BIODIVERSITY REPORT

2009
2010

IBERDROLA

IBERDROLA

Biodiversity Report 2009-2010

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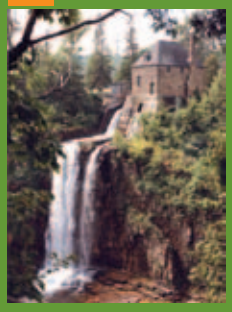

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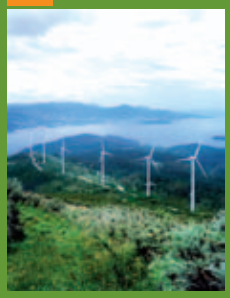

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Letter from the Chairman

It is a source of great satisfaction to me to present to you a new edition of the IBERDROLA Biodiversity Report, which describes the management approach and the main activities and projects undertaken by the Company in 2009 and 2010 in the field of Biodiversity.

IBERDROLA is aware that social development is closely linked to the use of natural resources, affecting not only their availability, but also the integrity of the ecosystems and the services they provide.

The scientific community agrees that we are witnessing a severe decline in natural capital and biodiversity worldwide, which entails serious environmental, economic and social consequences.

All the efforts made from the Convention on Biological Diversity (CBD), signed in Rio de Janeiro in 1992, to the Nagoya Summit in 2010, have proved insufficient to check this situation. This is why this last summit adopted a new strategic plan –which should be adapted by the various countries in their National Strategies and Action Plans by 2012– which will require companies to measure and report on their actions aimed at preserving and making sustainable use of biodiversity and the ecosystem services.

In this regard, I would like to point out that IBERDROLA already has a clear Biodiversity Policy approved by its Board of Directors, under which it pledges to take into account the effects on biodiversity when planning, implementing and operating its energy infrastructures, and to help foster a corporate culture that focuses on raising society's awareness of the magnitude of this issue and the potential actions that could contribute towards its conservation.

In this context, our Company carries out many actions and projects to make its activity compatible with the environment and grow in a more sustainable way. In addition, Iberdrola promotes renewable energy sources and is committed to new technologies which are respectful of the environment, such as offshore wind power. Moreover, the Group is firmly committed to the fight against climate change –which is directly related to the loss of biodiversity–, and has pledged to cut its emissions by 30% by the year 2020, and to become carbon neutral by 2050.

In the coming years, and with the hard work and professionalism of its staff, IBERDROLA will continue to advance its project, which dates back more than 150 years, reasserting its commitment to sustainability and its respect for the environment, and promoting the social and economic development of the regions where it operates.

Ignacio S. Galán

Chairman of IBERDROLA

2 Introduction

2. INTRODUCTION

Over the past fifty years, ecosystems have been transformed by human action more rapidly and extensively than in any comparable period in human history. As a result, the Earth's biodiversity has been considerably impoverished. According to the International Union for Conservation of Nature (IUCN), the rate at which species have disappeared over the last century has been one thousand times greater than the natural rate, as a result of the increasing impact of human activities. The extinction of species threatens not only nature, but also mankind. All living creatures, including humans, depend on biodiversity and on the natural resources it provides.

International action to sustain the variety of life on Earth is based on the Convention on Biological Diversity, signed by more than 150 countries following the Rio Earth Summit in 1992. For the first time, the Convention recognised that the conservation of biological diversity is a common concern for mankind and is part of the development process. The Convention encompasses all ecosystems, species and genetic resources, which it defines as any biological material of animal, vegetable or microbial origin, of real or potential value, which contains functional units of heredity. The CBD called for the development and enforcement of national strategies and associated action plans to identify, conserve and protect existing biological diversity, and to enhance it wherever possible. Each signatory country committed to developing a national strategy for the conservation and sustainable use of biological diversity.

The world leaders at the Earth Summit in Johannesburg in 2002 made a commitment as part of the Convention on Biological Diversity to reduce significantly the rate of loss of biodiversity by 2010, which has been designated by the United Nations as the International Year of Biodiversity. The UK Government committed itself to a stricter target -to halt the loss of biodiversity by 2010.

In November 2009, the United Nations Secretary General Ban Ki-Moon stated that the 2010 target to stem the rate of species' loss will not be achieved.

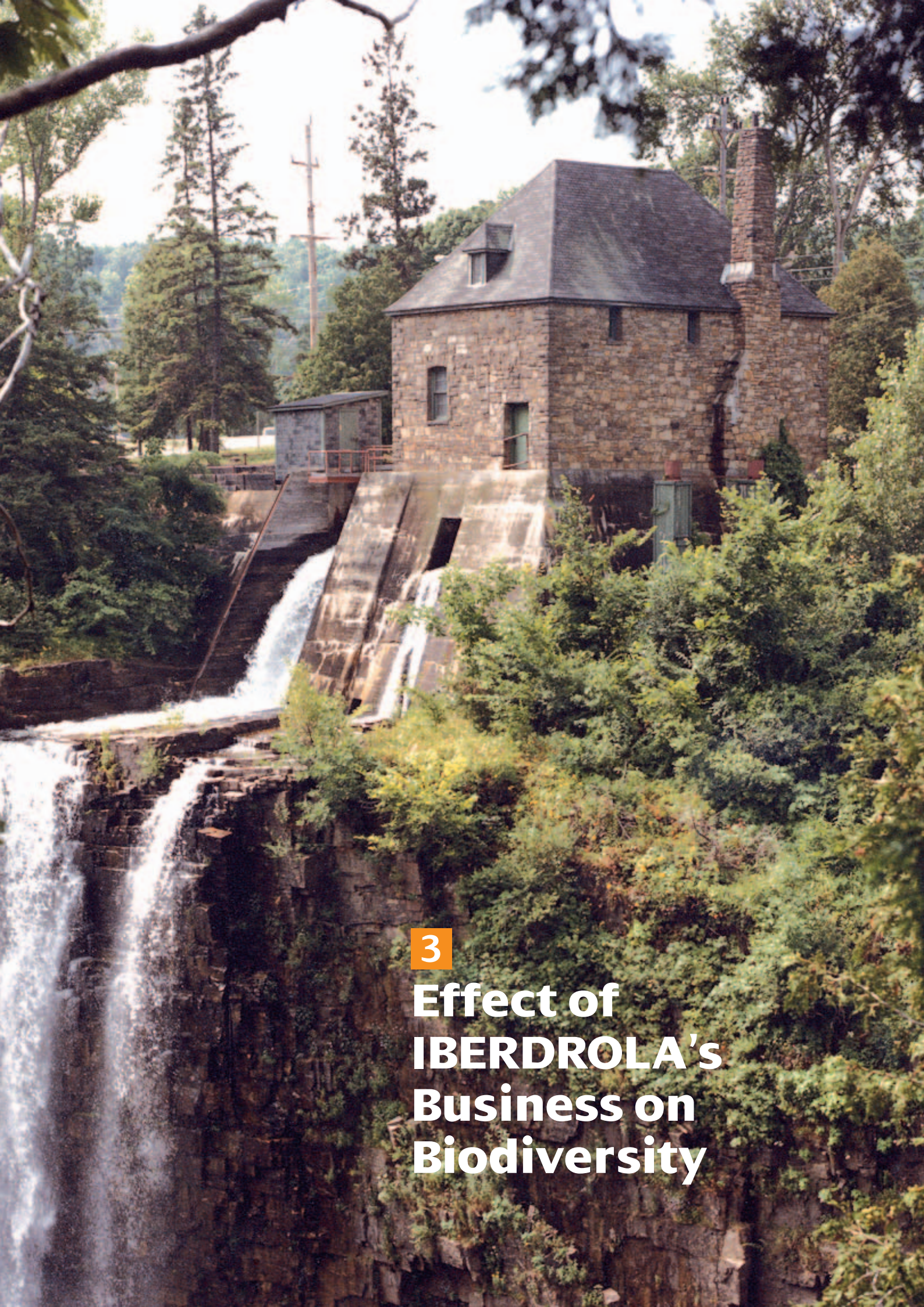
In the European Union, biodiversity is one of the key objectives of the sustainable development strategy and of the Sixth Environmental Action Programme. EU initiatives in this respect are based on the provisions of the Birds Directive and the Habitats Directive (collectively the "Nature Protection Directives"). Both Directives have been transposed into the legislation of each country, specifically in the United Kingdom and Spain, where our presence is significant.

Community policy recognizes that biodiversity is not uniformly distributed, and that some habitats and species are more threatened than others. Special attention is given to creating and protecting a major network of sites with high natural value: the Natura 2000 network programme.

In March 2010, the European Union's Environment Council of Ministers reached an agreement on aims and ambitions for managing biodiversity loss across Europe, including a target of halting the loss of biodiversity and the degradation of ecosystems in the EU by 2020 and restoring them, as far is feasible.

As part of the International Year of Biodiversity, the world community adopted a new strategic plan for implementing the Convention on Biological Diversity at the Nagoya Summit in October 2010. It was agreed that the countries should adapt their National Strategies and Plans of Action before 2012, in order to include the CBD's new targets and commitments for 2020. This will impose strong measures to require companies to measure and inform about their actions aimed at preserving and using resources in a sustainable manner, and for sharing the benefits of biodiversity and the ecosystems.

IBERDROLA has a biodiversity policy in place, approved by the Board of Directors on 18 December 2007, which applies to all business companies and regions where the Company operates. In addition to this policy, which is applied generally, ScottishPower, with a long tradition in biological diversity management, maintains its own Biodiversity Policy. It has also developed a Biodiversity Conservation Strategy and a Sustainable Development Policy specifically for its wind farms.



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Effect of IBERDROLA's Business on Biodiversity

3. EFFECT OF IBERDROLA'S BUSINESS ON BIODIVERSITY

IBERDROLA produces, distributes and sells energy across a vast geographical ambit, and these operations entail interactions with diverse ecosystems, landscapes and species. The effects are felt both during the construction phase (e.g. the bringing on site of vehicles and machinery, opening of tracks, disturbance of plant cover and prolonged human presence, which affects the behaviour of animal species only temporarily and is generally reversible) and the operations phase (e.g. alteration of the natural courses of rivers, barrier effect in hydroelectric sites that affect the ecosystems and habitats of certain species, species mortality from collisions and electrocution, and disturbance of vegetation to maintain power-line paths).

The background against which the Company operates likewise poses major challenges to biodiversity management, such as achieving a balanced portfolio of facilities so as to minimise the ecological footprint of its energy production, and making its businesses compatible with the preservation of the biological wealth of countries with areas of high biodiversity.

Management instruments:
- Biodiversity Policy
- Environmental Impact Assessment
- Management System
- Boidiversity Management/Action Plans

To face these challenges, the Group has adopted a range of management instruments: the Group's Biodiversity Policy; Environmental Impact Assessment of new projects; Environmental Management Systems; and Biodiversity Management/Action Plans.

Generation and distribution facilities operate in compliance with the permits granted by the environmental regulatory authorities of each region, and are subject to restrictions and duties that ensure the protection of the local environment. The environmental impact is assessed prior to construction, deploying analysis and impact prevention mechanisms that consider different alternatives and stipulate corrective measures. If an impact is involved, the project is modified to the extent possible, with the adoption of the best techniques available and measures deemed necessary to minimize any impact. If full mitigation is not possible, remedial measures are implemented.

It is also important to note that control of environmental impacts does not end upon completion of the facility, but rather continues during the operation and decommissioning phases, through implementation of Environmental Management Systems. The Company has environmental management systems that have been certified in accordance with ISO 14001 or EMAS standards to prevent and control environmental risks. In Spain and the United Kingdom, the operation of hydroelectric plants conforms to the requirements of the European Water Framework Directive, while the thermal generation plants operate in accordance with the Integrated Pollution Prevention and Control (IPPC) Directive.

The effects of the Company's operations on biodiversity are described in the documents Electricity Generation and Distribution: Their effect on the environment and Introduction to the Concept of *Biodiversity Management within the Company*, available at ***http://www.iberdrola.es/webibd/corporativa/iberdrola?cambioIdioma=ESWEBRESMAPUB***

Amélécourt Windfarm (France).

Windfarm and networks.

Cortes - La Muela Hydro Power Station (Valencia).

4

IBERDROLA Presence in Protected Areas

Alcantara dam (Cáceres).

4. IBERDROLA PRESENCE IN PROTECTED AREAS

When managing biodiversity it is necessary to know the protected or biodiversity-rich areas where we carry out our activity, in order to be able to adequately assess the possible impact and thus take mitigation actions or carry out recovery projects.

The facilities of the Company that are taken into consideration for this indicator, due to the extensive territory that they occupy, are mainly reservoirs, electrical power lines, and wind farms.

Spain

In the Generation Business, the presence of dams in protected areas represents 68.1 % of the total surface area in which the dams are located. Within the biosphere reserves, national parks, RAMSAR wetlands, and natural parks, these dams represent 1.15 % of the surface area of these protected areas. Furthermore, the managed dams include 13,613 hectares located in Natura 2000 Network areas, Special Protection Areas (SPAs) and Sites of Community Importance (SCIs).

Type of Space	Name of the Space/Area (ha)	Autonomous Community	Reservoir	Reservoir Area in Natural Space (ha)	Relation Reservoir/ Space (%)
Biosphere Reserves	330,460			2,365	0.72%
	Monfragüe / 116,160	Extremadura	Torrejón -Tajo, Torrejón -Tietar, Alcántara	2,301	1.98%
	Sierras de Cazorla Segura y Las Villas / 214,300	Andalucía	La Vieja, Anchuricas	64	
National Parks	18,396 (1)			1,135 (1)	0.03%
	Monfragüe / 18,396	Extremadura	Torrejón,Tajo, Torrejón-Tietar, Alcántara	1,135	(1)
RAMSAR Spaces	397			298	
	Colas del Embalse de Ullibarri / 397	Pais Vasco	Ullibarri	298	75.00 %
Natural Parks	136,965			3,696	
	Sierras de Cazorla Segura y Las Villas / 209,920 (1)	Andalucía	La Vieja, Anchuricas	64(1)	1.97%
	Montes Invernadeiro/ 5,722	Galicia	Las Portas	93	(1)
	Arribes del Duero /106,105	Castilla y León	Villalcampo, CastroAldeadávila y Saucelle	1,203	1.63%
	Tajo Internacional /25,088	Extremadura	Cedillo	1,400	1.13%
Total Biosphere Reserves, National and Natural Parks and RAMSAR Spaces	467,772			5,359	1.15%
Total Natura Network Areas (SCIs and SPAs)	792,182			13,613	1.72%

(1) The Monfragüe National Park and the Natural Parks of the mountain ranges of Cazorla, Segura and Las Villas are not included in the accounts because they are included as Biosphere Reserves with more area.

La Muela I - II Hydro Power Station (Valencia).

The presence of Networks Business facilities in protected areas is shown in the table below. The very high voltage (132 kV) lines cover a length of 7,072 kilometres, 19.39 % (1,371 km) of which are located in protected areas (SCIs y SPAs). The medium and high voltage lines cover a length of 102,164 kilometres, 16% (16,337 km) of which are in protected areas. Additionally, of the 916 existing substations, 131 are located in areas of the Natura 2000 Network.

POWER LINES AND SUBSTATIONS IN PROTECTED AREAS

	SUBSTATIONS	POWER LINES PRESENCE (km)	
		MEDIUM AND HIGH VOLTAGE	VERY HIGH VOLTAGE
Total number in IBERDROLA	916	102,164	7,072
Protected areas (SPA and SCI)	131	16,337	1,371
Presence (%) in protected areas	14.3	16	19.4

Monfragüe National Park (Extremadura).

As regards the Natura 2000 Network (SPA and SCI) in Renewable Business, some of the facilities pre-exist the declarations of Sites of Community Importance (SCI) or Special Protection Areas (SPA), mainly in the case of the mini-hydroelectric plants.

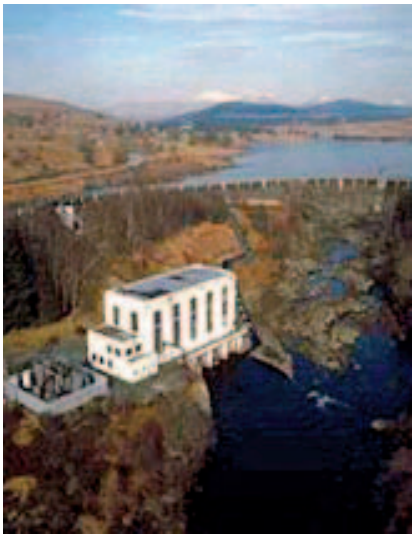
In the case of wind farms within the environmental boundary, the Company operates in territories included within the Natura 2000 Network. Of the 22,082,745 hectares of the Natura 2000 Network located in Spain, the wind farms occupy 139.14 hectares of the Network, or 0.0006%. This reflects the slight superficial impact of the wind farms on the Network. This is because the construction of the wind farms postdates the space protection declarations at the state or autonomous community level, which condition constitutes a restriction on the development of projects in these areas. In 2010, there was no increase in the surface area of facilities in protected areas.

The following chart shows the occupation of protected areas in Spain.

WIND FARMS IN PROTECTED AREAS IN SPAIN

TOTAL SURFACE AREA IN REGIONS (ha)	SCIS		SPAS			
	TOTAL SURFACE AREA SCIS (ha)	% OF THE REGION'S TERRITORY	TOTAL SURFACE AREASPAS (ha)	% OF THE DEVOLVED REGION'S TERRITORY	TOTAL SURFACE AREA IN NATURA 2000 NETWORK (ha)	% IN SPA AND SCI
50,649,688	12,371,595	24.43	9,711,150	19.17	139.14	0.00063

Maranchon Windfarm (Guadalajara).



Galloway Hydro Power Station (Scotland).

Electrical substation Maine (USA).

United Kingdom

SCOTTISHPOWER, has significant properties in 12 production centres in Scotland and England, from the uplands of Ben Cruachan to the coastal reedbeds at Damhead Creek. Many of these sites are located in or near areas recognized as important to biodiversity and afforded statutory protection for their habitats and species.

An estimated 41% of the land is located in protected areas. They include three Ramsar designations, five Special Protection Areas, three Special Areas of Conservation, and thirteen sites of Special Scientific Interest. Of particular importance is the Galloway hydroelectric scheme, which is exposed to 11 protected sites, including those at Loch Ken and Loch Doon, River Dee Marshes, Laughenghie and Airlie Hills and others, a reflection of the substantial area it covers in south-eastern Scotland, two reservoirs with a total area of 1,138 hectares.

The Lanark hydropower scheme at the Falls of Clyde Reserve near New Lanark, is designated as a SSSI and a World Heritage site.

The Cockenzie thermal plant is also located on a Ramsar-designated site adjacent to the Firth of Forth SPA. The Lindholme gas storage facility is located on Hatfield Moor, a SSSI. The Cruachan pump-storage hydro power station is located next to the Coille Leitire oak forest, which enjoys both SSSI and SAC status.

There are 6.9 % power lines and 7.09 % substations in protected areas. These figures include the following protected areas[1] : NSA, SPA, SAC, Ramsar, NNR, SSSIs.

ScottishPower Renewables operates two new wind farms in Scotland adjoining the Nature 2000 Network, Clachan Flats (Glen Etive and Glen Fyne SPA for golden Eagle) and Arecleoch, is still under construction (Glen App Galloway Moors SPA for Hen Harrier). Additionally, there are seven wind farms (Whitelee, Black Law, Beinn an Tuirc, Beinn Tharsuin, Clachan Flats, Cruach Mhor, Mark Hill) partially located on wetland bogs, a habitat included in the "UK Priority Biodiversity Action Plan" and in Annex 1 of the EU Habitats Directive.

Latin America

Some of the affiliate hydroelectric generation facilities in Brazil, such as Rio PCH, PCH Goiandira, PCH Nova Aurora, Corumbá and Baguari have land in protected areas with a surface area equivalent to 8,398 ha.

The subsidiary company Celpe has the Tubarao thermo electrical plant in the Fernando de Noronha Island, Marine National Park, with a built area of 3,493 m^2 and 6,807 m^2 of wooded area.

United States of America

High voltage lines (115 kV or higher) cover a length of 5,812 kilometres, 6.92% (402 km) of which border with or cross over protected areas (those designated specifically as such by the respective State, which may be forests, national parks or national fauna sanctuaries, and those which, without enjoying such a degree of protection, are considered to be areas of high ecological value). These include areas such as the Biosphere Reserve of Champlain-Adirondack, Letchworth Park, the Bigelow Reserve, etc.

IBERDROLA USA POWER LINES IN PROTECTED AREAS

COMPANY	POWER LINES PRESENCE (km)	
	TOTAL	IN PROTECTED AREAS
New York State Electric & Gas	3,484	382
Rochester Gas and Electric	398	2.1
Central Maine Power	1,900	12

1 Note at end of chapter

Other regions

The Company operates in Greece two wind farms in Natura Network sites. Of the 3,902,207 hectares of the mentioned Network these wind farms occupy 15.64 hectares of the Network, or 0.0004%

WIND FARMS IN PROTECTED AREAS IN GREECE

TOTAL NATURA 2000 NETWORK SURFACE AREA (ha)	IBERDROLA WIND FARMS	
	TOTAL SURFACE AREA IN NATURA 2000 NETWORK (ha)	% IN NATURA 2000 NETWORK
3,902,206.88	15.64	0,0004

In France there are seven wind farms adjacent to Nature 2000 Network areas or other protected areas.

Beinn Tharsuin Windfarm (Scotland).

Note:

KEY PROTECTED AREAS DESIGNATIONS:	
SPA	Special Protection Areas for birds, in accordance with the EC Birds Directive.
SCI	Sites of Community Importance, in accordance with the EC Habitats Directive.
SAC	Special Areas Conservation, in accordance with the EC Habitats Directive.
RAMSAR	Wetlands of international importance in accordance with Convention signed in Ramsar.
SSSI	Site of Special Scientific Interest (UK).
NSA	National Scenic Areas (UK).
NNR	National Nature Reserve (UK).

5

Biodiversity Management Approach and Development

5. BIODIVERSITY MANAGEMENT APPROACH AND DEVELOPMENT

It is IBERDROLA's longstanding practice to apply advanced biodiversity-preservation criteria. Even before the enactment of the Environmental Impact Assessment regulations that made this step a requirement, the Company conducted preliminary environmental studies on its infrastructure projects; it paid special attention to the potential effects of power lines on birdlife and operated its facilities with an awareness of their possible consequences for the natural setting.

As a prime indicator of sustainable development, biodiversity was already implicit in the first Environmental Policy subscribed by IBERDROLA in 1992 (through its adherence to the UNIPEDE Policy). It was mentioned explicitly in the IBERDROLA Environmental Policy approved in 2004, and our commitment continues in the latest revision, adopted by the Board of Directors of the Company in December 2007.

Biodiversity Policy sets out IBERDROLA's position and commitment

To boost in Spain biodiversity management (policy, priorities, actions) an internal biodiversity working group (GTBio) has been set up by IBERDROLA in 2006, with members drawn from the Generation, Networks, Renewables, Engineering and Construction Business and Corporate Environment division. GTBio meets regularly to gain a better understanding of external expectations as to IBERDROLA's performance, coordinate biodiversity management, reduce the environmental risks associated with new infrastructure projects and with the operation of existing facilities, encourage cooperation with other organisations, share experiences, and keep the working group's member divisions regularly informed about biodiversity actions.

In all the regions where the Company operates, the management approach is similar, although some areas are more developed, such as in the United Kingdom, where the culture of conservation and protection of the environment is specially rooted. In addition to minimising the effects of our activity on biodiversity, species and habitats are promoted through the application of positive conservation management and research at our sites.

A Biodiversity Policy was approved in 2007 which sets out the Company's position and its commitment to taking into account biodiversity in its decision processes, particularly as regards the design and construction of new infrastructure, and integrating it into our environmental, training, collaboration and information systems. The policy was updated and approved in December 2010 and is available in the Annexes section.

In addition to this policy, which is applied across the entire geographical ambit in which IBERDROLA operates, the subsidiary ScottishPower Energy Wholesale recognize the environmental impact of its operations and set out its commitment to managing these impacts in a specific biodiversity policy that is available a ***http://ww.ew.scottishpower.com/pages/policies.asp***

5.1. LINES OF ACTION

The aspects related to biodiversity are managed along priority lines in accordance with IBERDROLA's Biodiversity Policy, based on:

i) Protection, preservation and sustainable use of the natural environment (air, water, soil, fauna, flora and landscape).

ii) Development of biodiversity guidelines for new projects.

iii) Internal and external communication of biodiversity information.

iv) Training and awareness-raising.

v) Relationships with stakeholders.

In the Company's various units and regions, these guidelines translate into specific lines of action.

5.1.1. Spain

Generation Business

There are no thermal plants in protected areas, nor is their influence significant in adjacent areas. Some hydro power stations, however, are located in protected areas managed by IBERDROLA under concession arrangements.

In all existing generation facilities and in new projects, management is focused on the following aspects:

- Integrating biodiversity conservation into new projects.
- Applying preventative measures to minimise impact.
- Operating and maintaining facilities while minimising their environmental risks.
- Raising awareness of biodiversity among personnel.
- Participating in awareness-raising and training programmes with stakeholders.

Networks Business

Biodiversity management within the Networks Business focuses on reducing the vegetation and birdlife-related incidents and environment protection (spills, fires, etc).

Lines of actions:

- Application of biodiversity guidelines for new projects.
- Power line management and birdlife.
- Power line management and vegetation.
- Spill risk prevention in substations.

To this end, the Company has a Geographic Information System and a Fauna Inventory which has been prepared based on national and regional catalogues and on the Red List of the International Union for Conservation of Nature (IUCN).

Renewables Business

As mentioned in the Management Approach, IBERDROLA has a Biodiversity Policy in place that applies to the entire Group, including Renewables Business, and these commitments are undertaken and promoted so that the various levels in the Company's organisation can gradually integrate the analysis of the effects and actions for biodiversity conservation into the planning and carrying out of its activities.

In Spain the lines of action are:

- Birdlife and Bats studies (promotion phase).
- Monitoring of wildlife, birdlife and bats at wind farms and small scale hydro power stations (operation phase).
- Making and monitoring of environmental and vegetation restoration work at wind farms (operation phase)
- Improving the management of environmental emergencies caused by fires at wind farms.
- A geographic information system is used for tracking aspects of environmental management at the facilities, from their design phase to the operation stage.

Network with Wigeva crosshead.

Windfarm from Cuenca (Castilla La Mancha).

Dardanelos Hydro Power Station (Brazil).

- Bird-protection facilities for evacuation lines.

At the micro-hydro power plants available not only in Spain, the lines of work include:

- Channel fencing and clearing projects.
- Action towards the fitting of fine-mesh screens in channels and sound barriers.
- Fish-ways inspection and conservation projects.
- Studies to minimise the environmental impact on local wildlife and plant life of the use of oils, greases and lubricants at small scale hydroelectric stations.

IBERDROLA Engineering and Construction

IBERDROLA Engineering and Construction also takes into account biodiversity in all new projects, and the lines of action it follows include:

- Consideration of the environmental variable in the design and construction of all types of installations, identifying and evaluating at all times the environmental impact even when the project is not subject to an Environmental Impact Assessment.
- Introduction of fauna and flora protection measures as contractual requirements for contractors providing construction and assembly services.
- Raising awareness of biodiversity, among both employees and subcontracted staff.
- Application of habitat, fauna and flora protection measures.
- Use of sustainable material.

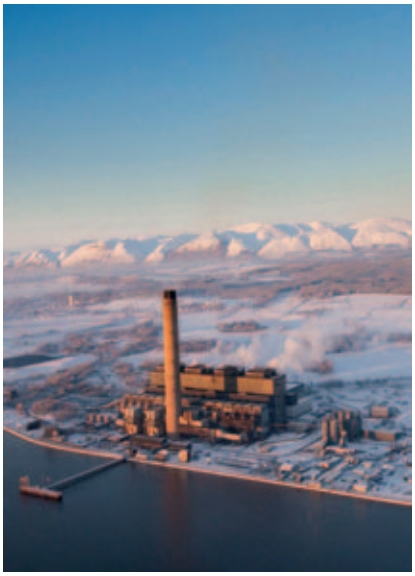
5.1.2. United Kingdom

SCOTTISHPOWER's approach has evolved over many years and goes beyond regulatory requirements. We seek not only to minimise the effects of our operations on biodiversity but also to promote wildlife and habitats through implementing positive conservation management and research at our sites and in the wider countryside.

SCOTTISHPOWER operates power stations and substations across large areas from southern England to the Highlands of Scotland, many of which have a rich biodiversity of flora and fauna.

SCOTTISHPOWER's management approach includes the following points:

- Implementing biodiversity action plans (BAPs) at all of Energy Wholesale´s generating sites and gas storage facilities in the UK. The BAPs set out objectives to entrench existing good practice, enhance habitats further for wildlife and plants and establish a timescale for their implementation.
- Assisting research into protected areas and for protected species, supporting studies by NGOs and linking in to local authority biodiversity plans and projects.
- Developing biodiversity conservation strategies and policies in consultation with the bodies controlling natural heritage.
- Employing or co-sponsoring four countryside rangers at different Energy Wholesale sites to monitor biodiversity, assist in implementing biodiversity projects and liaise with the public.
- Following a biodiversity procedure to protect wildlife and habitats during the construction of overhead lines or substations
- Working in partnership with Fisheries Boards, particularly at hydro generation schemes, to protect and enhance the aquatic environment, and linking in to local authority biodiversity plans and projects.
- Carrying out Environmental Impact Assessments for new-build developments, such as overhead lines and new power developments, and ensuring Environmental Management Plans are drawn up for projects where aspects of nature conservation value are identified.



Longannet Power Station (Scotland).

Renewables Business

In the United Kingdom, ScottishPower Renewables has a Wind farm Sustainable Development Policy, as well as a Wind Farm Biodiversity Conservation Strategy, that serve as a guide to ensure sustainability in decision-making and in process development.

- This Biodiversity Conservation Strategy is taken into account in the development of new wind farms and is applied at existing wind farms where appropriate. The principal strategic guidelines are those described below, which will later materialize in specific goals:
  - To promote and establish positive management of nationally and internationally important habitats and species throughout wind farm sites and the wider countryside.
  - To promote ecologically sustainable wind farm development by conducting research into ecological impacts and to develop best practice mitigation measures.

In the United Kingdom, ScottishPower Renewables has successfully implemented many of the goals for improving the management of biodiversity through the Habitat Management Plans (HMPs) described in more detail in the Actions chapter.

In the United Kingdom, ScottishPower Renewables has a Wind farm Sustainable Development Policy and Wind Farm Biodiversity Conservation Strategy

5.1.3. United States of America

Networks Business

At the distribution and retail electricity and gas subsidiary company IBERDROLA USA the priority lines of action are:

- Identifying areas of high biodiversity relating to new projects so as to avoid developing infrastructure in those areas.
- Minimising impacts on birdlife (osprey) and other endangered animal species.
- Improving aquatic habitats.

Renewables Business

Iberdrola Renewables USA integrates the Corporate Biodiversity Policy and establishes a process for maintaining relations with agencies and NGOs close to the sites in order to evaluate the various stages of its projects. To do so, since 2008 it has implemented a "Plan for the Protection of Birds and Chiroptera", which has been improved in recent years.

For more information, the plan is available at the subsidiary's website (***www.iberdrolarenewables.us***).

5.1.4. Latin America

At the distribution companies in which IBERDROLA holds an interest, action will focus on:

- Initiatives to reduce the risks of releasing effluents into the natural environment.
- Using insulated cable to avoid harm.
- Managing pruning along line routes.
- Participating in selected species-conservation projects.

5.2 ACTIONS

The priority lines of management are put into practice with actions that can be classified under the following areas:

- **Company facilities:** adjustment to the local environment and minimization of the impact of facilities, making continuous improvements at the facilities.
- **Areas of influence:** harmonization of the Company's facilities with the surrounding environment on a geographical, environmental and social scale.

Beinn an Tuirc windfarm (Scotland).

Velilla del Rio Carrión Thermal Power Station (Palencia).

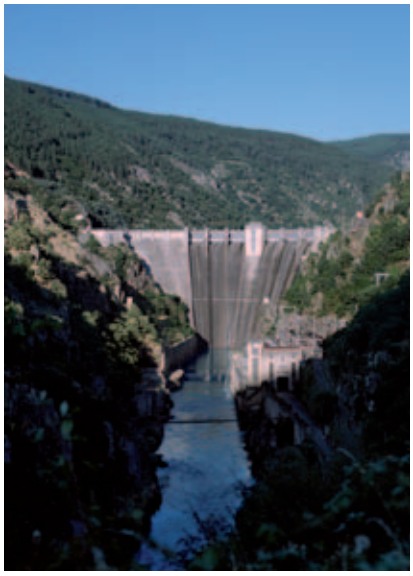
- **Exceptional-research projects:** scientific/technical programs oriented towards an understanding of biodiversity, its protection, and its enhancement by cooperating on projects for the conservation of protected areas or species.
- **Social/environmental projects:** advocating and promoting social values in connection with the environment and natural resources.

5.2.1. Spain

Generation Business

During the 2009/10 period, the actions carried out for managing the impact on biodiversity have included:

- Provision of the required ecological flow for conservation of river stretches downstream of dams.
- Conducting an impact study of the drops in level in the San Esteban and San Pedro dams (Sil River) as a result of the construction of the new expansion projects, in order to minimise their impact on fish fauna, (2009).
- Setting up of fences, corridors and exit devices for the fauna in various diversion canals of hydropower plants, (2009).
- Completed the R&D project for the oxygenation of turbined water in summer, at the Valdecañas hydropower plant, (2009).
- Increased capacity of barriers, instrumental controls and containment and absorption elements to minimise the significance of the environmental impact in the event of accidental oil spills into riverbeds. This has been completed in hydraulic generation within the 2007-2009 "Environmental Risk Minimisation Project (PRIMA)" and within the framework of the 2010 "Improvement Plan".
- Limnological follow-up plans in the dams of the Tajo and Duero basin. The Agavanzal and San Román dams were completed in 2009, while construction of the Valdecañas and Azutan dams started in 2010. The operation of the plants involved has taken into account the results obtained in such follow-up.
- 2009 saw the development of an inventory of areas in which construction activity has historically taken place and that have not been appropriately recovered. These areas are mainly seized lands, abandoned buildings and infrastructure, and deposits from construction work. In 2010, Hydraulic Generation began a biodiversity improvement plan to correct that historic trail. Worth pointing out is the project for environmental recovery of the soil at the Cedillo hydropower plant, where various abandoned structures and buildings have been demolished and removed.
- A project continues at the Aceca thermal power station, consisting of the demolition of the old structures and the environmental recovery of the land.
- At the Company's coal-, fuel-oil- and gas-fired thermal plants, environmental management concentrates on minimising emissions and the risk of accidental discharge into rivers, effluent temperature control, water use management and, in general, reducing the impact of the plants on the local biodiversity. In 2010, facilities were expanded (basins, lamella clarifier, etc, and new equipment has been acquired (analyzer, dozers, etc.) to improve the control and tracking of spills, discharges and emissions and the prevention of risks to the natural environment.
- The project about the study and control of Zebra mussels in the Castejon power station was continued during 2010. The University of Salamanca has been conducting this study since 2008. The conclusions and efficient measures obtained will be applied to larva control of the zebra mussel in the coming years.
- In partnership with the University of Salamanca, we have started the characterisation of the biodiversity of the Ebro River as it crosses the Castejon Combined Cycle Power Plant in Navarre, including preparing an inventory of the main species and carrying out censuses of the biotic populations (fauna and flora) present on the banks of the Ebro River within the environment of the Castejon CCPP (IBERDROLA), which will last until 2012.



San Esteban Hydro Power Station (Orense).

- The following actions continue at Cofrentes nuclear power station:
  - The hydrobiology programme conducted by the chemicals department with the Limnos firm, carrying out a study and follow-up of the environmental and biological conditions of the river and the reservoir.

  - The environmental radiological surveillance programme implemented by Risk Prevention in accordance with the MCDE dose calculation manual, involving sample-taking and analysis for all forms of exposure of living beings in the environs of the facility (soil, surface water, ground water, fish, game meat, etc). The results reveal a non-existent or negligible impact on the area's natural radiation level, with values similar to those obtained in the pre-operation programme before the station came on stream.

  - The R&D Project, REGPH, is focussed on the desing and development of a new water treatment process for regulating the pH of waters in the cooling and service water circuits which operates permanently and partially replaces sulphuric acid, used as a Ph-regulating agent, with carbon dioxide to reduce the water sulphate content. In this way, we manage to lessen the incrusting nature of water used at the plants for supplying both circuits and reduce the secondary contamination produced in the effluents by lowering their sulphate content.

Cofrentes Nuclear Power Station (Valencia).

Networks Business

- **Fire risk maps:** Maps showing the fire risk level of all the medium voltage pylons present in the Autonomous Regions have been completed and reviewed. The information obtained using a calculation methodology developed for this purpose was compared to the reality observed. Changes will be made in the coming years to the pylons with higher fire risk.
- Plan for building oil tanks in substations. 111 oil collection tanks were built at substations during the 2008-2010 period in order to minimize the environmental risk of spills, representing a €1,903,500 investment. A maintenance protocol was also defined in order to inspect the spill prevention system at the substations.
- With the ultimate objective of integrating the Valdemorillo (Madrid) substation into the environs, the facility was screened with indigenous plants, which have a higher probability of taking root and developing in terms of edaphoclimatic needs, being sustainable over time and with a high probability of viability and functionality. Holm oak, poplar, thyme and broom have been planted, (2009).
- During the 2009-2010 period a 7-km overhead power line and a 2-km underground line were modified in the Picos de Europa National Park, home to the Cantabrian capercaillie, an endangered species.
- A pilot project for comprehensive vegetation management was initiated in Soria, aimed at optimising tree felling and pruning. In 2010, the felling-pruning work carried out over the last 5-6 years was analysed in the area under study, and the fire risk was assessed. The suitability of the work was checked on-site and conclusions were reached. The project will continue in 2011.
- A study was initiated on the behaviour of the Ladder Snake (*Rhinechis scalaris*) in partnership with the University of Salamanca. This species shows high rates of electrocution in the grid's medium voltage towers, causing power cuts and situations of high fire risk. (Additional information can be found in section 4.3 - Highlight Initiatives).
- A Partnership agreement was reached between the Agriculture, Water and Environment Ministry of the Regional Government of the Murcia Region and Iberdrola Networks to invest nearly one million Euros to protect species threatened by dangerous overhead power lines in the Special Bird Protection Area of the Murcia Region (2007-2010). Total expenditure in 2009/10 was €776,336.

Protection of birdlife.

Perch for birds.

Valdeporres Windfarm (Castilla y León).

Bonelli's Eagle (*Aquila fasciata*).

- Removal or modification of 24 sections of overhead power lines in Navarre was undertaken to reduce the impact to birdlife. The total amount allocated to this project was €284,055, subsidised in part by the Regional Government of Navarre, (2009).
- Entered into partnership with the Regional Government of Madrid to improve the protection of birdlife and adapt the vegetation in order to prevent damage and fires in areas with high voltage power lines.:-) In 2010 have been made 13 actions in a total of 180 high voltage power pylons. A plan involving substation compacting and overhead power line burying in the Madrid Autonomous Region has also been prepared.
- A pilot exercise was carried out at substations, using cages to capture animals and release in alternative area to avoid electrocution. This pilot proved to be effective.

Renewables Business

In the development phase of wind farms, Renewables Business carried out the following actions: avian fauna and bat studies; environmental and vegetation restorations and installation of bird-protection beacons on the electrical energy evacuation lines.

Included in the Environmental Management System, during the operation phase monitoring of terrestrial fauna, avian fauna and chiroptera has been undertaken as well as environmental and vegetation restorations at the sites in which the wind farms are located.

The company has continued working to establish the design criteria for the Pilot Biodiversity Plan initiated in 2009. It will be carried out at the Viveiro wind farm and seeks to restore and preserve the Atlantic wet heath.

Fire-fighting tanks were installed in 2010 at the Sabina wind farm as a measure required by the Environmental Impact Statement.

As for micro-hydro power plants, available in Spain only, the actions carried out include:

- Channel fencing, animal passageways and sound barriers at some power plants (2009-2010).
- Completion of the study for minimising the impact caused by the use of oil and grease as lubricants (2009).
- Installation of devices for ecological flow control started at several power plants.
- Pilot project under development for hydrocarbon spill control with continuous flow (2010-2011).

The partnership agreements signed with Spanish institutions include the arrangement with the Environment Agency of the Regional Government of Castile and León for the preservation of the natural heritage. In 2009 and 2010, the budget for carrying out environmental actions as compensatory measures amounted to €2,130,000, and various actions were completed:

- Developing of the Bonelli's Eagle (*Aquila fasciata*) Conservation Plan in Castile and León. Information available on the project specific website: ***http://www.aguilaperdicera.org/.***
- Follow-up Study Ricotí Lark (*Chersophilus duponti*) in the areas of influence of several wind farms in the province of Soria.
- Completion of the project to determine the route, signage, beacons, infrastructure supply, landscape restoration and habitat improvement for the "Sendero de Sanabria" long-distance footpath.
- Thematic equipment and landscaping of the house in Valle de Iruelas Park, in Ávila province.
- Landscape restoration of the sterile dump located in the village of the Aldeadávila head (Salamanca).
- Removal of stork nests from San Esteban church (Castromocho) and relocation of the colony.
- Pathway signage in the Gorges of Duratón, Canyon Rio Lobos and Sierra de Gredos.
- Construction of the central theme for the National Hunting Reserve of Las Batuecas (Sierra de Gredos).

- Construction of a path in Acebal of Garagüeta.
- Reforestation on the hillsides of Castle Castrojeriz.

Other important agreement is with the Ministry for the Environment and Rural Development of the Castilla-La Mancha regional government for the commercial utilisation of residual forest biomass.

IBERDROLA Engineering and Construction

- The "Best On-site Environmental Practice Manual" was published in 2009. This manual, which applies to all construction work, lays down the basic principles for proper environmental management in construction work and establishes best practices for reducing the environmental impact and preserving biodiversity, among other aspects.
- A methodology has been implemented for the environmental assessment of contractors and suppliers as a contracting criterion.
- Sustainable wood has been used in recent years in hydraulic construction work, specifically at the San Esteban and La Muela II extensions.
- In order to raise awareness, inform and preserve the environment, sensitive areas are indicated at work sites using signs and posters with information on best environmental practices, both in Spain and abroad.
- A study is being conducted on the use of ultrasound to avoid bird nesting on power line pylons. The goal is to reduce the number of accidents involving power lines, fires and power cuts. (Additional information can be found in section 4.3 - Highlight Initiatives).
- An environmental management system applicable to construction work in the United Kingdom was developed and implemented in 2010, which will be certified in 2011.
- In Spain, the land around the Tayuella I and II photovoltaic plants is being maintained by using sheep. This practice is to be extended to other plants in operation.

Tayuela Photovoltatic Power Station (Extremadura), area maintenance using sheep.

Fundación IBERDROLA and corporate actions in Spain

In 2009-2010, the Corporate Environment Division and the Fundacion IBERDROLA promoted and collaborated in training and awareness-raising activities and in various conservation projects related to biodiversity.

These projects included:

- The partnership agreement with the Spanish Ornithological Society and the Ministry of the Environment's Biodiversity Foundation for the conservation of the Cantabrian capercaillie continued in 2009. The project is known as "Sounds of the Forest". Given the scale and relevance of the project, in June 2010 the European Union approved LIFE + funds for this "Programme of urgent actions for the conservation of the capercaillie (*Tetrao urogallus cantabricus*) and its habitat in the Cantabrian mountains. It will finish in 2014. (Additional information can be found in section 4.3 - Highlight Initiatives).
- The Fundación IBERDROLA is collaborating with the Fundación Universidad-Sociedad at the University of Extremadura on a Research Project on lichens in Monfragüe National Park. Lichens are a prime bioindicator of numerous ecological processes and make it possible to determine the state of conservation of the Mediterranean forest and scrubland ecosystems. (Additional information can be found on the website: ***www.fundacioniberdrola.org***).
- In 2010, several socio/environmental activities were undertaken with the participation of persons at risk of social exclusion. These include the conservation of the native flora of the Cartagena-La Unión Mining Range and volunteer work in La Rioja, Burgos and Cantabria to clean and recover river banks.
- The partnership project with Global Nature and Monfragüe National Park for building artificial nesting places for rocky-habitat species (Black Stork) to enable their recovery has been completed. The nests are currently being monitored. Moreover, the project for the protection of birds of prey (Eagle Owl) initiated in 2008 continued in 2009. The first phase involved the recovery of wild rabbit populations as food for these birds.

Lichen (*Acospora hilaris*).

Poster of Biodiversity Course.

- Sponsorship of the biodiversity course organised by the Faculty of Biology of the University of Salamanca "Biodiversity in Castile and León: Inventory, Management and Conservation". The exhibition associated with the summer course will be on display in the various provinces of Castile and León at the Natural Park Lodges until 2012.
- On the occasion of the 2010 International Year of Biodiversity, a communication was posted on the IBERDROLA website to celebrate this event and raise awareness of the importance of biodiversity.
- Sponsorship of training courses organised by the Green Office of the IBERDROLA Chair at the University of Salamanca:
  - Training course for Environmental Teachers.
  - Course on mycological biodiversity management.
- The Environmental Volunteer Work Day was once again held in the Basque Country together with the Lurgaia Foundation (***www.lurgaia.org***) and the Gorabide Association for the Disabled. It involves the reforestation of an area where a eucalyptus plantation formerly existed using indigenous trees. The "IBERDROLA Forest" was set in motion in 2008 and we have already planted more than 1,000 trees of various species. .

5.2.2. United Kingdom

Generation Business

ScottishPower Energy Wholesale operates nine Biodiversity Action Plans (BAPs) that cover 10 generating sites in Scotland and England. The BAPs were all launched between 2004 and 2007 to entrench existing good practice and set out ecological enhancement objectives and a timescale for their implementation. Activities and goals include the following: providing natural and artificial refuges for various types of birds and bats, and encouraging the availability of food for them (by increasing the diversity of the flora, etc.); encouraging the preservation of habitats for the development of individual species of flora and fauna; improving the management of arboreal and woodland species; developing aquatic habitats; controlling plagues and animal diseases; limiting the use of herbicides, and establishing good practices for their use; planning work activities so as to minimize the impact during the breeding season; raising employee awareness; and facilitating fish travel (by means of fish ladders, the installation of counters to track the specimens that use them, etc.).

Details about key species and biodiversity action plans at Energy Wholesale sites are available in downloadable electronic documents on the ***www.spenergywholesale.com.*** website.

Key achievements:

Lunar Hornet Moth (*Sesia bembeciformis).*

Countryside Rangers

Energy Wholesale continues to sponsor or part-fund the roles of four countryside rangers. We work with local authorities to support the role of rangers at Torry Bay LNR, which includes Valleyfield Lagoons, and at Levenhall Links at Musselburgh Lagoons. Our hydro schemes also sponsor a Scottish Wildlife Trust ranger at the Falls of Clyde, Lanark, and support the role of a ranger at Loch Doon.

Monitoring at Cruachan

Invertebrate recording at Cruachan Power Station has resulted in several new species for Argyll, including the UK BAP carabid beetle, the Lesser-searcher (*Calosoma inquisitor*) -only the fourth time it has been recorded in Scotland- and the spectacular Lunar Hornet Moth. Also, specimens of the *Sesia bembeciformis* moth species, which had never been seen in northwestern Scotland, were discovered in 2010. Our ongoing survey also resulted in the number of hoverfly species recorded in the area being doubled and the UK BAP Pearl-bordered Fritillary (*Boloria euphrosyne*) was seen for the first time at Cruachan Visitor Centre.

Cruachan Hydro Power Station (Scotland).

Peregrine Falcons

A pair of Peregrine Falcons bred successfully for the first time at Longannet Power Station and fledged two chicks. Four falcon chicks were fledged by the resident pair of Peregrines at the Falls of Clyde, part of the Lanark Hydros. At Shoreham, the peregrine nest-box was removed in 2010 due to essential maintenance on the chimney stack but a new improved nest-box was re-sited at the end of the summer.

Peregrine falcons (Longannet-Scotland).

Wildflower meadow at Valleyfield

The ScottishPower sponsored ranger at Longannet's Valleyfield Lagoons engaged with children from four local primary schools to grow wildflowers and build nest-boxes. The flowers were planted out at a disused ash lagoon at Valleyfield to create a wildflower meadow and the bird boxes have been erected in public parts of the site. In the lagoons, the work continued extending an area of wet grassland used by breeding wading birds.

Invasive species guidelines at Galloway

The Galloway Hydros have developed a set of guidelines for staff and contractors to raise awareness about the potential risk of inadvertently spreading the invasive species, the American Signal Crayfish (*Leniusculus pacifastacus*) , to ensure that precautions are taken to avoid the introduction of the non-native species to unaffected areas of the scheme through contaminated materials or machinery. Staff at Galloway Hydros have also continued their efforts to remove invasive Japanese Knotweed (*Polygonum cuspidatum*) from their landholdings.

Breeding bird surveys

Surveys have been carried out at Cruachan and Longannet/Valleyfield to determine which birds nest at the sites. At Cruachan, 31 out of 54 species recorded were proven to have nested, including seven that are priority listed on the UK BAP – Skylark, Tree Pipit, Dunnock, Song Thrush, Ring Ouzel, Spotted Flycatcher and Twite. At the Fife sites, 81 species were recorded and at least 40 nested – seven of which were UK BAP birds – Skylark, Song Thrush, Grasshopper Warbler, House Sparrow, Linnet, Bullfinch and Reed Bunting.

Areas of High Biodiversity Value at Cruachan

Five areas deemed to be 'Areas of High Biodiversity Value Outside of Protected Areas' have been identified at Cruachan Power Station to help meet reporting requirements of GRI Indicator EN11. Cruachan's site BAP has been reviewed to include measures to improve conditions in the selected areas.

Longannet Power Station (Scotland).

Damhead Creek Power Station (England).

Dee Eel Restoration Project

Galloway Hydros is supporting efforts to restore a population of European Eels in the River Dee upstream from Tongland Power Station. European Eels are categorised as Critically Endangered in the IUCN Red List due to a sharp decline in population of more than 80% in the past three generations. Led by Galloway Fisheries Trust, the project will commence in 2011, with a financial contribution from the Galloway Hydros to help purchase eel traps. The Trust will install two traps at the foot of Tongland's fish ladder from May until October. The captured eels will then be released above the dam, helping their journey upstream towards Loch Ken.

Kendoon tree felling

An ecologist was commissioned to carry out an assessment of wildlife prior to essential work at Kendoon Power Station in the Galloway Hydros to remove a number of trees for health and safety reasons. No priority species were discovered, allowing the tree-felling operation to be completed outwith the bird nesting season.

Damhead Creek 2

Planning consent for the construction of a new CCGT at Damhead Creek was given in January 2011. It will be built on approximately 24 hectares of land outwith the area's protected sites, which consists mostly of unmanaged grassland, hard-standing and an area formerly used to dispose of fly ash from Kingsnorth Power Station.

However, to mitigate for the loss of habitats, new ponds and other ecological improvements are planned on the eastern edge of the construction site. This will help to former a buffer zone between the station and the Medway Estuary protected area.

Hatfield West

Planning consent for the construction of an extension to our existing gas storage facility at Hatfield Moor was received in 2010. Mitigation measures include the reinstatement of hedgerows and scrub that must be removed during work to construct a gas pipeline and above-ground facilities, planting of a new hedgerow on a track bordering the new wellhead and the erection of bat boxes. Measures will be put in place to minimise potential disturbance to breeding Nightjars from the effects of temporary noise and increased light associated with the construction phase.

Red Squirrel confirmed at Longannet

The red squirrel (*Sciurus vulgaris*) is rare in many parts of the UK as populations have suffered from the invasion of American grey squirrels. However, populations are recovering in Scotland due to conservation efforts driven by their priority status in national and local Biodiversity Action Plans. During 2010, the Wildlife Ranger for Longannet Power Station was able to confirm the residence of a red squirrel next to the site. This is credit to Longannet's work in providing attractive habitats to encourage varied wildlife.

Red squirrel *(Sciurus vulgaris).*

Networks Business

SCOTTISHPOWER Energy Network organization has a Biodiversity Procedure that affects large projects, including the construction of overhead lines and substations. The procedure covers projects from the planning and consultation phase to the development of specific plans to protect biodiversity and habitats during the construction phase.

Personnel and contractors receive training in connection with the plans, which include, where necessary, the identification of species and the procedures that must be followed to minimize impacts on nature or habitats. Tracking and monitoring after the construction concludes are also an essential part of the procedure.

These procedures, Environmental Impact Assessments and more information relating to the environment and the development of new projects can be viewed at:

http://www.spenergynetworks.co.uk/publicinformation/performance.asp

http://www.spenergynetworks.co.uk/aboutus/cr_environment.asp

Additionally, during 2009/2010 detailed species/issue specific guides to wildlife and habitat protection have been developed. These will be published via an updated employee Health, Safety and Environment Handbook in 2011.

Refer to section 4.3 Highlight Initiatives for details of two ScottishPower Energy Network examples of Strategies, Current Actions and Future Plans for Managing Impacts on Biodiversity.

Renewables Business

Biodiversity enhancement efforts focused on implementing Habitat Management Plans (HMP). In 2009/2010, and within its environmental programme, ScottishPower Renewables (SPR) continued to implement and monitor at several wind farm sites a number of habitat compensation measures that are included in a Plan. The area comprising the priority actions of the relevant HMP is designated as a Habitat Management Area (HMA).

The primary objective is to recover native habitats and restore the nesting and reproduction conditions for species of birds, amphibian and reptiles in danger of extinction. Specifically, these actions are being carried out at the following wind farms:

WINDFARM	SOURCE	HABITAT	CONSERVATION INTEREST	ÁREA (HMA) (km^2)
Beinn an Tuirc	Beinn an Tuirc HMP (2000)	Blanket bog	Golden Eagle	16.70
Cruach Mhor	Cruach Mhor HMP (2004)	Blanket bog, heathland	Hen Harrier, Short Eared Owls, Black Grouse, Blanket Bog	5.77
Black Law	Black Law HMP (2004)	Blanket bog, heathland	Wader species Blanket Bog	14.40
Beinn Tharsuinn	Beinn Tharsuinn LMP (March 2006)	Blanket bog, heathland	Hen Harrier, Black Grouse	1.4
Wether Hill	Wether Hill HMP (2006)	Heathland	Black Grouse	0.02
Whitelee	Whitelee HMP, 4th draft (2007)	Blanket bog, heathland	Waders birds, Merlin, Black Grouse, Blanket Bog	25.47
Greenknowes	Greenknowes BGMP, (Oct. 2006)	Heathland	Black Grouse, native Woodland creation	0.2
Hagshaw Ext	Hagshaw Hill Windfarm Extension, BGMP. (June 2006)	Heathland	Black Grouse, native Woodland creation	0.12
Dunlaw Ext	Dunlaw Ext HEP	Brezales	Black Grouse	0.08
Beinn an Tuirc 2 (wind farm site under construction)	Beinn an Tuirc 2, HMP (2009)	Blanket bog, heathland	Hen Harrier and Black Grouse	6.71
Mark Hill (wind farm site under construction)	Mark Hill HMP(2010)	Blanket bog	Native Woodland, Water Vole, Otter	9.24
				80.11 km^2

Black Law Windfarm (Scotland).

Eurasian Curlew *(Numenius arquata).*

Plans for managing the habitats listed above are in the implementation stage, and a record is kept of progress made as well as of the targets achieved in connection with each. In 2010, 45 of the 70 targets set[1] were met, which shows the improvements made over the initial conditions with respect to both habitats and the development of the species involved. The main reason why all the established goals are not being reached at present is that some Habitat Management Plans are in the implementation stage and have not yet matured.

The solutions adopted at those sites include measures such as planting native tree species, conifer plantation removal, management of grazing land, drain damming, vermin control and monitoring, all of which have contributed to the improvement of biodiversity in the region.

With respect to the Whitelee, Beinn an Tuirc, Cruach Mhor and Black Law wind farms, an annual management report is submitted to competent habitat management bodies. For the other wind farms, there is no formal reporting procedure, although regular reports are made to local authorities and environmental organizations.

Cruach Mhor Windfarm (Scotland).

Some species and habitats of conservation interest are:

Black Grouse (*Tetrao tetrix*).- The protection of the black grouse is a matter of concern in the United Kingdom, and this species is included in Annex I to the European Union's Birds Directive. SPR has identified the grouse as a key species in eight of its habitat management areas. A study was conducted in 2010 in Cruach Mhor (*Argyll, Scotland*) in partnership with the Argyll and Stirling Black Grouse Project (sponsored by SPR), which revealed that it has the greatest known population of grouse in the Cowal Peninsula, many of which use the habitat improvement area adjacent to the wind farm.

Wading birds.-. In recent years, the populations of wading birds have been a matter of concern due to their declining numbers. With the inclusion of wading birds in the habitat management plans designed for a number of sites, SPR has been able to identify the best way of managing the habitats to the benefit of these species. Recent studies conducted in 2009/2010 at the Black Law, Hagshaw and Whitelee wind farms have revealed that the Eurasian Curlew (*Numenius arquata*) and the Common Snipe (*Gallinago gallinago*) account for the highest percentage of wading birds and are beginning to occupy felled plantation areas created to contribute to their recovery.

1 The number of targets changed from 2009, since new targets were set and others were not applied, according to the effectiveness of the measures implemented; progress towards the established targets is monitored regularly.

Golden Eagle (*Aquila chrysaetos*).- The pair of golden eagles that live in the Beinn an Tuirc wind farm have successfully bred their second pair of chicks. They were ringed last summer so that they can be monitored once they leave the nest..

Chicks of Golden Eagle (*Aquila chrysaetos*).

The main habitat for recovery and conservation is the blanket peat bog and other related areas such as swamps and salt marshes. Peat bog restoration plays a major role in most HMPs, as they have very beneficial repercussions and contribute to improve areas with numerous species of flora and fauna. To date, SPR has initiated works for the restoration of nearly 8,000 hectares of blanket peat bog. In 2010, the Whitelee wind farm saw the first tests of new methods that improve the restoration techniques, and whose results are being analyzed in order to implement them at the Black Law and Whitelee wind farms over 2011. (Additional information can be found in section 4.3 - Highlight Initiatives).

Further information is available at: ***http://www.scottishpower.com/p5.asp***

5.2.3. United States of America

Networks Business

At the subsidiary IBERDROLA USA, the Group's distribution and energy transmission companies are carrying out a number of biodiversity actions, including the following ones.

In the regions where the Rochester Gas and Electric Company ("RG&E") and the New York State Electric & Gas Company ("NYSEG") operate, areas with high biological diversity (whether or not the diversity is protected) are avoided in new overhead power line projects. Moreover, the latter is partnering with the Audubon Society and the New York Department of Environmental Conservation in order to provide nesting areas away from power lines, for example, for the osprey (*Pandion haliaetus*).

Land restoration work has been carried out at the Ithaca transmission line (115 kV, 24.14 km) built by IBERDROLA USA between 2009 and 2010.

The subsidiary Central Maine Power (CMP) is taking the following actions:

- Developing a procedure to minimise impact on osprey nesting and breeding in the company's distribution and transmission corridors.
- Working with the United States Fish and Wildlife Service on a study to identify and improve the habitat of the New England rabbit (*Sylvilagus transitionalis*), an endangered species, along its distribution corridors.

Candyville Hydro Power Station (USA).

Merlin radar. Peñascal Windfarm (USA).

- Aquatic habitats: the company is working with landowners in two rustic river basins. These activities include prior processing of run-off water from impermeable sectors of the basin before it meets the river. The aim is to improve water quality and enhance the aquatic and riverbank habitats.
- Implementing erosion control measures (e.g. removable mats enabling excavator transit). This reduces the biodiversity impacts of facilities sited on wetlands and bodies of water.

Renewables Business

Iberdrola Renewables USA in compliance with its "Avian and Bat Protection Plan", adopted in 2008, and in accordance with the "U.S. migratory bird and fish program," in the preparation of which it cooperated, in 2010 has established key performance indicators for the life cycle of wind farms in all its stages, in order to ensure prevention and minimization of the impact on birds, bats and other species. The subsidiary conducts annual studies in this connection at many wind farms, which take into account, among other things, migration periods and species reproduction periods. Notable are the following studies:

- **Study impact at Casselman wind farm, Pennsylvania**, has finished the research project to study the effects of halting wind turbines under gentle wind conditions as a way to avoid bat mortality, and to quantify the decrease in electricity output during outages. (Additional information can be found in section 4.3 - Highlight Initiatives).
- **Merlin project**, the Company continues to move forward with this project at the Peñascal wind farm (Texas), a Merlin avian radar unit is employed to monitor avian migration when major bird migration activity occurs during low visibility conditions

The "Avian and Bat Protection Plan" Compliance Management Program includes a Wildlife Management and Reporting System, implemented in 2010, for both baseline and operational monitoring to report and record bird and bat fatalities or injuries during project operations. In total, baseline fatality monitoring for birds and bats was conducted at 23 projects. The objective of the operational monitoring for life of project is to provide data on trends of fatalities over the long-term as well as species classification, which could lead to a better understanding of what species are at risk of collision.

To implement such policy, the subsidiary appointed technicians who had received training as environmental coordinators in bird and bat studies at the wind farms where they worked. For more information, the plan is available at the subsidiary's website: ***http://www.iberdrolarenewables.us/wp.html.***

Iberdrola Renewables USA participated in the drafting of the U.S. Fish and Wildlife Service guide for the implementation of wind farms, which aims to protect biodiversity.

Iberdrola Renewables USA is firmly involved in the main organizations specializing in biodiversity issues, and is a member of the following organizations:

- Federal Wind Turbine Advisory Committee for the USFWS.
- American Wind Wildlife Institute (AWWI) (member of the board).
- National Wind Coordinating Collaborative (NWCC) Steering Committee and Wildlife Working Group.

The subsidiary has given economic and scientific support to various studies performed by groups of experts, including the following:

- Study of raptor offspring mortality relating to the operation of wind farms, in cooperation with the Oregon Dept of Fish and Wildlife (ODFW), Washington Dept of Fish and Wildlife (WDFW), Boise State University and other industry members.
- Study regarding the habitat of the whooping crane and the lesser capercaillie at projects in the Midwest of the country, in cooperation with the U.S. Fish and Wildlife Service (USFWS), state agencies and other members of the wind power industry.

Klondike Windfarm (USA).

- Cooperation with the Bat Wind Energy Cooperative (BWEC) and the Pacific Southwest Research Station in preparing a study for improved monitoring of birds during the pre-construction and operating stages of wind projects in California.
- Cooperation with Bat Conservation International for bat population monitoring projects at several of the subsidiary's wind farms.

5.2.4. Latin America

Mexico

The Altamira combined cycle power station continues to participate in the "Hydrological rescue plan for the Garrapatas Arroyo in the Industrial Port of Altamira," which is attempting to recover the salt-water environment and biodiversity of the estuary through the discharge of seawater from the cooling system.

There is a continuation of the (*Zamia loddigesii*) reforestation program, which consists of transplanting specimens of this tree from land of the Mexican thermal plants to a 2000 m^2 area.

Zamia loddigessi **(Mexico).**

Brazil

Notable are actions taken by the Termopernambuco power plant for the water management and cooperation in several two-year (2009-2010) projects (***http://www.termope.com.br/ped_2009.asp***); one noteworthy project is a study on the development of artificial reefs near thermoelectric power plants. There is also an agreement with the Department of the Environment and with the Port of Suape for the development of conservation units for the Zumbie and Dos Lagunas forests.

Programs to recover or offset quarry areas, burrows and permanent conservation areas have established at the affiliate hydroelectric plants in Brazil that commenced operations in 2009-2010. There are currently 14.9 ha. under restoration. Noteworthy is that approximately 270 hectares were recovered at the Itapebi plant, within the framework of the bank protection and degraded area recovery program. Every year, this facility monitors and controls the dam's environmental conditions, such as the fish fauna, water quality, etc.

Itapebi Hydro Power Station (Brazil).

Networks, Coelba (Brazil).

Offsets consisting of two Conservation Units of the Areas of Integral Protection are being carried out due to the construction of the Itapebi hydroelectric plant in Brazil: the UNA Biological Reserve (11,400 ha) in the State of Bahía, and the Biological Reserve of Mato Escura (51,046 ha) in the state of Minas Gerais. An environmental offset covering 70 ha has also been created at Ibituruna Peak for the Baguari plant.

The distribution companies affiliated by Neoenergía offset their impact with the reforestation of certain areas determined by the government. For example, Celpe is carrying out a reforestation project for 15 ha. of Atlantic forest at the Urubu Mountain Range. 2.5 ha have been reforested in 2010, with 3,000 plants, including 26 different species.

Protected electric cables are also continuing to be installed in sensitive areas. They prevent accidents (fires) by contact with the trees, reducing the need to prune them, and they also prevent direct contact of wild fauna with the energised grid, significantly reducing the number of fatal accidents.

In 2010, the company Coelba carried out operations involving the rescue and watching of wild fauna, in addition to the recovery of degraded areas.

The company Celpe contributes to the preservation of the 26-ha Fernando de Noronha Marine National Park. It planted more than 200 trees in order to integrate the facilities of the Tubarão plant into the local landscape, minimising the visual impact and promoting the conservation of the archipelago's native species.

5.2.5. Other Regions

Greece

The subsidiary company, Rokas Renewables, continued with its actions to maintain the reforestation performed in 2009, watering and replacing ailing trees in the areas next to the "Kalogiros," "Makrirachi Extension" and "Patriarchis" wind farms, with a total of 11,530 plants covering 4.5 hectares.

Thrace Windfarm (Greece).

5.3. HIGHLIGHT INITIATIVES

5.3.1. Wood Grouse Conservation Programme in Spain and Northern Scotland

In line with the Biodiversity policy and working areas defined in this report, such as conservation actions in key areas and where protected species are located, the IBERDROLA Foundation has sponsored a project -"Sound of the Forest"- which focuses on the protection of the Cantabrian Capercaillie (*Tetrao urogallus cantabricus*) since its inception in 2007. This sub-species is threatened, as well as similar species across Europe. In fact, the IUCN Red List classes Capercaillie as being in critical danger of extinction. It is estimated that no more than 500 Cantabrian Capercaillie remain in the Cantabrian Mountain Range, concentrated in Asturias and León, Cantabria and the Los Ancares region in Lugo.

During recent years an important information and awareness campaign was undertaken and besides several actions were taken to improve the Cantabrian Capercaillie habitat centred on optimal forest management, by fostering an improved structure of the vegetation mosaic, opening clearings in beech and oak woods, and planting bilberry enclosures for monitoring purposes.

Given the scale and relevance of the project, in June 2010 the European Union approved LIFE + funds for this "Programme of urgent actions for the conservation of the Capercaillie (*Tetrao urogallus cantabricus*) and its habitat in the Cantabrian mountains". As such the budget for the conservation of the capercaillie will double to reach 7,028,505 Euros, of which the European Union will provide 50%.

The key aims of the LIFE + Cantabrian Capercaillie project are to curb the decline of this unique sub-species of the northwest of the Iberian Peninsula and to promote its recovery. The actions of the project are intended to improve its conservation status by improving the habitat, promoting environmental education and increasing public awareness.

The area comprises 16 Zones of Special Protection for the Birds (ZSPB) of the Cantabrian mountain range and the project takes place between October 2010 and September 2014.

In addition to funding from the European Union, the project is also funded by the Fundación IBERDROLA. It is coordinated by the Biodiversity Foundation and its partners include the Autonomous Communities of Galicia, Cantabria, Principality of Asturias and Castile and León; the latter being through the Natural Heritage Foundation of Castile and León; the National Parks Autonomous Agency and SEO/ BirdLife. Further information is available at the website ***www.fundacioniberdrola.org***.

Male Cantabrian capercaillie.

Scottish Capercaillie - Photography courtesy of Desmond Dugan, (RSPB).

Female Cantabrian Capercaillie.

As in Spain, wood grouse - or western capercaillie - is one of Scotland's most endangered species: barely more than 2,000 of the Scottish sub-species (*Tetrao urugallus urugallus*) remain in the pine woodlands of northern Scotland. Its retreat is a consequence of its loss of habitat; the sub-species native to the Scottish woods is facing the same challenges as the Spanish Cantabrian and Pyrenean sub-species. Intense conservation efforts over the past few years have stabilised their numbers, but we have yet to witness their recovery. They remain extremely vulnerable and a UK Biodiversity Action Plan priority species.

After considerable research and study, scientists agree that one of the key factors to explain

Capercaillie decline in Scotland is loss, fragmentation and degradation of their preferred habitat – Caledonian pine forest. As a result of this research, The Royal Society for the Protection of Birds are working to expand the important Caledonian forest at their 53 square mile (130 sq km) reserve at Abernethy, as well as to link it to the neighbouring forest of Glenmore. Abernethy supports approximately 15% of the total capercaillie population in the UK. They aim to put back holly, rowan, aspen, birch and other native species commonly found within Caledonian pine forest, but missing from areas of Scots pine regeneration within the forest.

As well as a membership of the RSPB's dedicated 'Friends of Capercaillie' conservation group, since 2008 ScottishPower have been involved in this project to enable the RSPB to purchase seedlings to be cultivated and planted within a designated area covering roughly 96 hectares at the Abernethy Reserve.

In order to recreate native forests, it is imperative that only trees of local provenance are planted and early stages of the project involved gathering seeds from Abernethy and neighbouring forests. Initially the seedlings were planted at the nursery at Forest Lodge (RSPB's base within the Reserve) or at local nurseries. Once these saplings were strong enough, the RSPB started ground preparation work to give the young trees the best possible chance. As the aim of the project is to recreate a natural forest, the ground was prepared by hand as it was felt machine preparation would not be appropriate.

Once the ground preparation work was completed, planting commenced and, by the end of 2010, a total of 2,475 young trees had been planted out, with a further 4,375 scheduled to be planted out during 2011. This planting will be in pockets on the most suitable areas and will cover approximately 96 hectares within an overall regeneration area of 500 hectares, helping to create the mosaic of different habitats required by the capercaillie and enriching biodiversity in the area.

5.3.2. Habitat Management Plan of Whitelee Windfarm (Scotland)

ScottishPower Renewables has successfully completed the first stage of its habitat management strategy at the Whitelee wind farm in East Renfrewshire, the largest in Europe. The area, which is covered by the Habitat Management Plan (HMP) covers 2,547 hectares and has become one of the places with the largest plan of its kind in Europe.

An objective of the Plan was to clear a large area of commercial conifer plantation with the objective of restoring heathland and blanket bog habitat for the benefit of upland breeding and wintering birds. The project began in 2007 and, since then, 900 hectares of non-native conifer were eliminated, around 2.25 million of trees.

Timber was felled using a variety of techniques suited to the ground conditions and size of trees present. A consequence of these harvesting methodologies is that the 'brash' will remain on site to naturally decompose. ScottishPower Renewables have taken advantage of the large-scale commercial plantation clearance at Cruach Mhor, Black Law and Whitelee to initiate research into the impacts of different harvesting methodologies on blanket bog restoration.

Whitelee Windfarm (Scotland).

Whitelee Windfarm (Scotland).

Whitelee Windfarm (Scotland).

Male Black Grouse *(Tetrao tetrix)*.

As mentioned above, the main habitat for the restore and conserve is the blanket bog included in the "UK Priority Biodiversity Action Plan". This habitat is a globally restricted 'tundra type' ecosystem confined to cool, wet, typically oceanic climates. The habitat has very high conservation value due to its rarity and fragility and supports unique assemblages of flora and fauna. It also provides valuable ecological functions as a carbon sink and acts to slow down the rate of rainfall run-off into catchments which might otherwise flood downstream.

Whitelee is the third site for our ongoing research into peatland restoration and its Habitat Management Plan has been benefited from the methods pioneered at Cruach Mhor and Black Law Windfarm Habitat Management Areas, in Argyll and Lanarkshire respectively. The research is in accordance with recommendations made by the UK Habitat Action Plan for blanket bog and will be beneficial to other developments on similar sites as well as comparable conservation projects.

The first tests of new methods that improve the restoration techniques were carried out in 2010 at the Whitelee wind farm. Their results are being analysed in order to implement them at the Black Law and Whitelee wind farms over 2011. Work can now progress on the regeneration of native moorland and blanket peat bog to benefit Black Grouse, Red Grouse, wading birds and other upland wildlife.

The protection of black grouse is a concern in the UK due to its 74% decline in UK population between 1981 and 2004; this species is also included in Annex I to the European Union Birds Directive. SPR has identified the Black Grouse as a key species in eight of his Habitat Management Areas and Whitelee is one of them. Two leks - where breeding birds gather to display and mate - are present within the Habitat Management Area. SPR is taking action to sustain grouse numbers by improving the quality of lekking sites and habitat for the species. It is enhancing the lek sites for the Black Grouse keeping up the vegetation shorter in these areas. They are also providing them with supplementary feed until their habitat is fully restored, while managing the spread of vermin which can endanger the eggs and chicks of the Grouse.

Throughout the lifetime of Whitelee Windfarm, SPR is committed to a multi million pound investment in the biodiversity of this large area and will continue to re-establish the sites environmental credentials over the next 20 plus years. SPR will demonstrate that wildlife can successfully coexist with wind farms at the site of Europe's largest onshore wind power development at Whitelee Forest.

5.3.3 Study of bat Mortality at the Casselman Wind Farm in the USA

An innovative study has been conducted over a period of two years in order to research into the interaction between bats and wind turbines at the Casselman wind farm in the US (Pennsylvania).

The aim of the study was to prove that an increase in the turbine start-up speed -the minimum wind speed needed for the turbines to start rotating and producing electricity- during periods when there is little wind, when bats are most active, reduces their mortality.

Iberdrola Renewables USA, the owner of the Casselman wind farm, collaborated with the independent association BCI (Bat Conservation International) to conduct this study within the framework of the wind power project in southwest Pennsylvania.

The field work was carried out by the BWEC (Bats and Wind Energy Cooperative), which is made up of the American Wind Energy Association (AWEA), the US Fish and Wildlife Service, the National Renewable Energy Laboratory and BCI. The consortium's work is focused on identifying and mitigating the potential impact of wind power on bats.

Indiana Bat (*Myotis sodalis*).

From late July to mid-October 2008 and once again in 2009, the Company, in partnership with BCI researchers, carried out a controlled experiment in which wind turbines selected in the Casselman project were stopped at night when wind speeds were relatively low, as recommended by BCI, in late summer and early autumn, which is the migration period.

The results show that bat mortality dropped between 44% and 93 % on turbines that were stopped partially at night during periods when there was little wind, compared to turbines that operated all the time. This is the first study conducted in the US that shows that increasing turbine input speed during migratory periods in summer and autumn significantly reduces bat mortality.

Although crucial to this study, reducing turbine operation does not seem to be the complete solution for mitigating the impact on bats in all circumstances and places, but it could be a practical solution in some areas in the northeast of the US where high bat mortality is a matter of concern.

This study is part of a partnership agreement with the BWEC at five Iberdrola Renewables USA wind farms. The results of the 2008 and 2009 studies conducted at Casselman have been examined and approved by the advisory and supervisory committees of the BWEC prior to publication. The study has been published on the Internet in "Frontiers in Ecology and the Environment", a magazine of the Ecological Society of America. It is also available at the following link: (***www.iberdrolarenewables.us/pdf/casselman-bats***)

Casselman Windfarm (USA).

Test facility for Ladder snake.

5.3.4 Experimentation with the Ladder Snake (*Rhinechis Sacalaris*) in the Electrical Grid Infraestructures of Iberdrola in Spain

This project is a clear example of research on ecology and the behaviour of terrestrial fauna and their interaction with electrical infrastructures, and specifically with the ladder snake (*Rhinechis Scalaris*). It is being carried out by the Animal Biology Department of the University of Salamanca together with the Network Environment Division in Spain. It began in late 2010 and will be completed in the coming years.

This study is based on the Network Biodiversity Department's monitoring of the incidents caused by terrestrial fauna over a period of 10 years, which points out the significance of the matter not only in terms of fauna mortality, but also as regards the damage to the electrical infrastructures and the added risk of fire.

The ladder snake is one of the species that most affects the electrical infrastructures- 13% of the total number of incidents in IBERDROLA's network in Spain. This mid-sized semi-arboreal ophidian which is usually less than 1 m long, can be found throughout Mediterranean Iberia. It has diurnal habits, although in summer it can be active at night, and actively hunts its prey by systematic prowling the ground for their detection. It feeds primarily on small mammals, but its diet also includes birds, their chicks and even their eggs, which it reaches by climbing up trees where the nests are located (Pleguezuelos, 1997, 2009).

Most incidents with this species take place in the central and eastern regions of the Iberian Peninsula, on a specific type of ground (near agricultural areas, pastures or abandoned crop fields) and on a specific type of structure: rectangular lattice medium voltage (MV) towers. The species climbs up the structure to a height of between 10 and 16 metres and bites an isolator or fuse. The results are the animal's death by electrocution and the outcome can include extended power cuts, as the damage is not easy to detect and difficult to replace. In addition, the incidents entail a risk of fire, because they most often occur in very dry months.

This behaviour seems to stem from the animal's hunting activity, but the exact mechanism and how to prevent this species from accessing the infrastructures where the incidents occur are unknown. Therefore, the objectives of this study are to:

Ladder snake (*Rhinechis scalaris***)** - Autor: http://marcialorenzo.jimdo.com.

- Analyse the data obtained from the modelling of the ecological niche in order to determine the specific characteristics of the incidents, the frequency of the annual cycle; and the relationship with habitat, climatic, anthropogenic and other variables.
- Carry out the experimental design under laboratory conditions to examine what attracts the snakes to the MV towers. Various reasons have been considered:
  - Due to a chemical or visual attraction to prey such as birds or their nests, which leads the snake to carry out an active search on the MV pylons. However, the observations at various incidents did not report the presence of birds or nests on these structures at that time. Chemical and visual stimuli play a fundamental role in the detection of prey by many species of snakes, such as the brown tree snake (Chiszar et al., 1988; Shivik & Clark, 1997) and also some rat snakes (e.g., Elaphe obsoleta; Neal et al., 1993) ecologically similar to the ladder snake.
  - Detection of its prey's body heat, mistaking the structures installed on the towers, such as isolators and/or fuses, which also emit heat. However, there is no evidence that this species has any vision in the infrared region.
  - Heat acquisition to help with the thermoregulation processes during the slough season and/or spermatogenesis in males, or to speed up prey digestion.
- Test the effectiveness of several elements designed to prevent access by this species to the infrastructures, such as truncated pyramids, plastic discs, isolator insulators, etc.

In parallel to the laboratory tests, the Network Biodiversity Department is conducting field pilot tests with the designed devices in Castellon, one of the areas with the highest number of incidents. The results obtained in the study will be put into practice in the future in order to reduce the number of incidents affecting this species.

Test modified pylon.

5.3.5. Examples of How the Impact on Biodiversity is Managed at ScottishPower Energy Networks

Listed below are two examples of strategies, current actions and future plans for managing the impact on biodiversity as a result of the application of ScottishPower Energy Network's biodiversity procedure. The two projects are the new 132 kV overhead power line connection from the Rhyl Flats offshore wind farm in Conway in north Wales, and a new reinforcement for a 132 kV overhead power line east of Cheshire.

Rhyl Flats Offshore Wind Farm 132kV Overhead Line Connection

This scheme comprises the installation of 6km of a new overhead wood pole line to connect an offshore wind farm to the existing 132kV circuit near St Asaph in north Wales. The scheme was consented in 2008 with a number of planning conditions which controlled the impact mitigation measures as identified in the supporting Environmental Statement. In addition, SPEN proposed an environmental enhancement scheme to ensure biodiversity would be improved further. This scheme was approved by the local planning authority and with funding (£20k) provided by SPEN, the Council's Countryside section agreed to deliver the scheme through working with local landowners and using its countryside volunteers to help with work on the ground.

The scheme includes:

- Improving 1km of water vole habitat near Abergele.
- Hedgerow (200m) and tree planting (200 trees) along and close to the overhead line route to gap up existing hedgerows and plant black poplars, a native tree in decline in Wales.

Dingy Skipper butterfly (*Erynnis tages*).

Great Bittern (*Botaurus stellaris*).

Carrington - Lostock 132kV Overhead Line Reinforcement in East Cheshire

Planning consent for this scheme was granted in January 2010 and prior to this, in 2009, SPEN had agreed an environmental enhancement scheme with landowners and a delivery partner, Cheshire Wildlife Trust. The purpose of this scheme is to improve biodiversity beyond the mitigation measures stated in the Environmental Statement. This scheme includes:

- Woodland (9ha) and pond management (4ponds).
- Tree (230) and hedgerow planting (1km) close to the route of the overhead line.
- Meadow (34ha) and reed bed (1ha) creation.

This scheme was identified due to the loss of hedgerows in field boundaries and pond in-filling in east Cheshire.

Cheshire Wildlife Trust used the funding provided by SPEN to appoint a dedicated conservation project manager for two years to work with local conservation volunteers to deliver the scheme.

One example of how impact management translates into results and benefits for biodiversity can be seen in the creation of habitats for butterflies and bitterns. Forest management in Aston and Neumann's Flash in Northwich, Cheshire, together with the rangers at the natural parks, has made it possible to improve the habitat for a rare species of butterfly known as Dingy Skipper or Cervantes (*Erynnis tages*) . Nearby, in Pickmere, some reedbeds have been cleared to create paths for Eurasian bitterns (*Botaurus stellaris*).

Anti-perch Wigeva crosshead.

5.3.6. Use of Ultrasound to Keep Nesting Birds Away from Electricity Transmission Pylons

The primary objective of the project is to reduce the impact of overhead power lines, specifically high voltage power line pylons, on birds by using ultrasound. In addition, another associated benefit is the reduction in the number of network incidents caused by bird nesting, fires and power cuts, voltage dips, electric trips, microcuts, etc.

The Iberica 2000 report by "Ecologistas en Acción", SEO/BirdLife and WWF/Adena estimated that 30,000 birds die every year by electrocution or collision against overhead power lines. Species as significant as imperial eagles, vultures or storks are affected, especially younger birds.

From the point of view of overhead lines, birds cause most power cuts. Some species, such as storks, make more than half their nests each spring on pylons. Bird excrement, when it comes into contact with the power line insulators, generates voltage dips that affect thousands of users. Falling nest branches, after hitting the cables, can cause fires when they reach the ground.

Various initiatives have been implemented to prevent the interaction between the overhead power lines and birdlife:

- Installation of multi-nest platforms, artificial poles and nest moving, especially for common storks (*Ciconia ciconia*).
- Installation of insulating elements. Sections of cable have been lined with insulating material in areas of risk. Replacement of stiff insulation by suspended insulation which, owing to its design, makes it more difficult for birds to reach the voltage area.
- Installation of anti-perch and anti-collision devices (bird protection elements).
- Regulations as regards type of cable, distance between pylons and poles, and installation of transformers and crosspieces.

However, although it has been mitigated, the problem persists in certain components of the grid, especially in high voltage pylons. Thus, the possible use of ultrasound has been considered as a measure to prevent perching and nesting of birds such as crows, white storks and diurnal birds of prey.

Ultrasound is sound with a frequency too high to be detected by our species, around 15-20 kHz. It has short wavelength and enables echolocation in some mammals and birds. Animal echolocation is based on multiple receivers. Animals

Extensions to avoid birds electrocution.

have two ears at a certain distance from each other. The sound bouncing off arrives with intensity, time and frequency differences at each ear, depending on the spatial position of the object that generates the sound. This difference between both ears enables the animal to recreate the spatial position of the object, even its distance, size and other characteristics, and the animal can thus be repelled or attracted. It is possible for the species that nest on high voltage pylons to be capable of detecting ultrasound.

The project involves several consecutive phases:

Phase 1: Information collection, particularly aspects relating to the attraction/repulsion of these sounds in species of birds that nest on electricity transmission pylons.

Phase 2: Recording of appropriate ultrasounds on-site and storage in digital system to enable their use on-site.

Phase 3: On-site verification with nests of 2-3 different species. Analysis of the type of reaction with exposure to a range of such ultrasounds, monitoring the exposure time, reaction and species

Prior to these phases, a problem was solved that had limited previous developments of this type: how to supply low-power equipment on high voltage pylons. In 2010, IBERDROLA Engineering developed a device that uses high-voltage capacitive voltage dividers that make it possible to extract energy from one of the phases of a high voltage line and supply it to the equipment fitted onto the pylon, enabling the ultrasound devices to be connected. Phase 1 was completed in partnership with the Zoology Department of the University of Salamanca. The results obtained in this first phase are not too conclusive in view of the information available today, and it is not possible to objectively assess the effectiveness of the ultrasound-based deterrent devices.

The next phases of the project will be completed in 2011 and at least three prototypes of voltage dividers and ultrasound devices will be developed for three different species. The prototypes will be tested on both high voltage pylons on large transmission lines and medium-high voltage pylons in urban areas.

Multi-nest platform for common stork.

6 Annexes

6. ANNEXES

ANNEXE 1 THE IBERDROLA GROUP'S BIODIVERSITY POLICY

The Board of Directors of Iberdrola, S.A. (the "Company") recognizes that social development is closely linked with the use of natural resources, affecting the availability thereof, as well as with natural systems and the services provided by ecosystems, which may occasionally result in a reduction of biological diversity. There is consensus in the scientific community that there is an accelerated rate of loss of this natural capital and of biodiversity, which are essential for the survival of humanity as well as for its welfare and for sustainable development.

Preservation of biodiversity is also an issue that receives growing attention from some of the principal stakeholders of the company, such as non governmental organizations, government administrations and socially responsible investment groups.

Aware of the importance of biodiversity, the Company undertakes to take into account the effects on biodiversity in the planning, implementation and operation of its energy infrastructure and to contribute to building a social culture directed at sensitizing society to the magnitude of this challenge and to possible actions that will contribute to the preservation thereof.

This commitment is assumed and promoted through this Biodiversity Policy, in order for the various levels of the Company's organization to increasingly incorporate the analysis of the effects and actions for the preservation of biodiversity into the planning and subsequent implementation of its activities. Moreover, all the Company's employees will contribute in their daily work to the attainment of the goals set in this field.

To put these commitments into practice, the Company shall be guided by the following basic action principles, which shall be progressively applied in all its activities and business:

1. **Integrate** the preservation of biodiversity into the Company's strategy, including consideration thereof in decisions on the implementation of infrastructure projects.
2. **Promote** the in-house biodiversity training of the Company's personnel.
3. **Apply** a preventive approach to minimize the impacts of new infrastructure on biodiversity, bearing in mind its entire life cycle, including the stages of implementation, operation and dismantling, for which purpose environmental guidelines shall be prepared for each type of infrastructure project to be carried out by the Company.
4. **Incorporate** this preventive approach into the environmental and social impact assessments of new projects, particularly in natural areas that are sensitive, biologically diverse or protected.
5. **Integrate** biodiversity into the Company's environmental management systems (EMS), setting goals and indicators as well as standards for the control, monitoring and audit thereof within the framework of such systems.
6. **Participate** in research, preservation, education and sensitization projects, cooperating with government administrations, non-governmental organizations, local communities and other stakeholders in the development of these projects.
7. **Report** on the Company's biodiversity actions, the presence of facilities in protected areas and research, preservation, education and sensitization actions.

In addition to this policy, which is applied across the entire geographical ambit in which IBERDROLA operates, ScottishPower recognize the environmental impact of its operations and set out its commitment to managing these impacts in a specific biodiversity policy that is available at
http://ww.ew.scottishpower.com/pages/policies.asp

ANNEXE 2 NUMBER OF SPECIES INCLUDED ON THE IUCN RED LIST AND ON NATIONAL LISTINGS, AND WHOSE HABITATS ARE LOCATED IN AREAS WHERE COMPANY OPERATES

The Group is active in certain areas that are or may be inhabited by threatened species included in the IUCN Red List and other national listings such as the UK BAP and the USFW, without such activities entailing a negative impact or threat.

Some of the species are:

- In danger of extinction: Birds such as the Iberian imperial eagle, the red kite, the black stork, the Egyptian vulture, the Cantabrian capercaillie, and the Squacco heron, and Chiroptera such as the long-fingered bat, the Indiana bat; insects such as the ground beetle.
- Vulnerable: Birds such as Bonelli's eagle, the osprey, and Montagu's harrier; Chiroptera such as Geoffroy's bat, Mehely's horseshoe bat, the lesser mouse-eared bat or cave bat, and the noctule bat; insects such as the diving beetle, the Canary Islands hairy blowfly, and river jelly lichen.

Furthermore, at the properties of the generating centres in the United Kingdom, a total of 28 birds included in the UK BAP (half of the 56 species on the high-priority list) have been noted hibernating or breeding. Nine mammal species, seven fish species, five reptile species, two amphibian species, eight butterfly and moth species, another four invertebrate species, a lichen species, and seven plant species, all of them included in the UK BAP, also live on these lands. In 2010, a pair of peregrine falcons bred at the combustion shaft of the Longannet thermal plant, and specimens of the Sesia bembeciformis moth species, which had never been seen in northwest Scotland, were discovered at the Cruachan plant.

Below is the complete list available:

Threatened Species List Available

Spain

Threatened species included in the national inventory of the Ministry of MARM and/or in the Red List of the International Union for Conservation of Nature (IUCN) that may inhabit the areas of our Hydro Power Stations.

6 CRITIC ENDANGERED SPECIES (CR)

GROUP	SPECIES	COMMON NAME	CATEGORY (MARM)	(IUCN)
Birds				
	Neophron percnopterus	Egyptian Vulture	CR	EN
	Botaurus stellaris	Great Bittern	CR	LC
Mammals				
	Lynx pardinus	Iberian Lynx	CR	CR
	Ursus arctos	Brown Bear	CR (Northern Spain)	LC
Invertebrates				
	Belgrandiella galaica	Gastropoda	CR	Not listed
	Macromia splendens	Splendid Cruiser	CR	VU

24 ENDANGERED SPECIES (EN

GROUP	SPECIES	COMMON NAME	CATEGORY (MARM)	(IUCN)
Amphibians				
	Rana dalmatina	Agile Frog	EN	LC
Birds				
	Pyrrhocorax pyrrhocorax	Chough	EN	LC
	Hieraaetus fasciatus	Bonelli´s Eagle	EN	LC
	Alectoris rufa	Barbary Partridge	EN	LC
	Parus caeruleus	Blue Tit	EN	LC
	Tyto alba	Barn Owl	EN	LC
	Burhinus oedicnemus	Stone Curlew	EN	LC
	Corvus corax	Common Raven	EN	LC
	Chersophilus duponti	Dupont´s Lark	EN	NT
	Milvus milvus	Red Kite	EN	NT
	Aquila adalberti	Spanish Imperial Eagle	EN	VU
	Cercotrichas galactotes	Alzacola	EN	LC
Reptiles				
	Algyroides marchi	Spanish Algyroides	EN	EN
	Emys orbicularis	European Pond Turtle	EN	NT
Mammals				
	Rhinolophus mehelyi	Mehely´s Horseshoe Bat	EN	VU
	Mustela lutreola	European Mink	EN	EN
	Myotis capaccinii	Long –Fingered bat	EN	VU
Freshwater fish				
	Salaria fluviatilis	Freshwater blenny	EN	LC
	Chondrostoma turiense	Madrija (Endemic)	EN	EN
	Cobitis vettonica	Colmilleja del Alagón (Endemic)	EN	EN
Invertebrates				
	Gomphus graslinii	Pronged Dubtail	EN	NT
	Oxygastra curtisi	Insecta	EN	Not listed
	Margaritifera margaritifera	Freshwater Pearl Mussel	EN	EN
	Prosopistoma pennigerum	Insecta	EN	Not listed

53 VULNERABLE SPECIES (VU)

GROUP	SPECIES	COMMON NAME	CATEGORY (MARM)	(IUCN)
Amphibians				
	Alytes dickhilleni	Betic Midwife Toad	VU	VU
	Salamandra salamandra	Common Fire Salamander	VU	LC
	Triturus pygmaeus	Southern Marbled Newt	VU	NT
	Rana iberica	Iberian Frog	VU	NT
	Mesotriton alpestris	Alpine Newt	VU	NT
	Chioglossa lusitanica	Golden-striped Salamander	VU	VU
Birds				
	Streptopelia turtur	European Turtle-dove	VU	LC
	Accipiter nisus	Eurasian Sparrowhawk	VU	LC
	Calandrella brachydactyla	Short-toed Lark	VU	LC
	Otis tarda	Great Bustard	VU	VU
	Coracias garrulus	Roller	VU	NT
	Ciconia nigra	Black stork	VU	LC
	Pterocles orientalis	Black-billed Sandgrouse	VU	LC
	Falco naumanni	Lesser-Kestrel	VU	VU
	Sterna nilotica	Gull-billed Tern	VU	LC
	Circus pygargus	Montagu´s Harrier	VU	LC
	Tringa totanus	Common Redshank	VU	LC
	Aegypius monachus	Black Vulture	VU	NT
	Acrocephalus melanopogon	Moustached Warbler	VU	LC
	Phoenicurus phoenicurus	Common Redstart	VU	LC
	Pterocles alchata	Pin-tailed Sandgrouse	VU	LC
	Chlidonias hybrida	Whiskered Tern	VU	LC
	Apus caffer	White-rumped Swift	VU	LC
	Glareola pratincola	Collared Pranticole	VU	LC
	Perdix perdix	Partridge	VU	LC
	Anas acuta	Northern Pintail	VU	LC
Reptiles				
	Vipera latasti	Lataste´s Viper	VU	VU
	Mauremys leprosa	Leprous freshwater tortoise	VU	Not listed
Mammals				
	Oryctolagus cuniculus	European Rabbit	VU	NT
	Miniopterus schreibersii	Schreibar´s Long-fingered Bat	VU	NT
	Rhinolophus euryale	Mediterranean Horseshoe Bat	VU	NT
	Myotis blythii	Lesser Mouse-Eared Myotis	VU	LC
	Myotis myotis	Greater Mouse-Eared Bat	VU	LC
	Arvicola sapidus	Southwestern Water Vole Bat	VU	VU
	Myotis emarginatus	Geoffroy´s Myotis	VU	LC

GROUP	SPECIES	COMMON NAME	CATEGORY (MARM)	(IUCN)
	Galemys pyrenaicus	Pyreneam Desman	VU	VU
	Nyctalus lasiopterus	Giant Noctule Bat	VU	NT
	Nyctalus noctula	Noctule Bat	VU	LC
	Microtus cabrerae	Cabrera´s Vole	VU	NT
Freshwater fish				
	Chondrostoma arcasii	Bermejuela	VU	VU
	Barbus guiraonis	Mediterranean barbel	VU	VU
	Salmo trutta	Sea Trout	VU	LC
	Squalius pyrenaicus	Cacho (Endemic)	VU	NT
	Anguilla anguilla	European Eel	VU	CN
	Cobitis paludica	Colmilleja (Endemic)	VU	VU
	Barbus haasi	Red-tailed Barbel	VU	VU
	Squalius alburnoides	Calandino (Endemic)	VU	VU
	Chondrostoma lemmingii	Pardilla (Endemic)	VU	VU
	Barbus comizo	Iberian Barbel (Endemic)	VU	VU
	Chondrostoma duriense	Dueros Nase (Endemic)	VU	VU
	Squalius carolitertii	Bordallo (Endemic)	VU	LC
	Cobitis calderoni	Lamprehuela (Endemic)	VU	EN
	Barbatula barbatula	Stone Loach	VU	LC

- IUCN classification of threatened species: CR (Critic Endangered); EN (Endangered); VU (Vulnerable); NT (Near threatened); LC (Least Concern).

GROUP	CRITICALLY ENDANGERED (CR)	ENDANGERED (EN)	VULNERABLE (VU)
Birds	2	11	20
Mammals	2	3	11
Freshwater fish	0	3	14
Reptiles	0	2	2
Amphibians	0	1	6
Invertebrates	2	4	0
TOTAL	**6**	**24**	**53**

UNITED KINGDOM

Threatened species included in the Red List of the International Union for Conservation of Nature (IUCN) that may inhabit the areas of ScottishPower Energy Wholesale sites (Hydro-power station,Thermal Power Station,...) and wind farms of ScottishPower Renewables.

2 ENDANGERED SPECIES (EN)

GROUP	SPECIES	COMMON NAME	CATEGORY (IUCN)
Coleoptera			
	Bembidion humerale	Ground Beetle	EN
	Curimopsis nigrita	Mire Pill-beetle	EN

3 VULNERABLE SPECIES (VU)

GROUP	SPECIES	COMMON NAME	CATEGORY (IUCN)
Lepidoptera			
	Phaonia jaroschewskii	Hairy Canary Fly	VU
Coleoptera			
	Hydroporus rufifrons	Oxbow Diving Beetle	VU
Lichen			
	Collema dichotomum	River Jelly Lichen	VU

5 THREATENED

GROUP	SPECIES	COMMON NAME	CATEGORY (IUCN)
Birds			
	Aquila chrysaetos	Golden eagle	LC
	Circus cyaneus	Hen harrier	LC
	Falco columbarius	Merlin	LC
	Asio flammeus	Short-eared owl	LC
	Tetrao tetrix	Black grouse	LC

- IUCN classification of threatened species: CR (Critic Endangered); EN (Endangered); VU (Vulnerable); NT (Near threatened); LC (Least Concern).

Species included in the UK Biodiversity Action Plan (UK BAP) priority list that may inhabit the areas of ScottishPower Energy Wholesale sites (Hydro-power station, Thermal Power Station,..).

GROUP	SPECIES	COMMON NAME	SPW FACILITIES
Birds			
Wintering species			
	Anser albifrons	Greenland White-fronted Geese	Galloway
	Larus argentatus	Herring Gull	Galloway, Longannet, Cockenzie
	Melanitta nigra	Common Scoter	Cockenzie, Damhead Creek
	Vanellus vanellus	Northem Lapwing	Cockenzie, Damhead Creek
	Numenius arquata	Eurasian Curlew	Cockenzie, Damhead Creek
Breeding species			
	Perdix perdix	Grey Partridge	Galloway, Longannet, Cockenzie Damhead Creek
	Vanellus vanellus	Northem Lapwing	Galloway, Longannet, Cockenzie Damhead Creek
	Numenius arquata	Eurasian Curlew	Galloway, Longannet
	Alauda arvensis	Skylark	Galloway, Lanark, Longannet Cockenzie, Damhead Creek, Hatfield Moor Cruachan
	Anthus trivialis	Tree Pipit	Galloway, Lanark, Hatfield Moor, Cruachan
	Prunella modularis	Dunnock	Galloway, Lanark, Longannet Cockenzie, Damhead Creek, Shoreham, Rye House, Daldowie, Hatfield Moor Blackburn Mill, Cruachan

GROUP	SPECIES	COMMON NAME	SPW FACILITIES
	Turdus philomelos	Song Thursh	Galloway, Lanark, Longannet Cockenzie, Damhead Creek, Shoreham, Rye House, Daldowie, Hatfield Moor, Blackburn Mill, Cruachan, Cruachan
	Locustella naevia	Grasshopper Warbler	Galloway
	Phylloscopus sibilatrix	Wood Warbler	Galloway, Cruachan
	Muscicapa striata	Spotted Flycatcher	Galloway, Lanark, Hatfield Moor Cruachan
	Poecile montanus	Willow Tit	Galloway, Lanark, Longannet
	Sturnus vulgaris	Common Starling	Galloway, Lanark, Longannet, Damhead Creek, Shoreham, Rye House, Daldowie, Blackburn Mill
	Passer domesticus	House Sparrow	Galloway, Lanark, Longannet Shoreham, Rye House, Daldowie, Blackburn Mill
	Passer montanus	Tree Sparrow	Rye House
	Carduelis cannabina	Common Linnet	Galloway, Lanark, Longannet Cockenzie, Damhead Creek, Rye House, Hatfield Moor
	Carduelis flavirostris	Lesser Redpoll	Galloway, Lanark, Longannet, Cruachan
	Pyrrhula pyrrhula	Bullfinch	Galloway, Lanark, Longannet, Cockenzie, Hatfield Moor, Cruachan
	Emberiza citrinella	Yellowhammer	Galloway, Lanark, Longannet, Cockenzie, Hatfield Moor
	Emberiza schoeniclus	Reed Bunting	Galloway, Lanark, Longannet, Cockenzie, Damhead Creek, Hatfield Moor
	Cuculus canorus	Common Cuckoo	Longannet, Damhead Creek, Cruachan
	Streptopelia decaocto	Eurasian Turtle Dove	Damhead Creek
	Caprimulgus europaeus	European Nightjar	Hatfield Moor
	Motacilla flava	Yellow Wagtail	Hatfield Moor
	Turdus torquatus	Ring Ouzel	Hatfield Moor
	Gavia arctica	Black-throated Diver	Cruachan
Mammals			
	Plecotus auritus	Brown Long-eared Bat	Galloway, Hatfield Moor
	Micromys minutus	Harvest Mouse	Galloway, Damhead Creek
	Lutra lutra	Otter	Galloway, Hatfield Moor
	Lepus europaeus	Brown Hare	Galloway, Hatfield Moor
	Sciurus vulgaris	Red Squirrel	Galloway, Longannet
	Arvicola sapidus	Water Vole	Damhead Creek, Rye House, Hatfield Moor
	Erinaceus europaeus	Western European Hedgehog	Hatfield Moor
Fish			
	Salvelinus alpinus	Arctic Charr	Galloway
	Salmo salar	Atlantic Salmon	Galloway, Lanark, Longannet, Cockenzie

GROUP	SPECIES	COMMON NAME	SPW FACILITIES
	Salmo trutta trutta	Brown/Sea Trout	Galloway, Lanark, Longannet, Cockenzie, Shoreham
	Anguilla anguilla	European Eel	Galloway, Lanark, Longannet, Cockenzie
	Petromyzon marinus	Sea Lamprey	Longannet, Cockenzie
	Lampetra fluviatilis	River Lamprey	Longannet, Cockenzie
	Osmerus eperlanus	Smelt	Longannet, Cockenzie
Reptiles/ Anphibians			
	Vipera berus	Adder	Galloway, Lanark, Hatfield Moor
	Podarcis hispanica	Common Lizard	Galloway, Lanark, Damhead Creek
	Bufo bufo	Common Toad	Galloway, Lanark, Longannet, Damhead Creek, Rye House
	Triturus cristatus	Great Crested Newt	Galloway, Damhead Creek, Rye House
	Anguis fragilis	Slow-worm	Lanark, Damhead Creek
	Natrix natrix	Grass Snake	Damhead Creek
Coleoptera			
	Hydroporus rufifrons	Oxbow Diving Beetle (VU)	Galloway
	Bembidion humerale	Ground Beetle (EN)	Hatfield Moor
	Curimopsis nigrita	Mire Pill-beetle (EN)	Hatfield Moor
Lepidoptera			
	Boloria euphrosyne	Small Pearl-bordered Fritillary	Galloway
	Tineola bisselliella	Common Heath	Galloway, Damhead Creek
	Coenonympha tullia	Large Heath	Galloway
	Perizoma albulata	Grass Rivulet	Lanark
	Tyria jacobaeae	The Cinnabar	Rye House
	Pechipogo strigilata	Common Fan-foot	Lanark
	Orgyia recens	Scarce Vapourer	Hatfield Moor
	Phaonia jaroschewskii	Hairy Canary Fly (VU)	Hatfield Moor
Lichen			
	Collema dichotomum	River Jelly Lichen (VU)	LanarK
Plants			
	Juniperus communis	Common Juniper	Galloway
	Platanthera bifolia	Lesser Butterfly-orchid	Galloway, Lanark
	Coeloglossum viride	Frog Orchid	Galloway
	Pilularia globulifera	Pillwort	Galloway
	Stellaria palustris	Marsh Stitchwort	Galloway
	Hordeum marinum	Sea Barley	Damhead Creek
	Carex divisa	Divided sedge	Damhead Creek

UNITED SATATES OF AMERICA

Threatened species included in the Lists of "US Fish & Wildlife Services" (USFW) and Red List of the International Union for Conservation of Nature (IUCN) that may inhabit the services territory.

12 ENDANGERED SPECIES (EN) (USFW Classification)

GROUP	SPECIES	COMMON NAME	CATEGORY (IUCN)
Birds			
	Sterna dougallii	Roseate tern	LC
	Charadrius melodus	Piping Plover	NT
Mammals			
	Myotis sodalis	Indiana bat	EN
	Canis lupus	Gray wolf	LC
	Puma concolor	Puma	LC
Fish			
	Acipenser brevirostrum	Shortnose sturgeon	VU
Mollusc			
	Alasmidonta heterodon	Dwarf wedgemussel	EN
	Lampsillis cariosa	Yellow Lampmussel	Not listed
Invertebrate: Coleoptera			
	Nicrophorus americanus	American burying beetle	CR
Invertebrate: Lepidoptera			
	Lycaeides melissa samuelis	Karner blue butterfly	Not listed
Plants			
	Scirpus ancistrochaetus	Northeastern bulrush	Not listed
	Schwalbea americana	American chaffseed	Not listed

- IUCN classification of threatened species: CR (Critic Endangered); EN (Endangered); VU (Vulnerable); NT (Near threatened); LC (Least Concern).

11 THREATENED SPECIES (USFW Classification)

GROUP	SPECIES	COMMON NAME	CATEGORY (IUCN)
Mammals			
	Lynx canadensis	Canada lynx	LC
	Sylvilagus Transitionalis	New England Cottontail Rabbit	VU
Reptiles			
	Glyptemys muhlenbergii	Bog turtle	EN
	Clemmys guttata	Spotted Turtle	VU
Invertebrate			
	Novisuccinea chittenangoensis	Chittenango ovate amber snail	Data Deficient
	Williamsonia Lintner	Ringed Boghaunter (damselfly)	VU
Plants			
	Asplenium scolopendrium var. americanum	American hearts tongue fern	Not listed
	Aconitum noveboracense	Northern wild monkshood	Not listed

GROUP	SPECIES	COMMON NAME	CATEGORY (IUCN)
	Platanthera leucophaea	Eastern praire fringed orchid	Not listed
	Isotria medeoloides	Small whorled pogonia	Not listed
	Sedum integrifolium ssp. leedyi	Leedy's roseroot	Not listed

- IUCN classification of threatened species: CR (Critic Endangered); EN (Endangered); VU (Vulnerable); NT (Near threatened); LC (Least Concern).

LATIN AMERICA

11 CRITIC ENDANGERED (CR)*

GROUP	SPECIES	COMMON NAME	CATEGORY (IUCN)
Birds			
	Mergus octosetaceus	Brazilian Merganser	CR
	Claravis godefrida	Purple-winged Ground-dove	CR
	Anodorhynchus leari	Lear's Macaw	CR
	Cyanopsitta spixii	Spix's Macaw	CR
	Merulaxis stresemanni	Stresemann's Bristlefront	CR
Mammals			
	Trichechus manatus	West Indian Manatee	CR
	Brachyteles hypoxanthus	Northern Muriqui	CR
	Cebus xanthosternos	Yellow-Breasted Capuchin	CR
	Callicebus barbarabrownae	Blond Titi Monkey	CR
	Callicebus coimbrai	Coimbra-filho's Titi Monkey	CR
	Phyllomys unicolor	Unicolored Tree Rat	CR

34 ENDANGERED (EN)*

GROUP	SPECIES	COMMON NAME	CATEGORY (IUCN)
Birds			
	Harpyhaliaetus coronatus	Crowned Eagle	EN
	Crax blumenbachii	Red-billed Curassow	EN
	Aburria jacutinga	Black-fronted Piping-guan	EN
	Amazona viridigenalis	Red-crowned Amazon	EN
	Amazona rhodocorytha	Red-browed Amazon	EN
	Amazona vinacea	Vinaceous Amazon	EN
	Anodorhynchus hyacinthinus	Hyacinth Macaw	EN
	Touit melanonotus	Brown-backed Parrotlet	EN
	Glaucis dohrnii	Hook-billed Hermit	EN
	Cotinga maculata	Banded Cotinga	EN
	Xipholena atropurpurea	White-winged Cotinga	EN
	Myrmeciza ruficauda	Scalloped Antbird	EN
	Pyriglena atra	Fringe-backed Fire-eye	EN
	Rhopornis ardesiacus	Slender Antbird	EN
	Phylloscartes beckeri	Bahia Tyrannulet	EN
	Crypturellus noctivagus noctivagus	Maned Three-toed Sloth	*

GROUP	SPECIES	COMMON NAME	CATEGORY (IUCN)
	Neomorphus geoffroyi dulcis	Rufous Vented Ground Cuckoo	*
	Phaethornis margarettae	Margaretta's Hermit	*
	Discosura langsdorffi langsdorffi	Black-bellied Thorntail	*
	Lepidocolaptes wagleri	Woodcreeper of Wagler	*
	Sporophila maximiliani	Boll weevil	*
	Grallaria varia intercedens	Tovacucu (portugues)	*
	Sclerurus caudacutus umbretta	Black-tailed Leaftosser	*
	Sclerurus scansor cearensis	Rufous-breasted Leaftosser	*
	Cichlopsis leucogenys leucogenys	Rufous-brown Solitaire	*
Reptiles			
	Eretmochelys imbricata	Hawksbill Turtle	EN
	Lepidochelys olivacea	Olive Ridley	EN
	Cnemidophorus abaetensis	Lizards-of-Abaete	*
	Cnemidophorus nativo	Native lizards	*
Mammals			
	Bradypus torquatus	Maned Three-toed Sloth	EN
	Leontopithecus chrysomelas	Golden-headed Lion Tamarin	EN
	Leopardus pardalis mitis	Ocelot	EN
	Callistomys pictus	Painted Tree-rat	EN
	Puma concolor greeni	Cougar	

26 VULNERABLE (VU)*

GROUP	SPECIES	COMMON NAME	CATEGORY (IUCN)
Birds			
	Thalasseus maximus	Royal Tern	VU
	Tangara fastuosa	Seven-coloured Tanager	VU
	Herpsilochmus pectoralis	Pectoral Antwern	VU
	Leucopternis lacernulata	White-necked Hawk	VU
	Penelope jacucaca	White-browed Guan	VU
	Pyrrhura cruentata	Blued-throated Parakeet	VU
	Carpornis melanocephalus	Black-headed Berryeater	VU
	Xiphocolaptes falcirostris	Moustached Woodcreeper	VU
	Sporophila falcirostris	Temminck's Seedeater	VU
	Carduelis yarrellii	Yellow-faced Siskin	VU
	Acrobatornis fonsecai	Pink-legged graveteiro	VU
	Geositta poeciloptera	Coastal Miner	VU
	Synallaxis cinerea	Bahia Spinetail	VU
	Thripophaga macroura	Striated Softtail	VU
	Herpsilochmus pileatus	Bahia Antwren	VU
	Myrmotherula minor	Salvadori's Antwren	VU
	Myrmotherula urosticta	Band-tailed Antwren	VU
Reptiles			
	Caretta caretta	Loggerhead	VU

GROUP	SPECIES	COMMON NAME	CATEGORY (IUCN)
	Chelonia mydas	Green Turtle	VU
	Bothrops pirajai	Piraja's Lancehead	VU
Mammals			
	Tolypeutes tricinctus	Brazilian Three-banded Armadillo	VU
	Platyrrhinus recifinus	Recife Broad-nosed Bat	VU
	Cebus robustus	Robust Tufted Capuchin	VU
	Callicebus melanochir	Southern Bahian Masked Titi	VU
	Leopardus tigrinus	Oncilla	VU
	Chaetomys subspinosus	Thin-spined Porcupine	VU

5 NEAR THREATENED (NT)*

GROUP	SPECIES	COMMON NAME	CATEGORY (IUCN)
Birds			
	Pyrrhura leucotis	Maroon-faced Parakeet	NT
Mammals			
	Chrysocyon brachyurus	Maned Wolf	NT
	Speothos venaticus	Bush dog	NT
	Leopardus wiedii	Margay	NT
	Panthera onca	Jaguar	NT

1 LEAST CONCERN (LC)*

GROUP	SPECIES	COMMON NAME	CATEGORY (IUCN)
Birds			
	Celeus torquatus tinnunculus	Ringed woodpecker	LC

(*) All these species are included in the endangered species list of the Environmental Ministry of Brasil, although they aren't scheduled in the UICN clasification. (***http://www.mma.gov.br/sitio/index.php?ido=conteudo.monta&idEstrutura=179&idConteudo=8110&idMenu=8617***)

GROUP	CRITICALLY ENDANGERED (CR)	ENDANGERED (EN)	VULNERABLE (VU)	NEAR THREATENED (NT)	LEAST COSERN (LC)
Birds	0	0	0	0	0
Mammals	5	25	17	1	1
Reptiles	6	5	6	4	0
TOTAL	**11**	**34**	**26**	**5**	**1**

In the ENDANGERED category, all species that are not included in the IUCN but appear in the Brasilian list,are added to this list.

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