department) | Definition of corridors or areas of lesser impact for the location of future electricity facilities. |
| Government of La Rioja | High voltage electricity facilities that reduce the prejudicial effects on birdlife. |
| Autonomous Government of Andalusia (Environmental Department) | Prevention and tackling of forest fires. |
| Autonomous Government of Castilla-La Mancha (Department of Industry and Employment) | Development of electricity infrastructures during the period 2002-2011 |
| Autonomous Government of Castilla La Mancha (Department of Environment and Rural Development) | Prevention and tackling of forest fires. |

In terms of fire prevention, noteworthy is the effort carried out to obtain collaboration agreements in preventing and tackling forest fires with different autonomous regions, with our sights set on covering the entire country in the medium term. These agreements include, amongst other things, the exchange of information which enables the autonomous regions to approve in advance Red Eléctrica's programme on revision and actions to prevent fires and identify the electricity transmission facilities, and also for Red Eléctrica to know the priority forest areas in each region.

## Collaborations with research centres

| | |
|---|---|
| Official School of Physicists | |
| | Electromagnetic Fields: Informative Leaflet |
| CSIC. Biological Station of Doñana | |
| | Framework Agreement for Collaboration |
| | Analysis of the useful life efficiency of anti-collision "bird-saving" devices and markers on electrical energy transmission lines |
| | Testing of measures on electricity transmission lines to minimise the possible impact on pseudo-steppe birdlife. Pilot project. |
| | Environmental assessment regarding the location of HV/LV towers within the route selected for the Lada-Velilla line |
| University of Barcelona | |
| | Research project: Use and interaction of Bonelli's Eagle (Hieraaetus fasciatus) with electrical energy transmission lines |

## Collaborations with other organisations

| | |
|---|---|
| Association for the integral development of the Sierra de Gata (ADISGATA) | |
| | Sustainability project |
| Fund for the protection of wildlife (FAPAS) | |
| | Environmental assessment regarding the route of the Lada-Velilla line |
| Entorno Foundation | |
| | Agreement by which Red Eléctrica forms part of the companies that collaborate with the Entorno Foundation, Sustainable Development and Business |
| Gypaetus Foundation | |
| | Project for the selection, creation and management of improved habitat areas for the great bustard and other steppe species |

Migres Foundation

Framework agreement for the execution of works in research, development and innovation projects and technical support within the environmental scope

Bird collision detector on electricity lines. Pilot project

Group for the rehabilitation of the indigenous fauna and its habitat (GREFA)

Framework agreement for collaboration

Re-introduction of the black vulture in Catalonia

Spanish Ornithology Society (SEO)

Framework agreement for collaboration

## Collaborations with communication and educational centres

Association of Environmental information Journalists (AIPA)

Environmental information

CONAMA 2008

Sponsorship

EXPOAGUA Zaragoza 2008

Sponsorship


Stand at the CONAMA 2008 Fair.

In addition, in 2008 we actively participated in **working groups, congresses and debates** organised by entities, bodies and associations of recognised prestige.

## Working Groups

| |
|---|
| National Congress for the Environment (CONAMA) |
| GT-ACU Noise Contamination |
| GT-BOS Forestry Management |
| GT-CERT New referentials in environmental certification |
| GT-DRES Harmonisation in the gathering of data regarding waste |
| GT-EEDF Certification of energy efficiency. Rating of building |
| GT-LUZ Light Contamination |
| GT-RIES Maps of natural risks in the city planning and territorial organisation |
| JT-COM Sustainability criteria applied to purchasing and contracting. The chain of suppliers |
| JT-ITRA Sustainable planning of the transmission infrastructures. Indicators |
| JT-TIR Integral Waste Treatment. Valuation and environmental aspects |
| CIGRÉ |
| WG C3.04: "Communication strategies within the sustainable development framework" |
| WG C3.06: "Environmental assessment of plans and programmes" |
| WG C3.09 : "Corridor Management" |
| AEC |
| Environmental committee |
| Excellence Club |
| Sustainability Excellence Club |
| UNESA |
| Working group on electromagnetic fields |
| Distribution environment working group |

## Discussion Forums

| | ORGANISED BY |
|---|---|
| Corporate social responsibility seminar: "The environmental aspect of REE's Corporate Responsibility" | AIESEC España. University Complutense de Madrid |
| Technical Training Days | National Committee of CIGRE |
| Technical Training Day. The Challenge of Climate Change. Sustainable initiatives in the Company. | AEC |
| Round Table of the Spanish Association of Global Compact. "The role of Spanish companies in the mitigation of Climate Change" | Spanish Association of Global Compact |
| Round Table: XIII Congress for the Quality and Environment in the automobile industry | Sustainability Observatory of Spain |
| "REE's Actions and policies regarding biodiversity" | Cátedra Holcim |

## Presence at fairs

| |
|---|
| Madrid por la Ciencia. (Madrid). |
| CONAMA 2008 |
| EXPOAGUA. Zaragoza 2008 |

Finally, and keeping in line with previous years, we do a great deal of work with respect to editing and distributing publications.

Distribution of publications in e-format through the website (www.ree.es), enable information to be made widely available to all interested parties and represents a very significant saving in natural resources. In 2008, a total of 290,208 downloads were made, almost 19% more than in the previous year.

The main publications in 2008 were:

> Environmental Report 2007

> Corporate Responsibility Report 2007

We continue to collaborate with the Publication *"Red Life"* - a magazine dedicated to nature in Andalusia which contains news articles and reports on endangered species – and have sponsored two species of birds: Lesser kestrel and the great bustard.

# 09 Collaborators

**We consider our suppliers and contractors to be an essential link in the development of our activities, and therefore our commitment to the environment extends to each one of them as an integral part of our work team.**

Our collaborators also assume our commitment to respect the environment in their daily work. Proof of this is the increase in the number of suppliers having an environmental management system in place which is certified by an external entity, or who are starting to implement one.

## Supplier behaviour on environmental issues

| | 2006 | 2007 | 2008 |
|---|---|---|---|
| No. of suppliers with environmental certification (1) | 198 | 195 | 188 |
| % of suppliers with certified environmental management systems (UNE-EN ISO 14001:2004 or EMAS registered) of those qualified | 38 | 40 | 41 |

*(1) Includes suppliers qualified and authorised by Red Eléctrica and whose services rendered or products supplied have some environmental consideration to take into account.*

On 31 December, 188 suppliers were identified (corresponding to 44 supplies), who carried out a service or supplied a product with environmental connotations. Of these 188 suppliers, 41% (77 suppliers) have an environmental management system in place that is either certified under UNE-EN ISO 14000 or registered in EMAS.

Although Red Eléctrica encourages its suppliers to have an environmental management system implemented, the promotion of training campaigns such as e+5 proposed in 2008 did not prove effective, therefore it is necessary to analyse new alternatives (Objective regarding supplier environmental awareness as included in the 2008 Environmental Programme, not fulfilled).

## Services considered as having high impact risk

| |
|---|
| Assembly and hoisting of line towers |
| Civil engineering on lines |
| Construction to increase capacity |
| Civil engineering on substations |
| Construction of underground lines |
| Other minor civil engineering on lines |
| Construction/modification of lines with lengths less than 15 km |
| Other minor civil engineering on substations |
| Lines - Turn-key projects |
| Felling and pruning of trees |
| Substations - Turn-key projects |
| Hanging of 2nd circuit of lines in proximity of live voltage |
| Telecommunication facilities - Turn-key projects |
| Hanging and clamping of ground cables or composite cables (OPMG) |
| Electro-mechanical assembly of substations |
| Hanging and clamping of conductors |
| Land movements in substations |

Starting in 2009, all companies wishing to be qualified for services which, from an environmental point of view, are deemed to have a high impact risk (in accordance with Red Eléctrica's environmental qualification criteria of suppliers) are obliged to have a civil liability insurance that includes coverage of damage to the environment.

During 2008, documentation was elaborated in order to promote best environmental practices amongst the companies contracted to carry out the following services: construction of facilities, gardening and cleaning of buildings. (Objective regarding supplier environmental awareness as included in the 2008 Environmental Programme, 55.6% fulfilment).

Hydro-sowing
Pesoz Substation.

# 10 Sanction proceedings and fines

**Red Eléctrica continues with its line of ongoing improvements thanks to the increasingly intensive involvement of each employee in their respective day-to-day activities.**

During 2008, a total of twelve sanction proceedings filed over recent years were resolved and settled through the payment of the corresponding fines.

The following table details the type of infringement committed and the total cost for those sanction proceedings resolved with a fine in the 2006-2008 period.

## Infringement committed

| | 2006 | 2007 | 2008 |
|---|---|---|---|
| Unauthorised construction of a path | 1.688,56 € | 100 € | - |
| Lack of maintenance of vegetation | - | 91 € | 992.15 € |
| Unauthorised felling and pruning | 7.486.00 € | 100 € | 1,372.00 € |
| Unauthorised occupation of mountains and highlands | - | 200 € | - |
| Fire | - | 91€ | - |
| Unauthorised overhead crossing of a water channel | - | 240 € | - |
| Total Cost | 9,174.56 € | 822 € | 2,364.15 € |

As there are sanction proceedings pending resolution for cases filed in 2006, 2007 and 2008, the above figures are modified yearly as the proceedings are concluded.

# 11 Environmental expenditures

**During 2008, we have made environmental investments in new facilities valued at 5,078,780.39 euros, equating to 0.82% of the total investments carried out in the transmission grid. These investments are associated to the execution of environmental impact studies of all projects, implementation of preventive and corrective measures, environmental supervision of electricity facilities under construction and the application of compensatory measures related to environmental aspects.**

Similarly, during 2008 we have incurred expenses for environmental protection and improvement totalling 17,150,041.92 euros, which corresponds to 2.76% of the total operating costs.

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

| | 2006 (€) | 2007 (€) | 2008 (€) |
|---|---|---|---|
| INVESTMENTS | 6,293,732.62 | 2,086,624.86 | 5,078,780.39 |
| **Engineering and construction of new facilities** | **6,293,732.62** | **2,086,624.86** | **5,078,780.39** |
| EXPENDITURES | 9,321,594.39 | 15,359,789.82 | 17,150,041.92 |
| **Environmental Management System** | **7,365.73** | **12,131.82** | **10,775.00** |
| **Preventive and corrective measures for facilities in service** | **7,489,289.72** | **13,791,959.98** | **14,782,548.01** |
| Contamination Prevention | 305,488.98 | 430,610.98 | 428,203.75 |
| Fire Prevention | 6,664,040.20 | 12,654,662.30 | 12,712,352.85 |
| Protection of birdlife | 225,921.67 | 194,255.84 | 682,533.20 |
| Environmental improvement of facilities | 188,903.42 | 403,132.54 | 402,414.24 |
| Electromagnetic field and noise management | 34,515.34 | 3,095.16 | 2,163.97 |
| Waste Management | 70,420.11 | 106,203.16 | 554,880.00 |
| **Research and Development** | **355,327.92** | **283,641.08** | **496,108.42** |
| **Training and Communication** | **451,197.98** | **408,741.33** | **711,919.10** |
| Training and environmental awareness programmes | 38,130.00 | 19,476.16 | 41,814.95 |
| Communication | 413,067.98 | 389,265.17 | 670,104.15 |
| **Environmental taxes and levies** | **16,820.04** | **37,232.61** | **207,719.39** |
| **Expenses for personnel dedicated to environmental activities** | **1,001,593.00** | **826,083.00** | **940,972.00** |

The following table shows the evolution of the percentage of environmental costs over total expenditures and total investments in the transmission grid, respectively:

### Percentage of investment and expenditure on the environment

| | 2006 | 2007 | 2008 |
|---|---|---|---|
| % of investment in environmental matters<br>Environmental investment / Total investment in transmission grid | 1.22 | 0.35 | 0.82 |
| % of expenditure in environmental matters<br>Environmental expenditure / total operating costs | 2.03 | 2.11 | 2.76 |

In addition to the costs indicated above, Red Eléctrica pays out a significant amount of money in environmental taxes due to the presence of our electricity transmission facilities in the autonomous regions of Catalonia and Extremadura.

### Environmental Taxes (€)

| | 2006 | 2007 | 2008 |
|---|---|---|---|
| Catalonia | 61,272.48 | 61,663.80 | 56,525.18 |
| Extremadura | 910,630.27 | 1,040,714.94 | 1,040,714.87 |
| TOTAL | 971,902.75 | 1,102,378.74 | 1,097,240.05 |

# 12 Frequency of the environmental impact declaration

**This *Environmental Report* has been published with the purpose of providing information to all stakeholders on the environmental activities carried out by Red Eléctrica during 2008.**

The Environmental Declaration is published every year in the form of an *Environmental Report*. However, should it be considered that no important changes have taken place since the last Declaration, it is published as an additional chapter of Red Eléctrica´s Annual Report.

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 certifies that the Red Eléctrica Environmental Declaration complies with the requirements set forth in Regulation (EC) No. 761/2001 of the European Parliament and Council, dated March 19, 2001, allowing voluntary participation by organisations in a Community eco-management and audit scheme (EMAS).

The next Declaration will be presented and published during the first half of 2010.

# 13 Glossary of terms

| | |
|---|---|
| ENVIRONMENTAL ASPECT: | Any element of the activities, products or services of an organisation that may interfere with the environment. *(European Parliament and Council Regulation no. 761/2001 dated 19 March 2001, allowing voluntary participation by organisations in a Community eco-management and audit scheme (EMAS)).* |
| ASIGNIFICANT ENVIRONMENTAL ASPECT: | Those environmental aspects having or which may have a significant impact on the environment. *(UNE-EN ISO 14001:2004 Environmental management systems. Requirements and guides for their use).* |
| ENVIRONMENTAL AUDIT: | A management instrument which includes a regular documented systematic and objective evaluation of the efficiency of the organisation, its management systems, and the procedures for protecting the environment with a view to facilitating operational control over practices that could have an impact on the environment and evaluates compliance of the environmental policies of the organisation, and in particular, its environmental objectives and goals. *(European Parliament and Council Regulation no. 761/2001 dated 19 March 2001, allowing voluntary participation by organisations in a Community eco-management and audit scheme (EMAS)).* |
| 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)* |
| MAGNETIC FIELD: | In a point in space, the force exerted on a live element located at that point. Expressed in amps 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 DETERRANT: | A device comprised of several elements made of galvanised steel, and of different sizes, that stops birds from nesting or resting in the places where the device is installed.<br>*(Own definition of REE).* |
| 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.<br>*(European Parliament and Council Regulation no. 761/2001 dated 19 March 2001, allowing voluntary participation by organisations in a Community eco-management and audit scheme (EMAS)).* |
| ENVIRONMENTAL BEHAVIOUR INDICATOR: | Specific expression providing information on environmental behaviour in an organisation.<br>*(Standard UNE-EN ISO 14031 Environmental management. General Guidelines).* |
| PLACE OF COMMUNITY IMPORTANCE (SAC): | LAn area that, based on the biogeographic region or regions where it is located, 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 contribute noticeably to maintaining biological diversity in the biogeographic region or regions in question. For the animal species occupying large areas, the places of community importance 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.<br>*(Directive (92/43), of May 21, regarding conservation of natural habitats and wild fauna and flora).* |

| | |
|---|---|
| ENVIRONMENTAL OBJECTIVE: | A general environmental objective, which has its origin in the environmental policy laid down by the organisation itself and which, insofar as is possible, is quantified.<br>*(European Parliament and Council Regulation no. 761/2001 dated 19 March 2001, allowing voluntary participation by organisations in a Community eco-management and audit scheme (EMAS)).* |
| ENVIRONMETAL POLICY: | The general objectives and principles of action of an organisation with respect to the environment, including compliance with all the regulatory provisions related to the environment and the commitment to continuously improve environmental behaviour; and shall constitute a framework for establishing and reviewing environmental objectives.<br>*(European Parliament and Council Regulation no. 761/2001 dated 19 March 2001, allowing voluntary participation by organisations in a Community eco-management and audit scheme (EMAS)).* |
| 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 to dispose of. In all cases, the items listed in the European Waste Catalogue (EWC) will be classified as such.<br>*(Law 10/1998, 2 April, on Waste).* |
| 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 wound onto the ground cable or conductor to mark it and reduce the risk of accident due to birds colliding with them.<br>*(Own definition REE).* |

| | |
|---|---|
| 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).* |
| ENVIRONMENTAL MANAGEMENT SYSTEM: | That part of the general management system that includes the organisational structure, planning activities, responsibilities, good practices, procedures, processes and resources to develop, apply, achieve, revise and maintain the environmental policy. *(European Parliament and Council Regulation no. 761/2001 dated 19 March 2001, allowing voluntary participation by organisations in a Community eco-management and audit scheme (EMAS)).* |
| SPECIAL BIRDLIFE PROTECTION ZONE (SPA): | An area of community interest for the protection of birds listed in appendix I of the Council Directive 79/409/EC of 2 April 1979, on the conservation of wild birdlife. |

# Validation

AENOR Asociación Española de Normalización y Certificación

## ESQUEMA EUROPEO DE ECOGESTIÓN Y ECOAUDITORÍA (EMAS)

**Eco-Management and audit scheme (EMAS)**

**VDM-01/004**

La Asociación Española de Normalización y Certificación (AENOR) a través de procesos de auditoría acreditados, certifica que:
***The Spanish Association for Standarization and Certification (AENOR) through acreditated audit processes certifies that:***

***RED ELÉCTRICA DE ESPAÑA, S.A.***

tiene implantado un sistema de Gestión Medioambiental que cumple los requisitos del Reglamento Europeo 761/2001
***has implemented an environmental management system that complies with the requirements of the European Regulation 761/2001***

para las actividades de:
***for the activities of:***

**LA INGENIERÍA, LA CONSTRUCCIÓN Y EL MANTENIMIENTO DE LÍNEAS Y SUBESTACIONES ELÉCTRICAS DE ALTA TENSIÓN, Y DE SISTEMAS DE TELECOMUNICACIONES.**
**LA OPERACIÓN DE SISTEMAS ELÉCTRICOS.**
**LA SEGURIDAD FÍSICA DE INSTALACIONES.**
**LOS PROYECTOS DE INVESTIGACIÓN, DESARROLLO E INNOVACIÓN TECNOLÓGICA.**
**LA CONSULTORÍA Y LOS SERVICIOS PROFESIONALES EN LAS ACTIVIDADES ANTES DESCRITAS.**

**THE ENGINEERING, CONSTRUCTION AND MAINTENANCE OF HIGH VOLTAGE, TRANSMISSION LINES AND SUBSTATIONS, AND TELECOMMUNICATION SYSTEMS.**
**THE TRANSMISSION SYSTEM OPERATION.**
**THE SECURITY OF PEOPLE, BUILDING AND FACILITIES.**
**THE RESEARCH, DEVELOPMENT AND TECHNOLOGICAL INNOVATION PROJETCS.**
**THE CONSULTING AND PROFESSIONAL SERVICES OF ABOVE ACTIVITIES.**

que se realiza/n en o desde los establecimientos:
***which is/are carried out in or from the establishments:***

**Sede Social**
**PO CONDE DE LOS GAITANES, 177**
**28109 - ALCOBENDAS**
**(MADRID)**

**VER DIRECCIONES INDICADAS EN EL ANEXO**

y que la información incluida en la declaración medioambiental se ajusta a los requisitos expresados en dicho Reglamento y ha sido validada con fecha 2009-05-20.
***and the information included in the environmental declaration complies with the requirement of that European Regulation and has been validated on 2009-05-20.***

**Fecha de validación:** 20 de mayo de 2009
*Validation Date*

AENOR Asociación Española de Normalización y Certificación

**Firma:** D. Ramón NAZ PAJARES
*Signature* **Director General de AENOR**
*General Manager of AENOR.*

AENOR - C/ Génova, 6 - 28004 MADRID(España) – Teléfono: (+34) 914 326 090 – Telefax: (+34) 913 104 518 – www.aenor.es

***Entidad de certificación acreditada por ENAC con acreditación nº ES-V-0001***

AENOR Asociación Española de Normalización y Certificación

## ANEXO

## ESQUEMA EUROPEO DE ECOGESTIÓN Y ECOAUDITORÍA (EMAS)

**Eco-Management and audit scheme (EMAS)**

# VDM-01/004

Los Centros Certificados del Sistema de Gestión Medioambiental de acuerdo con el esquema europeo de Ecogestión y Ecoauditoría (EMAS) de RED ELÉCTRICA DE ESPAÑA, S.A. nº VDM-01/004 son los siguientes: *Activities within the scope of the Environmental Management System according to the Eco-Management and Audit Scheme (EMAS) RED ELÉCTRICA DE ESPAÑA, S.A.* nº VDM-01/004 *include the following:*

**Delegación Regional Oeste**
CL ZALAETA, S/N EDIFICIO REE
15002 - LA CORUÑA
(A CORUÑA)

**Delegación Regional Norte**
AV DE ENEKURI, 60 EDIFICIO REE
48014 - BILBAO
(VIZCAYA)

**Delegación Regional Noroeste**
AV PARALELO, 55 EDIFICIO REE
08004 - BARCELONA

**CECORE**
CL ISAAC NEWTON, 13 EDIFICIO REE
28760 - TRES CANTOS
(MADRID)

**Delegación Regional Sur**
CL INCA GARCILASO, 1 EDIFICIO REE
41092 - ISLA DE LA CARTUJA
(SEVILLA)

**Delegación Levante**
CL PUEBLA LARGA, 18
46183 - LA ELIANA
(VALENCIA)

**Demarcación Duero-Sil (35 Subestaciones)**
CR N-601, MADRID-VALLADOLID-LEÓN, Km 218
47630 - LA MUDARRA
(VALLADOLID)

**Demarcación Ebro (32 Subestaciones)**
CR ZARAGOZA-SARIÑERA, Km 9,2
50162 - VILLAMAYOR
(ZARAGOZA)

**Demarcación Mediterráneo (22 Subestaciones)**
CR ANTIGUA CASTELLBISBAL-RUBÍ, S/N PI CAN PI DE VILAROC
08191 - RUBÍ
(BARCELONA)

**Demarcación Tajo (24 Subestaciones)**
CR N-I MADRID-BURGOS, Km 20,7
28700 - SAN SEBASTIÁN DE LOS REYES
(MADRID)

**Demarcación Bética (24 Subestaciones)**
CR SEVILLA-UTRERA, Km 17
41500 - ALCALÁ DE GUADAIRA
(SEVILLA)

**Dirección de Red Eléctrica en Baleares:**
CAMI SON FANGOS Nº 100 EDIFICIO A 2ª PLANTA
07007 - PALMA DE MALLORCA
(ILLES BALEARS)

**Dirección de Red Eléctrica en Canarias (Sede Las Palmas de Gran Canaria)**
CL LEÓN Y CASTILLO Nº 1
35003 - LAS PALMAS DE GRAN CANARIA
(LAS PALMAS)

**Dirección de Red Eléctrica en Canarias (Sede Tenerife)**
NUESTRA SEÑORA DE LA TERNURA (LOS MAJUELOS)
38108 - SAN CRISTOBAL DE LA LAGUNA
(S.C. DE TENERIFE)

**Fecha de validación:** 20 de mayo de 2009
*Validation Date*

AENOR Asociación Española de Normalización y Certificación

*Por AENOR. El Director General*
*On behalf of AENOR. The General Manager*

AENOR - C/ Génova, 6 - 28004 MADRID(España) – Teléfono: (+34) 914 326 090 – Telefax: (+34) 913 104 518 – www.aen

# Planned factilites in environmental processing

(December 2008)

## Facilities being processed by environmental entities

L/Aldeadávila-Portuguese border

SE. Belinchón
SE. Santa Cruz
L/Belinchón-Santa Cruz
E/S in Belinchón de L/Morata-Olmedilla y Morata-Cofrentes

L/Puebla de Guzmán-Portuguese Border

SE. Herreros
L/Herreros-L/Segovia-Galapagar
L/Herreros-Otero

SE. Torrejón de Velasco
L/Torrejón de Velasco-L/Morata-Villaviciosa
L/Torrejón de Velasco-L/Añover-Pinto
L/Torrejón de Velasco-L/Villaverde-Almaraz
L/Torrejón de Velasco-L/Pinto-Nueva Yeles
L/Torrejón de Velasco-L/Torrijos-Villaverde

SE. Moncada
L/Moncada-Olmedilla

SE. Avenas
L/Avenas-Requena

SE. Galera
L/Galera-Romica

L/María-Plaza

L/Mangraners-Juneda-Montblanc-Penedés-Viladecans

SE. San Serván
L/Brovales-Guillena
L/Almaraz-San Serván
L/San Serván-Brovales
L/Mérida-San Serván

L/Cartuja-Puerto Real

L/Soto-Penagos (for the Piloña route)

SE. Udalla
L/Udalla-L/Penagos-Abanto

Peninsula-Balearic Islands Interconnection
Converter Substation Morvedre
Converter Substation Santa Ponsa

SE. Ruidarenes
E/S Riudarenes de L/Sentmenat-Vic-Bescanó

L/Oncala-Moncayo

SE. Laracha
L/Laracha-L/Mesón do Vento-Vimianzo

SE. Mudéjar
L/ Mudéjar-Morella
E/S Mudéjar L/Aragón-Teruel

Modification of a section of line in L/Penedés-Viladecans

SE. Solórzano
SE. Cicero
L/Solórzano-L/Penagos-Abanto
L/Cicero-Solórzano

SE. Brazatortas
E/S Brazatortas de L/Valdecaballeros-Guadalquivir Medio
L/Brazatortas-Puertollano

SE. Manzanares
L/Brazatortas-Manzanares
L/Manzanares-La Paloma

SE. Platea
L/Mezquita-Platea

SE. El Palo
L/El Palo-L/Pesoz-Salas
L/Adrall- Andorran border

SE. Sama
L/Sama-Velilla

L/Galapagar-Moraleja de En medio (modification of a section of line) L/Villaviciosa de Odón-Moraleja de En medio (modification of a section of line)

L/Trives-Aparecida

L/Mezquita-Morella

L/Boimente-Pesoz

Substation Ramis 400 kV
Substation Santa Llogaia 400/25 kV (ADIF)
L/400 kV Bescanó-Ramis-Santa Llogaia

## Facilities being processed by environmental entities (continues)

L/220 kV Mazaricos-Tambre
L/220 kV Tambre-Tibo

L/220 kV Mangraners- Juneda-L´Espluga-Montblanc-Penedés-Begues

Substation Torrecilla 400kV
Substation Villaverde 400 kV
L/400 kV Morata-Torrecilla-Villaverde

Substation Baza 400 kV
Substation Ribina 400 kV
L/400 kV Ribina-L/El Palmar-Litoral
L/400 kV Baza-Caparacena

Substation de Córdoba
E/S in Códoba de L/ Casillas -Lanchas
E/S in Códoba de L/ Cabra- Guadame

L/220 Astillero Cacicedo

L/220 Cacicedo - Puente de San Miguel

L/400 kV Manzanares- Romica

Substation Campanario 400/25 kV (ADIF)
L/400 kV Pinilla-Campanario-Ayora
L/400 kV Ayora-Cofrentes

Substation Gozón 400/220 kV
L/400 kV Gozón-L/Soto-Tabiella
L/220 kV Gozón-Tabiella

Voltage change and modification of a section of line in L/400 kV Soto de Ribera-Grado
Modification of a section of line in L/220 kV Soto de Ribera-Carrio

Substation Bit 66 kV
L/66 kV Bit-L/Son Reus-Poligono

Substation Labarces 220 kV
L/220 kV Labarces-L/Siero-Puente San Miguel

Substation Piélagos 220 kV
L/220 kV Piélagos-L/Cacicedo-Penagos

Abanto switchyard 220 kV
L/220 kV Abanto-L/T. Babcok 2-T. Santurce

L/220 kV La Jara-L/Güeñes-T. Ayala 1
L/220 kV La Jara-L/Güeñes-T. Ayala 2

L/220 kV Andújar-Guadame

L/220 kV Andújar-Úbeda

Substation Mazuelos 220 kV
L/220 kV Mazuelos-L/Atarfe-Olivares

Antequera switchyard 220 kV
L/220 kV Antequera-L/Caparacena-Tajo de la Encantada

Substation Puente Genil 220 kV
L/220 kV Puente Genil-La Roda de Andalucía

Substation Atanasio 220 kV
L/220 kV Atanasio-L/Alhaurín-Jordana

Alcolea switchyard 220 kV
L/220 kV Alcolea-L/Carmona-Guillena

L/220 kV Alhaurín-Polígono

Substation Urso 220 kV
L/220 kV Urso-La Roda de Andalucía

Substation Manilva 220 kV
L/220 kV Manilva-L/Jordana-Pinar del Rey

Substation Antequera II 2 220 kV
L/220 kV Antequera 2-L/Atarfe-Tajo de la Encantada

Substation Villallana 220 kV
L/220 kV Villallana-L/Pereda-Telledo

Substation Silvota 220 kV
L/220 kV Silvota-L/Soto de Ribera-Trasona

Substation San Claudio 220 kV
L/220 kV San Claudio-L/Carrio-Soto de Ribera

Substation San Martí 220/66 kV
C/220 kV Alcudia-San Martí
C/66 kV San Martí-L/Alcudia-Sa Pobla
L/66 kV San Martí-Alcudia B

Substation Rafal 220 kV
L/220 kV Rafal-L/Son Reus-Valldurgent

Substation Cala Blava 66 kV
L/66 kV Arenal-Cala Blava

L/66 kV Llucmajor-Cala Blava

Substation Soria 220 kV
L/220 kV Soria-Trébago

Substation Bejar 220 kV
L/220 kV Béjar-Ciudad Rodrigo

Substation Corcos 220 kV
L/220 kV Corcos-Palencia
L/220 kV Corcos-Renedo

L/220 kV Almaraz C.N.-Almaraz E.T.

Substation Nueva Mataporquera 400/220 kV
L/400 kV Nueva Mataporquera-L/Herrera-Virtus
L/220 kV Nueva Mataporquera-Mataporquera

L/400 kV Almazán-Medinaceli

Substation Cañaveral 400 kV
L/400 kV Cañaveral-L/Arañuelo-Jose María Oriol

L/400 kV Mudarra-Tordesillas

L/220 kV Haro-Alcocero de Mola

Substation Turís 400/220 kV
L/400 kV Turís-L/Catadau-Requena
L/400 kV Turís-L/Cofrentes-La Eliana
L/220 kV Turís-L/Catadau-Torrente

## Facilities being processed by environmental entities (continues)

Substation Ciudad Rodrigo 400 kV
L/400 kV Ciudad Rodrigo-L/Almaraz-Hinojosa

L/220 kV Parralejo-Puerto Real

L/220 kV Facinas-Parralejo

L/220 kV Atarfe-El Fargue

Substation Palomares 220 kV
L/220 kV Palomares-L/Don Rodrigo-Aljarafe

L/220 kV Dos Hermanas-Quintos

Substation Corbones 220 kV
L/220 kV Don Rodrigo-Corbones

Substation Falca 66 kV
L/66 kV Falca-Santa Catalina
L/66 kV Falca-L/Rafal-Coliseo

Substation Valdepeñas 220 kV
L/220 kV Manzanares-Valdepeñas

L/220 kV Villares del Saz-Olmedilla

Substation Illescas 220 kV
L/220 kV Illescas-Valmojado

L/220 kV Torrijos-Valmojado

L/220 kV Cercs-Vic

L/220 kV La Selva-Morell
L/220 kV La Selva-Perafort

Substation San Marcos 220 kV
L/220 kV San Marcos-Mesón do Vento
L/220 kV San Marcos-L/Mesón do Vento-Puerto

Substation Alcalá 2 220 kV
L/220 kV Meco-Anchuelo
L/220 kV Alcalá 2-L/Meco-Anchuelo

Substation Eras de Valdemoro 220 kV
L/220 kV Eras de Valdemoro-Valdemoro
L/220 kV Eras de ValdemoroTorrejón de Velasco

Substation Tamón 400/220 kV
L/400 kV Tamón-L/Grado-Tabiella
L/220 kV Tamón-L/Soto de Ribera-Trasona

Substation Guadaira 400 kV
L/400 kV Guadaira-Don Rodrigo

Substation Aranjuez 220 kV
L/220 kV Aceca-Aranjuez
Substation Añover 220 kV
L/220 kV Añover-L/Aceca-Aranjuez

Substation Nueva Puentes Gª Rodríguez 400 kV
Substation Nueva Cornido 400 kV
L/400 kV Nueva Puentes Gª Rodríguez-Nueva Cornido
Modification of L/400kV As Pontes-Aluminio 1
Modification of L/400kV As Pontes-Boimente
Modification of L/400kV As Pontes-Montearenas

Modification of L/400kV As Pontes-Mesón do Vento 1
Modification of L/400kV As Pontes-Mesón do Vento 2

Substation El Serrallo 220 kV
Renovation of Substation El Ingenio 220 kV
L/220 kV El Ingenio-El Serrallo

Substation Oropesa 220 kV
L/220 kV Oropesa-L/Benadresa-El Ingenio

Substation Puzol 220 kV
L/220 kV Puzol-L/La Eliana-Morvedre

Expansion of Substation Alzira 220 kV
L/220 kV Alzira-L/Alzira-Catadau

Substation Villarreal Sur 220 kV
L/220 kV Villarreal Sur-L/Bechí-La Plana

Substation Rambleta 220 kV
L/220 kV Rambleta-L/Villarreal Sur-Vall D´Uxó

Substation Montealegre 220 kV
L/220 kV Montealegre-L/Dos Hermanas-Puerto Real

Substation Santa Ponsa 220/66 kV
C/220 kV E.C. Santa Ponsa-Santa Ponsa E.C.
L/66 kV Palma Nova-Santa Ponsa
L/220 kV Valldurgent-Santa Ponsa
L/66 kV Calviá-Santa Ponsa
L/66 kV Andratx-Santa Ponsa
L/66 kV San Agustín-Santa Ponsa

L/220 kV Barranco de Tirajana-Jinamar

Substation Nueva Candelaria 220 kV
Substation Nueva Geneto 220/66 kV
L/220 kV Nueva Candelaria-Nueva Geneto
L/220 kV Nueva Candelaria-Candelaria
L/66 kV Nueva Geneto-Geneto

L/220 kV Torrijos-Aceca

L/220 kV Aranjuez-Valdemoro

Substation Ulea 220 kV
C/220 kV Ulea-L/El Palmar-Rocamora

Substation Porto Cristo 132/66 kV
L/132 kV Porto Cristo-L/Bessons-Cala Millor

Substation Son Pardo 66 kV
L/66 kV Son Pardo-L/Son Reus-Coliseo

L/66 kV Llubi-Vinyeta

L/66 kV Bessons-Porto Colom

Substation Cala Dor 66 kV
L/66 kV Cala Dor-L/Porto Colom-Santanyi

Substation Centro 66 kV
L/66 kV Llubi-Centro
L/66 kV Centro-Llucmajor

## Facilities being processed by environmental entities (continues)

Substation Campos 66 kV
L/66 kV Campos-L/Llucmajor-Santanyi

Substation Son Ferriol 66 kV
L/66 kV Marratxi-Son Ferriol

Substation Toro 66 kV
L/66 kV Calvia-toro
L/66 kV Palma Nova-Toro

Substation Torrente 132 kV
L/132 kV Ibiza-Torrente

Substation Formentera 66 kV
C/66 kV Torrente-Formentera

C/66 kV Torrente-Santa Ponsa

Substation Vendrell 220 kV
L/220 kV Vendrell-L/Bellicens-Subirats

Substation Montijo 220 kV
L/220 kV Montijo-L/Mérida-Vaguadas

Cartuja switchyard 400 kV
L/400 kV Arcos de la Frontera-Cartuja

Substation Valle del Nalón 400 kV
L/400 kV Sama-Valle del Nalón

Substation Carrio 400 kV
L/400 kV Carrio-Gozón

L/66 kV Guía de Isora-Los Olivos

Corralejo switchyard 132 kV
L/132 kV Salinas-Corralejo

Substation Antigua 132 kV
Gran Tarajal switchyard 132 kV
Substation Tuineje 132 kV
Salinas switchyard 132 kV
L/132 kV Salinas-Antigua
L/132 kV Salinas-Gran Tarajal
L/132 kV Tuineje-L/Antigua-Gran Tarajal

Matas Blancas switchyard 132 kV
L/132 kV Matas Blancas-Gran Tarajal

Macher switchyard 132 kV
Playa Blanca switchyard 132 kV
L/132 kV Playa Blanca-Macher

Substation Arico II 220 kV
L/220 kV Arico II-L/Candelaria-Granadilla
L/220 kV Arico II-L/Candelaria-Granadilla

Substation Arinaga 66 kV
L/66 kV Arinaga-Barranco de Tirajana

Substation La Mantanza 220/66 kV
L/220 kV Candelaria-La Mantanza
L/66 kV Cuesta LaVilla-La Mantanza
L/66 kV La Mantanza-Tacoronte
L/66 kV Icod-La Mantanza

Substation Los Arenales 220 kV
L/220 kV Jose María Oriol-Los Arenales

Substation Campomayor 220 kV
L/220 kV Las Vaguadas-Campomayor

Substation Alburquerque 220 kV
L/220 kV Campomayor-Alburquerque

Substation Costa Verde 400 kV
L/400 kV Carrio-Valle del Nalón
L/400 kV Costa Verde-L/Carrio-Valle del Nalón

Substation Nueva Saladas 400/220 kV
L/400 kV Nueva Saladas-L/Benejama-Rocamora
L/220 kV Nueva Saladas-Saladas

Substation Nueva Monzón 400/220 kV
Substation Isona 400/220 kV
L/400 kV Peñalba-Monzón 2
L/400 kV Monzón 2-Isona
L/400 kV Isona-L/Sallente-Sentmenat
L/400 kV Isona-L/Sallente-Calders
L/220 kV Isona-L/La Pobla-Pujalt
L/220 kV Isona-L/Anoia-Pont de Suert
L/220 kV Monzón 2-L/Monzón-Mequinenza
L/220 kV Monzón 2-L/Monzón-Riba Roja
L/220 kV Nueva Monzón-L/Grado-Monzón
L/220 kV Monzón-Cinca

Substation Mar Menor 220 kV
C/220 kV Murcia-El Palmar

L/220 kV Abadiano-Basauri
L/220 kV Sidernor-Basauri

Substation Torrevieja 220 kV
L/220 kV Torrevieja-San Miguel de Salinas

Substation El Altet 220 kV
L/220 kV El Altet-L/El Palmeral-Saladas

Substation Petrel Este 220 kV
L/220 kV Petrel-L/Benejama-Petrel

Substation Castalla 220 kV
L/220 kV Castalla-L/Benejama-Novelda

L/220 kV María-Fuendetodos

Substation Oeste 132 kV
L/132 kV Oeste-L/Ciudadela-Mercadal

Substation Alaior 132 kV
L/132 kV Alaior-L/Dragonera-Mercadal

Substation Poima132 kV
L/132 kV Poima-L/Ciudadela-Dragonera

Substation Monda 220 kV
L/220 kV Monda-L/Cártama-Jordana

Substation Galdar/Agaete 66 kV
L/66 kV Galdar/Agaete-Guía

## Facilities being processed by environmental entities (continues)

Substation Calamocha 220 kV
L/220 kV Calamocha-Mezquita

L/132 kV Arta-Ciudadela

Repowering of L/400 kV Almaraz-Bienvenida

Substation Buniel 400/25 kV (ADIF)
L/400 kV Buniel-L/Barcina-Grijota

Substation Torrente (ADIF) 400/25 kV
C/400 kV Torrente (ADIF)-Torrente

L/220 kV Plaza-L/Entrerrios-Montetorrero

L/220 kV Palencia-Villalbilla

L/220 kV Palencia-Vallejera

Substation Sabadell Sur 220 kV
L/220 kV Mas Figueres-Sant Cugat
L/220 kV Sabadell Sur-L/Mas Figueres-Sant Cugat

Substation Sax 400/25 kV (ADIF)
L/400 kV Saz-L/Benejama-Rocamora

Substation Montesa 400/25 kV (ADIF)
L/400 kV Montesa-L/Benejama-Catadau

Substation San Fernando 400/220 kV
L/400 kV San Fernando-L/Morata-S.S. de los Reyes
L/220 kV San Fernando-L/S.S. de los Reyes-Villaverde
C/220 kV San Fernando-Puente San Fernando

1 Expansion+Renovation of Substation Rojales 220 kV

Substation Santa Teresa 220 kV
L/220 kV Santa Teresa-L/Alarcos-La Paloma

Substation Valmojado 220 kV
L/220 kV Valmojado-L/Majadahonda-Talavera

Substation Gavá kV
L/220 kV Gava-L/Puigpela-Viladecans

Substation Algete 220 kV
L/220 kV Algete-L/Ardoz-S.S de los Reyes

Substation Rivas 220 kV
L/220 kV Rivas-L/Loeches-Vallecas

Substation Brunete 220 kV
L/220 kV Brunete-L/Majadahonda-Valmojado

Substation Los Berrocales 220 kV
L/220 kV Los Berrocales-L/Loeches-Vallecas

Substation Trigales 220 kV
L/220 kV Trigales-Villaviciosa

Substation Las Fuentecillas 220 kV
L/220 kV Las Fuentecillas-L/Algete-Ardoz

Substation Camarma 220 kV
L/220 kV Los Carmarma-L/Daganzo-Meco

Substation Las Matas 220 kV
L/220 kV Las Matas-L/Galapagar-Ventas

Substation Carpetanía 220 kV
L/220 kV Carpetanía-L/Pinto-Villaverde

Substation Carmonita 400 kV
L/400 kV Carmonita-L/Almaraz-San Serván

Substation Alange 400 kV
L/400 kV Alange-L/Almaraz-Bienvenida

Substation Peñarrubia 400 kV
L/400 kV Peñarrubia-L/Pinilla-Rocamora

Substation Prahonal 220 kV
L/220 kV Prahonal-L/Casa de Campo-Villaviciosa

Substation Parla Oeste 220 kV
C/220 kV Parla Oeste-Torrejón de Velasco

Substation Fuente Hito 220 kV
C/220 kV Alcobendas-Fuente Hito

Substation Lugo 400 kV
L/400 kV Lugo-L/Puentes de García Rodríguez-Montearenas

Substation Nueva Aluminio 400 kV
L/400 kV Nueva Aluminio-L/As Pontes-Aluminio 1
L/400 kV Nueva Aluminio-L/As Pontes-Aluminio 2

Substation Carril 400 kV
L/400 kV Carril-L/Asomada-Litoral
L/400 kV Carril-L/Totana-Litoral
L/400 kV Carril-L/El Palmar-La Ribina

Substation Cardiel 220 kV
L/220 kV Cardiel-L/Mequinenza-Monzón

Renovation of substation Valdeconejos 220 kV
L/220 kV Valdeconejos-Escucha
L/220 kV Mezquitra-L/Sierra Costera Fase II-Valdeconejos

Substation Pinofranqueado 400 kV
L/400 kV Pinofranqueado-L/Aldeadávila-Arañuelo

Substation Maimona 220 kV
L/220 kV Maimona-L/Mérida-Guillena

Substation Perales 220 kV
L/220 kV Perales-L/Huelves-Morata

Substation Cuevas de Almanzora 220 kV
L/220 kV Cuevas de Almanzora-Hortalez

Substation Valdebebas 220 kV
C/220 kV Valdebebas-Aena
C/220 kV Valdebebas-Campo de las Naciones

Substation Ciudad Olímpica 220 kV
Substation Las Mercedes 220 kV
C/220 kV Vallecas-Ciudad Olímpica
C/220 kV Ciudad Olímpica-Las Mercedes
C/220 kV Las Mercedes-Puente San Fernando

## Facilities being processed by environmental entities (continues)

| | |
|---|---|
| Substation San Roque 220 kV<br>C/220 kV San Roque-C/Fuencarral-Sanchinarro | Substation Ciudad de la Imagen 220 kV<br>C/220 kV Ciudad de la Imagen-C/Aravaca-Ventas |
| Substation Valle del Arcipreste 220 kV<br>C/220 kV Valle del Arcipreste-C/Mirasierra-Majadahonda | Substation Los Cerros 220 kV<br>C/220 kV Los Cerros-C/Coslada-Loeches 2 |
| Substation Valdecarros 220 kV<br>C/220 kV Valdecarros-C/Coslada-Getafe | Substation Lista 220 kV<br>C/220 kV Lista-C/Palafox-La Estrella |
| Substation Mercamadrid 220 kV<br>C/220 kV Mercamadrid-C/Estación Terminal Cerro de la Plata 1-Villaverde | Expansion of substation Tres Cantos 220 kV<br>C/220 kV Cereal-Tres Cantos |
| | Substation Aberin 400/220 kV (ADIF)<br>L/400 kV Aberin-L/Castejón-Vitoria |

*C/:Underground cable*
*E/S: Input/Output*
*L/Line*
*SE: Substation*

# New facilities under construction

( December 2008)

| Lines under construction | Substations under construction |
|---|---|
| L/400 kV Pesoz-Salas | SE. Salas |
| L/400 kV Soto-Penagos | SE. Pesoz |
| L/400 kV Zierbena-Abanto | SE. Requena |
| L/400 kV Penagos-Güeñes | SE. Aguayo |
| L/220 kV E/S Muruarte L/Cordovilla-Orcoyen | SE. Penagos |
| L/E/S in Carmona | SE. Abanto |
| DC/400 kV Cabra-Guadame 2 y 3 | SE. Cártama |
| DC/400 kV Arcos-La Roda | SE. Casaquemada |
| L/E/S in Cartama | SE. Carmona |
| L/Sentmenat-Vic-Bescanó | SE. Garraf |
| C/Zal-Zona Franca | SE. Codonyers |
| L/400 kV Aparecida-Tordesillas | SE. Zona Franca |
| L/400 Segovia-Galapagar | SE. La Cereal |

*C/:Underground cable*
*DC/: Double circuit*
*E/S: Input/Output*
*L/:Line*
*SE: Substation*

Panoramic view of the slopes of the Pesoz substation.

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P.º del Conde de los Gaitanes,177
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Tel. 91 650 85 00
Fax. 91 640 45 42

**Coordination:**
Communication and Corporate Image Department
of RED ELÉCTRICA

**Technical Management:**
Environmental Department of RED ELÉCTRICA
mambiente@ree.es

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RED ELÉCTRICA
DE ESPAÑA

P.º del Conde de los Gaitanes, 177
28109 Alcobendas (Madrid)
www.ree.es