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CONVENTION ON THE CONSERVATION OF EUROPEAN WILDLIFE
AND NATURAL HABITATS

Bern Convention Group of Experts
on Conservation of Birds
/
Groupe d'experts de la Convention de Berne
sur la Conservation des Oiseaux

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ASSESSMENT OF THE COMPLIANCE BY PARTIES WITH THE BUDAPEST DECLARATION ON BIRD PROTECTION AND POWER LINES

- Final -

Document prepared by
BirdLife International
on behalf of the Bern Convention

CONTENTS

1. SUMMARY

Power lines can pose a major threat to the conservation of birds through electrocution, collision and habitat loss. To reduce bird mortality from power lines, the conference "Power lines and bird mortality in Europe" was organised in 2011, resulting into the adoption of the Budapest Declaration. The Budapest Declaration identified several action points on power lines and bird safety, outlining at the same time a multiannual programme of follow-up actions.

In 2012 the Standing Committee to the Bern Convention invited the contracting parties to the Convention to report on the progress of implementation of the Budapest Declaration. Seventeen contracting parties responded to this request. An additional ten parties had previously submitted information to the Bern Convention which was also used to examine the status of bird safety and power lines.

The reports from the contracting parties revealed that in general the implementation of action points of the Budapest Declaration has been limited. National expert groups have only been identified in a few parties and a national programme of action was only reported in Hungary. No internationally coordinated start-up programme for exchange of experience has been initiated, although exchange of experience is on-going.

Some contracting parties have prioritised power lines for retrofitting and adaptation on a national or regional level and have developed and implemented technical standards for bird-safe power pole design and in a few contracting parties retrofitting and adaptation are already on-going. Several parties have put the necessary legislation in place to ensure new and fully reconstructed power lines are bird-safe by design.

Reporting and monitoring activities have been limited. The development of an international standardised monitoring has not begun and monitoring protocols do not seem to be used by most parties.

Contracting parties also reported that voluntary cooperation between industry, public administration and NGOs is on-going and that research on the impact of power lines on birds is being undertaken and published.

The contracting parties to the Bern Convention are invited to step up their efforts to implement the action points of the Budapest declaration especially regarding the identification of national expert groups and monitoring and reporting.

2. INTRODUCTION

Power lines can pose a major threat to the conservation of birds through electrocution, collision and habitat loss. Electrocution occurs when a bird touches two phase conductors or one conductor and an earthed device simultaneously and results in a strong electric current running through the body of the bird, which can cause the death or injury of the bird. Collision occurs when a bird in flight hits an overhead cable and can also cause the death or injury of the bird. Habitat loss occurs when power lines are built in an open habitat, which then becomes less attractive for birds as staging or nesting sites due to an increased risk of predation (Haas et al 2003).

The two different types of power lines, transmission lines and distribution lines, pose different risks for birds. Transmission lines are power lines transferring electricity from power plants to high-voltage electrical substations located near demand centres. Distribution lines are power lines carrying electricity from the transmission substations to the final customers. Electrocution mainly occurs on overhead distribution lines and mainly when birds roost, perch or nest on the poles (Haas et al 2003). Collision can occur on both transmission and distribution lines (Haas et al 2003).

The risk of electrocution and collision depend on the bird species concerned (Annex I and Haas et al 2003). In addition, there is a strong consensus that the risks power lines pose to birds strongly depend on the technical construction type and detailed design of power facilities such as poles, lines and transmission stations (see figures in Annex I).

The Standing Committee to the Convention on the Conservation of European Wildlife and Natural Habitats (the Bern Convention) has recognized the threats power lines pose to birds in 2004 and made a Recommendation on minimising adverse effects of above-ground electricity transmission facilities (power lines) on birds (Recommendation 110, reprinted in Annex I). Similar recognition has been given to the issue by the Convention on Migratory Species (Bonn Convention) which adopted Resolution 7.4 in 2002 calling to curb the increasing electrocution risk from medium-voltage transmission lines to migratory birds and to minimise this risk in the long term.

In 2011 MME/BirdLife Hungary, the Ministry of Rural Development of Hungary and BirdLife Europe organized the conference “Power lines and bird mortality in Europe”. This conference highlighted the progress made in bird safety and power lines and outlined challenges in ensuring implementation of relevant international and national legislation. The conference resulted in the adoption of Budapest Declaration (reprinted in Annex II). As part of this declaration, several action points were identified, which are shown in table 1 on the next page.

As a follow-up to the Budapest Declaration, the Standing Committee to the Bern Convention sent a questionnaire to the contracting parties on the implementation of the action points identified under the Budapest Declaration (printed in Annex III).

In the present report a stocktaking of progress on the implementation of the action points is made based on the questionnaires submitted by seventeen contracting parties. This is complemented by an analysis of the situation in eleven contracting parties based on an earlier questionnaire on the implementation of the action points of Recommendation 110.

The final chapter then provides some key recommendations to ensure full implementations of the action points of the Budapest Declaration.

I. Preparatory actions, to be implemented by the end of 2012	
Action	**Applies to**
1. Set up groups of experts on bird safety on power lines in each country and at the international level to review and consolidate the available technical standards for bird safety on power lines; to develop National and European programmes for prevention and mitigation of bird electrocution and collision; to facilitate exchange of technical, biological and managerial experience and support implementation of such programmes.	Governments National (EU) National (non-EU) International Industry, NGOs
2. Develop and kick off an internationally coordinated start-up programme for knowledge transfer, including the maintenance of an international roster of experts and regular communication on technical and managerial issues; to collate and publish bird electrocution and collision-related literature; to develop internationally standardised monitoring protocols; to expedite a Pan-European movement towards improving bird safety on power lines, including research and development as well as communication projects and voluntary cooperation between industry, public administration and civil society.	National (EU) National (non-EU) International
3. Support on-going exchange of experience between EU and non-EU countries to reduce and eliminate bird electrocution and collision on power lines.	National (EU) National (non-EU)
II. Planning and standard verification actions, to be completed by the end of 2015	
4. Prioritise power lines for mitigation in accordance with bird distribution data and in consultation with relevant government, industry, academic and NGO experts. Set up a detailed mid-term strategy and an implementation plan for mitigation measures.	National (EU) National (non-EU)
5. Develop and approve national technical standards and catalogues of bird-safe power pole designs (for new lines) and mitigation measures (for retrofitting existing lines) relevant for each country. Promote these standards through formal training of technical staff and sub-contractors and regular conferences.	National (EU) National (non-EU)
III. Ensure that bird losses are to be eliminated on new and fully reconstructed power lines from 2016 onward	
6. Ensure that new and fully reconstructed power line sections are safe for birds by design.	National (EU) National (non-EU)
IV. Mitigation actions on existing power lines, to be completed by 2020	
7. Ensure that priority power lines in term of bird conservation/distribution and the most dangerous pole types in all lines are retrofitted/changed to bird-friendly lines and pole types.	National (EU) National (non-EU)
V. Monitoring and reporting of progress	
8. Promote and support financially internationally standardised monitoring of the impacts of power lines on birds, including the necessary evaluation of the effectiveness of mitigation measures.	National (EU) National (non-EU) Industry
9. To report every two years (starting from 2012) on the actual progress in the implementation of Resolution 110 of the Bern Convention and of this Declaration.	National (EU) National (non-EU)

Table 1: Action points of the Budapest declaration on bird protection and power lines, adopted by the Conference "Power lines and bird mortality in Europe" in Budapest, Hungary on 13 April, 2011.

3. REVIEW OF REPORTS RECEIVED FROM THE PARTIES TO THE CONVENTION

Seventeen contracting parties to the Bern Convention provided a report on the implementation of the action points identified under the Budapest Declaration (printed in Annex II). In addition, sixteen contracting parties submitted reports on the implementation of the action points of Recommendation 110 of the Standing Committee to the Bern Convention in 2011 and ten contracting parties submitted reports in 2009, which also contained valuable information on the action points of the Budapest Declaration. Where reports were available for both the action points of the Budapest Declaration and Recommendation No. 110 (2004) only reports on the action points of the Budapest Declaration were used. The only exception is the European Union for which both the report on the action points of the Budapest Declaration and the 2011 report on Recommendation No. 110 (2004) were reviewed as both reports included unique information. An overview of the reports submitted and reviewed is given in table 2.

Contracting party	**Budapest**	**Bern Rec. 110 2011**	**Bern Rec. 110 2009**	**Report reviewed**
Albania / Albanie	x			Budapest
Belgium / Belgique			x	Bern 2009
Bosnia and Herzegovina / Bosnie-Herzégovine		x		Bern 2011
Bulgaria / Bulgarie		x		Bern 2011
Croatia / Croatie	x	x	x	Budapest
Cyprus / Chypre	x			Budapest
Czech Republic / République tchèque		x	x	Bern 2011
Estonia / Estonie		x		Bern 2011
European Union / Union europeénne	x	x		Bud/Be11
France / France	x	x		Budapest
Germany / Allemagne			x	Bern 2009
Hungary / Hongrie	x	x	x	Budapest
Iceland / Islande			x	Bern 2009
Italy / Italie	x	x		Budapest
Latvia / Lettonie		x		Bern 2011
Malta / Malte	x	x		Budapest
Republic of Moldova / République de Moldova		x		Bern 2011
Monaco / Monaco	x			Budapest
Norway / Norvège	x			Budapest
Poland / Pologne	x			Budapest
Portugal / Portugal	x			Budapest
Serbia / Serbie	x	x	x	Budapest
Slovak Republic / République Slovaque	x	x	x	Budapest
Spain / Espagne	x	x		Budapest
Sweden / Suède			x	Bern 2009
Switzerland / Suisse	x			Budapest
United Kingdom / Royaume-Uni	x	x	x	Budapest
Total number of contracting parties reporting	**17**	**16**	**10**	**28***

Table 2: Reports received and reviewed on the implementation of the action points of the Budapest Declaration and Recommendation 110 of the Standing Committee to the Bern Convention. *This number includes the European Union report on the action points of the Budapest Declaration and the report on Recommendation 110 submitted in 2011.

Albania / Albanie

Organisation:	Ministry of Environment, Forests and water Administration
Name and position of responsible person:	Elvana Ramaj
E-mail:	Elvana.Ramaj@moe.gov.al
Phone:	+ 35 542 233 855

In Albania no national group of experts on bird safety and power lines has been identified, as there is no specialized national expertise in this field and the issue is not amongst priorities in the country's agenda. Consequently, in Albania no national bird monitoring protocol is in place, there were no recent publications on the bird safety and power lines and no exchange of experience with other countries is currently planned.

There is no cooperation on bird safety and power lines between industry, public administration or civil society in Albania. Albania recently supported a research project by the Albanian Electro-energy company as part of an Environmental Impact Assessment (EIA) study on assessment of new power lines. Monitoring of mitigating measures is carried out by companies.

In Albania there is no railway infrastructure using power lines, thus bird safety and railway infrastructure is not an issue.

Underground cabling is not promoted as a standard technique. There is no legislation which ensures that new and fully reconstructed power lines are bird-safe by design. The impact of power lines on birds is not monitored and no priority power lines to be retrofitted or changed for bird conservation and distribution have been identified. There are no technical standards and catalogues of bird-safe power pole design and mitigation measures.

Croatia / Croatie

Organisation:	State Institute for Nature Protection
Name and position of responsible person:	Vlatka Dumbović Mazal Department for wild and domesticated taxa and habitats, Head of the Vertebrates Section
E-mail:	vlatka.dumbovic@dzzp.hr
Phone:	+38 501 550 294 6

In Croatia no national group of experts on bird safety and power lines has been identified due to a lack of funding and a low priority for this issue. No national bird monitoring protocol has been developed yet, but the development of such a protocol is planned for September 2014. The national experience on bird safety and power lines has recently been published by the national distribution company HEP – Operator distribucijskog sustava d.o.o. which published reports on bird electrocution on distribution lines for the years 2005 and 2009-2012.

Croatia supported the exchange of experience on birds and power lines with other countries through informal cooperation of Croatian ornithologists with the Hungarian NGO MME/BirdLife Hungary on protection of the Saker Falcon (*Falco cherrug*), which nests on power poles. Hungary has a very successful cooperation between their transmission and distribution companies on the conservation of Saker Falcon and the Hungarian experience is being used in Croatia.

Voluntary cooperation on bird safety and power lines between industry, public administration and civil society is on-going through cooperation between the nature protection sector and a distribution company on protective measures for White Stork (*Ciconia ciconia*) nesting on electricity poles. The cooperation is has been running since 2004. Croatia also recently supported research projects of the NGO Natural History Society Drava. These projects consist of monitoring and drafting a conservation action plan for the Saker Falcon. Monitoring of mitigating measures is carried out by companies.

The impact of railway infrastructure on electrocution and collision has not been studied in Croatia.

Underground cabling of distribution and transmission lines is not promoted as standard technique. Legislation which ensures that new and fully reconstructed transmission power lines are bird-safe by design is provided through the Strategy and Action Plan for the Protection of Biological and Landscape Diversity (OG 143/08) which provides for a spatial planning requirement, EIA requirements, and technical standards for bird-safe power poles and lines, and the regulation on EIA which applies to high-voltage (≥220 kV) transmission lines (OG 64/08, available here). In addition, under the Regulation on the ecological network of Croatia (OG 109/07 available here) plans, programmes and projects in the ecological network are subject to an appropriate assessment.

The impact of power lines on birds is generally not monitored. It should be noted however that the national distribution company HEP has begun collecting data on the electrocution on distribution lines through sending fieldworkers to locations with frequent faults. Fieldworkers report on date and place of electrocution and bird species if possible.

Priority power lines to be retrofitted or changed for bird conservation have been identified. The parts of the distribution network with the highest bird casualties and with casualties of endangered bird species are rated as a priority for retrofitting and changing. Croatia did not report whether technical standards and catalogues of bird-safe power pole design and mitigation measures have been developed.

Cyprus / Chypre

Organisation:	Game & Fauna Dept., Ministry of the Interior
Name and position of responsible person:	Panicos Panayides, Officer
E-mail:	wildlife.thira@cytanet.com.cy; panayides.gf@cytanet.com.cy
Phone:	+35 722 867 786

In Cyprus a national group of experts on bird safety and power lines has been identified and is coordinated by Game & Fauna Service, Ministry of the Interior (Email). There is no national bird monitoring protocol in place, there have been no recent publications on bird safety and power lines and no exchange of experience with other countries is currently planned.

No cooperation on bird safety and power lines between industry, public administration or civil society has been planned yet. Cyprus did not recently support research projects on bird safety and power lines. Monitoring of mitigating measures is carried out by government agencies and nature protection NGOs.

The impact of railway infrastructure on birds is not relevant for Cyprus as Cyprus does not have a railway.

Underground cabling is promoted as standard technique only in protected zones such as the Special Protection Areas under the Birds Directive. This is part of the assessment of plans and projects which affect protected species and areas.

There is no legislation which ensures that new and fully reconstructed power lines are bird-safe by design. Impact of power lines on birds is occasionally monitored by government agencies, but not in a systematic way. No priority power lines to be retrofitted or changed for bird conservation and distribution have been identified. There are no technical standards and catalogues of bird-safe power pole design and mitigation measures.

European Union / Union européenne

Organisation:	DG Environment Unit B.2 Bio-diversity
Name and position of responsible person:	François Wakenhut
E-mail:	francois.wakenhut@ec.europa.eu
Phone:	+32 229 653 80

The European Union has provided references to the Budapest Declaration on Bird Protection and Power Lines in relevant cases. The European Union is also referring to the Budapest Declaration in the context of the guidance document under preparation on energy transmission infrastructures and Natura 2000.

France / France

Organisation:	Ministry of Ecology, Sustainable Development and Energy
Name and position of responsible person:	Marianne Courouble, International issues, Sub-Directorate for Conservation and Sustainable Use of Species and their Habitat
E-mail:	Marianne.courouble@developpement-durable.gouv.fr
Phone:	+33 140 813 190

In France a national group of experts on bird safety and power lines has been identified in 2004 through the French BirdLife committee (CNA). The group of experts meets every three months and consists of Ligue de Protection des Oiseaux (LPO) represented by Yvan Tariel (Email) and Benjamin Kabouche (Email), France Nature Environnement (FNE) represented by Dominique Py (Email) and Lionel Jacob (Email), the Distribution network (ERDF) represented by Richard Lejeune (Email) and the Transmission network (RTE) represented by David Landier (Email), Jean-François Lesigne (Email) and Aude Laurens (Email). In addition, regional initiatives are being developed in the Rhône-Alpes region and Est region.

A national bird monitoring protocol on collision with distribution lines will be elaborated in the next years as part of a research project by the MNHM funded by RTE. In addition, LPO developed a monitoring protocol for evaluating the dangerousness of a line based on the behaviour of birds when they approach the line. There is no national bird monitoring protocol for electrocution. However, several monitoring protocols for electrocution by transmission lines have been developed by the LPO to evaluate the efficiency of different equipment in ensuring bird safety.

In France, experience on bird safety and power will be published in several scientific publications as part of the research project above. Experience is also published in several reports and papers such as the Renewable Grid Initiative Report (available here). The CNA also publishes a report for the member organizations of the group every six months.

France supported the exchange of experience on birds and power lines which other countries, through various networks such as CIGRE, the Renewable Grid Initiative and ENTSO-E and bilateral meetings between CNA and Transport System Operators (TSOs) in Belgium, Portugal, Spain and South Africa.

Voluntary cooperation on bird safety and power lines between industry, public administration and civil society is on-going through the CNA, including a RTE/ERDF funded position at LPO, and through action plans for species threatened by power lines developed by public administration. In addition, there is cooperation on a regional level such as the convention signed by LPO Pyrénées, RTE and DREAL Aquitaine to protect the bearded vulture. France supported research on bird safety and power lines through the development of a new bird deterring device for high voltage conducted by RTE and LPO and a prioritisation of dangerous electrical lines in the Provence Alpes Côte d'Azur by LPO, ERDF and RTE. Monitoring of mitigating measures is carried out by companies, scientific organizations and nature protection NGOs, as part of the RTE research project and as part of testing new materials.

The impact of railway infrastructure on electrocution and collision has not been studied in France.

Underground cabling of distribution and transmission lines is promoted as a standard technique everywhere in France. Legislation which ensures that new and fully reconstructed transmission power lines are bird-safe by design is provided through the application of the EIA directive, which takes into account in particular, protected areas where birds are nesting (including Natura 2000 areas designated under the Birds directive) or migratory corridors. This is supported through a ten year development plan by RTE which allows for integrated spatial planning of the net by taking into account protected areas and migratory corridors. The impact of power lines on birds is monitored by regionally by

NGOs, for example as part of the prioritisation of dangerous electrical lines in the Provence Alpes Côte d'Azur described before.

Priority transmission lines to be retrofitted or changed for bird conservation and distribution have been identified in the 1990's and 2000's. This inventory will be updated as part of the RTE research project described before. Priority distribution lines to be retrofitted or changed have only been identified at a local level such as in the Provence Alpes Côte d'Azur (see before). Technical standards and catalogues of bird-safe power pole design and mitigation measures have been developed through CNA and LPO and are implemented nationally by RTE and ERDF.

Hungary / Hongrie

Organisation:	Ministry of Rural Development
Name and position of responsible person:	András Schmidt, Deputy Head of Nature Conservation Department
E-mail:	andras.schmidt@vm.gov.hu
Phone:	+36 179 523 99

In Hungary a national group of experts on bird safety and power lines has been identified in 2008 as part of the Accessible Sky Agreement described below. The group of experts consists of representatives of the Ministry responsible for nature conservation, presently the Ministry of Rural Development, the NGO MME/BirdLife Hungary and electricity distribution and transmission companies and meets on a regular basis, at least annually. The coordinator of the group is András Schmidt, Deputy Head of Nature Conservation Department (Email). There are no regional groups of experts for this topic.

There is no national bird monitoring protocol for distribution and transmission lines in Hungary. Experience with bird safety and power lines has recently been published in publications by MME/BirdLife Hungary. Hungary has also supported the exchange of experience on birds and power lines with other country through organizing and supporting the Budapest Conference and international conferences as part of LIFE projects.

Voluntary cooperation on bird safety and power lines between industry, public administration and civil society is on-going through the Accessible Sky Agreement. The Accessible Sky Agreement forms a national programme of action on power lines and bird safety. Since the signing of the agreement in 2008 the parties to the Agreement hold regular meetings and conferences to discuss priorities and to develop and promote the best available technologies. Hungary also recently supported a research project by MME/BirdLife Hungary which assessed and prioritized power lines for retrofitting and supported the development of a new technological standard for power facilities design. Monitoring of mitigating measures is carried out by government agencies and nature protection NGOs.

The impact of railway infrastructure on electrocution is studied in Hungary, but only in a small area where railway power lines are known to have caused the death of several Great Bustards (*Otis tarda*) through collision with overhead power lines.

Underground cabling of distribution lines is promoted as standard technique in Great Bustard habitats, in areas where large concentrations of birds (water birds, cranes etc.) regularly occur and where landscape protection reasons justify underground cabling. Underground cabling of transmission lines is not promoted.

Legislation which ensures that new and fully reconstructed distribution power lines and new transmission power lines ensures are bird-safe by design is provided through Article 7 (5) of the Act No LIII of 1996 on Nature Conservation (available here). However, this article does not cover fully reconstructed transmission lines. Impacts of power lines on birds is monitored by MME/BirdLife Hungary, which started to collect systematic data on the impact of power lines on bird mortality in 2004. The monitoring protocol (available here) includes a report form with detailed instructions to the survey and to filling in the form. Surveys are carried out on an annual basis by MME (results available here) as well as by national park directorates along some power lines.

Priority transmission lines to be retrofitted or changed for bird conservation and distribution have been identified in 2008 and formed the basis of several retrofitting projects, but a more detailed prioritisation is still needed. Technical standards and catalogues of bird-safe power pole design and mitigation measures have been developed under the Accesible Sky Agreement (available here). The best available technology to produce or retrofit power lines in a bird friendly way is constantly updated and new solutions are field-tested. These standards are enforced by the environmental authorities in protected areas and Natura 2000 areas, but are also used elsewhere.

Italy / Italie

Organisation:	Ministry for the Environment, Land and Sea
Name and position of responsible person:	Eugenio Duprè
E-mail:	dupre.eugenio@minambiente.it
Phone:	+39 065 722 820 0

In Italy no expert group on bird safety and power lines has been identified due to a lack of funding. There is no national bird monitoring protocol in place. The national experience on bird safety and power lines has recently been published in a publication by government agencies and in scientific publications. No exchange of experience on birds and power lines with other countries is currently planned.

Voluntary cooperation between industry, public administration and civil society is on-going in Italy. The province of Varese, the Lombardy Region, the NGO Lega Italiana Protezione Uccelli (LIPU) and CARIPLO Foundation are partners in a LIFE Nature project (LIFE TIB, Trans Insubria Bionet) aimed at reconnecting Natura 2000 along an ecological corridor of the Regional ecological network. One of the actions involves the power company ENEL and it is aimed at mitigating the impact on birds of a power line crossing the ecological corridor. Italy recently supported a research project by LIPU and the transmission company Terna on bird collision with transmission lines in several IBAs and SPAs. Monitoring of mitigating measures is carried out by companies, government agencies and nature protection NGOs.

The impact of railway infrastructure on electrocution and collision has not been studied in Italy.

Underground cabling of distribution and transmission lines is not promoted as standard technique. Legislation which ensures that new and fully reconstructed power lines are bird-safe by design is provided through the Decreto del Presidenta della Reppublica 08/09/1997 357 which transposes the Birds Directive and thereby introduces a requirement for appropriate assessment for projects such as constructing new power lines and fully reconstructing power lines. In addition under Decreto Legislativo 3 Aprile 2006 152, which transposes the EIA and Strategic Environmental Assessment (SEA) Directives, all high-voltage transmission lines length over 10 km are subject to an EIA and a SEA. Impacts of power lines on birds are monitored by Government agencies and NGOs, based on sample sites by NGOs in agreement with the transmission and distribution companies.

No priority power lines for retrofitting or changing for bird conservation and distribution have been identified. Technical standards and catalogues of bird-safe power pole design and mitigation measures have been developed by the Ministry of Environment, Land and Sea and Istituto Superiore per la Protezione e Ricerca Ambientale in consultation with NGOs and power companies. The guidelines are available here.

Malta / Malte

Organisation:	Malta Environment and Planning Authority
Name and position of responsible person:	Darrin T. Stevens
E-mail:	bern.malta@mepa.org.mt
Phone:	+35 622 907 120

In Malta no national group of experts on bird safety and power lines has been identified as this issue is not a priority as there are no documented instances of significant bird collisions and Malta does not have substantial above ground power transmission infrastructure capable of causing significant detrimental effect on birds. Consequently, no national bird monitoring protocol is in place, there have been no recent publications on bird safety and power lines and no exchange of experience on birds of power lines with other countries is planned.

There is no voluntary cooperation on bird safety and power lines between industry, public administration and civil society. Malta did not recently support research projects of companies, scientific organisations or NGOs. Monitoring of mitigating measures is not carried out.

The impact of railway infrastructure on electrocution and collision has not been studied in Malta as Malta does not have a railway.

Underground cabling of distribution and transmission lines is promoted as standard technique in priority zones through the national land use planning and development control policies and procedures. All development proposals involving power transmission infrastructure are subjected to an assessment, which ensures that whenever possible and feasible, transmission and distribution power lines are placed underground. The recommendations of this assessment are subsequently included as conditions of development planning permit specifications. As a result of this procedure, Malta is experiencing a shift towards the provision of electrical services through underground trenches or tunnels, thus reducing the requirement for the installation of additional poles and transformers.

Legislation for new and fully reconstructed distribution and transmission power lines ensures they are bird-safe by design through development planning and control processes, through the provisions of the Environment and Development Planning Act (2010), relevant subsidiary legislation and planning policies such as the Structure Plan for the Maltese Islands and the relevant Local Plans. In addition, the Flora, Fauna and Natural Habitats Protection Regulations (Legal Notice 311 of 2006), and the Conservation of Wild Birds Regulations (Legal Notice 79 of 2006, available here) cover the protection of wild birds and activities, plans and programmes, including the development of power infrastructure. The impacts of the development of power infrastructure on biodiversity, including on birds, are also taken into consideration as part of the EIA and appropriate assessment processes.

The impact of power lines on birds is not monitored in Malta. No priority power lines to be retrofitted or changed for bird conservation and distribution have been identified and no technical standards and catalogues of bird-safe power pole design and mitigation measures have been developed.

Monaco / Monaco

Organisation:	Direction de l'Environnement
Name and position of responsible person:	Astrid Claudel Rusin
E-mail:	aclaudelrusin@gouv.mc
Phone:	+37 798 988 894

In Monaco no national group of experts on bird safety and power lines has been identified. There is no national bird monitoring protocol in place, there were no recent publications on the bird safety and power lines and no exchange of experience with other countries is currently planned.

There is no cooperation on bird safety and power lines between industry, public administration or civil society in Monaco. Monaco has not recently supported any research projects on bird safety and power lines and no monitoring of mitigating measures is carried out.

The impact of railway infrastructure on electrocution and collision has not been studied in Monaco.

Underground cabling is promoted as a standard technique everywhere. There is no legislation which ensures that new and fully reconstructed power lines are bird-safe by design. The impact of power lines on birds is not monitored and no priority power lines to be retrofitted or changed for bird conservation and distribution have been identified. Currently there are no technical standards and catalogues of bird-safe power pole design and mitigation measures.

Norway / Norvège

Organisation:	Norwegian Directorate for Nature ManagementP
Name and position of responsible person:	Principal Advisor Øystein Størkersen
E-mail:	Oystein.storkersen@dirnat.no
Phone:	+47 735 805 00

In Norway a national group of experts on bird safety and power lines has been identified and is coordinated by research institutes and electricity companies. More information can be requested from Kjetil Bevanger (Email). No regional groups have been established.

A national bird monitoring protocol is in place for transmission and distribution lines. Experience on bird safety and power lines has recently been published in scientific publications, publications of distribution companies and publications of transmission companies. Norway supported the exchange of experience on birds and power lines through an international cooperation project linked to wind turbines and power lines with the United Kingdom and Denmark. Regular annual conferences on the issues are conducted with experts from many parts of Europe (next in Sweden spring 2013).

Voluntary cooperation on bird safety and power lines between industry, public administration and civil society is on-going. There is also prescriptive cooperation in relation to the issuance of permits for new power line development.

Norway recently supported research projects of companies, scientific organisations and NGOs through the wind turbines project described above. There have also been national cross-sectoral programmes and smaller programmes on selected species such as the Eagle Owl (*Bubo bubo*) and selected sites. Monitoring of mitigating measures is carried out by research institutes and government agencies.

The impact of railway infrastructure on electrocution and collision has not been studied in Norway.

Underground cabling of distribution and transmission lines is promoted as standard technique in potential high conflict zones and near protected sites. There is no legislation which ensures that new and fully reconstructed power lines are bird-safe by design. Impacts of power lines on birds are monitored by research institutes.

Priority power lines to be retrofitted or changed for bird conservation and distribution have been identified using the information as received from NGOs. Technical standards and catalogues of bird-safe power pole design and mitigation measures have not been developed, but the recommendations in this respect in Recommendation 110 of the Standing Committee to the Bern Convention and several German guidelines are used.

Poland / Pologne

Organisation:	General Directorate for Environmental Protection
Name and position of responsible person:	Małgorzata Opęchowska, senior specialist
E-mail:	malgorzata.opechowska@gdos.gov.pl
Phone:	+48 225 792 186

In Poland no national group of experts on bird safety and power lines has been identified due to a lack of funding and a low priority for this issue. There is no national bird monitoring protocol in place. There have been no recent publications of the national experience on bird safety and power lines, but a publication on this topic by the General Directorate for Environmental Protection is planned in 2013. This publication will summarize the information on current situation regarding on bird safety and power lines. It will contain recommendations for measures and changes to the legislation regarding this issue. The impact of railway infrastructure on bird electrocution and collision will also be studied in the frame of this paper. No exchange of experience on birds and power lines with other countries is currently planned.

Voluntary cooperation on bird safety and power lines between industry, public administration and civil society is on-going. The cooperation mainly focuses on the conservation of the White Stork. For example, the Tauron EnergiaPro Group power company is mounting nesting platforms for White Storks in cooperation Regional Nature Conservators. The Energa Operator power company is also mounting platforms, and has together with Polish Society of Wildlife Friends Pro Natura started a ringing project for White Storks. The ringing is done by specially trained employees of Energa Operator. The Ekofundusz Foundation has also funded the mounting of nesting platforms and the restoration of White Stork nests in cooperation with power companies. Another area of cooperation is the identification of dangerous power lines. A project funded by the GEF and the power company Energetyka Poznańska PLC controlled over 600 km of power lines and another project involved the participation of school children in locating dangerous lines. Also a small project on identifying a dangerous power line for White-tailed Eagles (*Haliaeetus albicilla*) was undertaken, which resulted in replacing a part of a distribution line with an underground cable.

Poland did not recently support research projects of companies, scientific organizations and NGOs. Monitoring of mitigation measures is carried out by companies and nature protection NGOs.

The impact of railway infrastructure on electrocution and collision is studied as part of the publication by the General Directorate for Environmental Protection described above.

Underground cabling of distribution lines is promoted as a standard technique in urban areas, due to technical difficulties with building overhead cables in urban eareas. Underground cabling of transmission lines is not promoted as standard technique. Legislation for new and fully reconstructed distribution power lines for new transmission power lines ensures they are bird-safe by design through Article 73 of the Act of the Environmental Protection (available here) communication lines, overhead and underground pipes, cable lines and other linear features shall be carried out and implemented in such a way that restricts their impact on the environment including the possibility of movement of wild animals.

Impact of power lines on birds is monitored by NGOs and power companies. The Eagle Protection Committee NGO maintains a database on injured and killed birds of prey (*Falconiformes*) and Owls. The Nature Society Bocian NGO monitored the electrocution and collision of White Storks in the Mazowieckie Province together with engineers from power companies. Several power companies also maintain a database of accidents involving birds.

No power lines to be retrofitted or changed for bird conservation and distribution have been identified other than the power lines affecting the White Stork and White-tailed Eagle described above. Technical standards and catalogues of bird-safe power pole design and mitigation measures will be developed in 2013 as described above.

Portugal / Portugal

Organisation:	Instituto da Conservação da Natureza e Florestas – government agency for nature conservation and forests
Name and position of responsible person:	Júlia Almeida – Division of Biodiversity Conservation
E-mail:	julia.almeida@icnf.pt
Phone:	+35 121 312 480 0

In Portugal a national group of experts on bird safety and power lines has been identified in the form of a Technical Board coordinated by the distribution company EDP- Distribuição. The group has been set up in 2003 and includes EDP, the government agency for nature conservation Instituto da Conservação da Natureza e Florestas (ICNF) and the NGOs SPEA/BirdLife Portugal, Quercus and LPN. More information on the Technical Board is available here.

There is no national bird monitoring protocol in place. The national experience on bird safety and power lines has recently been published in a report the distribution company EDP on the Distribution lines Collaboration Protocols (described below), reports on EIA procedures and reports under the LIFE+ project Estepárias – Conservation of Great Bustard, Little Bustard and Lesser Kestrel in the Baixo Alentejo cereal steppes.

Portugal supported the exchange of experience on birds and power lines with other countries through an international meeting on power lines and birds in 2005, the workshop 'Impacto das linhas de Média e Alta Tensão nas populações de aves' in 2008 and two seminars in 2011. In addition, a workshop with Spain is planned in 2013 on 'Power lines and birds – balance of 10 years of protection'. This workshop will be organized under the Collaboration Protocols and will involve government agencies, power companies, NGOs and international partners and will aim at exchanging knowledge.

Voluntary cooperation on bird safety and power lines between industry, public administration and civil society is on-going through Distribution line Collaboration Protocols. Collaboration Protocols have been established since 2003 between EDP – Distribuição, the ICNF and the NGOs SPEA/BirdLife Portugal, Quercus and LPN, aiming at minimizing the impact of distribution lines on bird conservation. Studies on priority species, monitoring mortality at national level and retrofitting of power lines were carried out under these protocols. In addition, a similar protocol concerning transport lines was established in 2003-2005 with an energy transport company (REN).

Portugal recently supported research projects of companies, scientific organisations and NGOs under the Collaboration Protocols. These research projects improved the assessment of the impact of power lines on birds and have also been testing new technologies in order to reduce electrocution and collision of birds. Portugal also supported the LIFE+ project Estepárias (described above) which included monitoring and retrofitting power lines in steppe areas inside SPAs. Monitoring of mitigating measures is carried out by companies, government agencies and nature protection NGOs.

The impact of railway infrastructure on electrocution and collision has not been studied in Portugal.

Underground cabling of distribution lines is promoted as standard technique in priority zones. This includes some protected areas, where underground cabling is used to integrate power lines in the landscape and to minimize impacts on birds. Underground cabling of distribution lines is however not considered as a standard mitigation measures. Underground cabling of transmission lines is not promoted as a standard technique due to the technical difficulties with underground cabling for this type of power lines.

There is no legislation which ensures that new and fully reconstructed power lines are bird-safe by design. However, for distribution lines internal procedures and bird-safe design of distribution lines have been established within EDP. The impact of power lines on birds is monitored by government agencies and NGOs.

Priority power lines to be retrofitted or changed for bird conservation have only been identified for distribution lines. As part of the Collaboration Protocols described above criteria have been established for prioritizing power lines for retrofitting or changing. These criteria are based on the results of power line monitoring, information on distribution of sensitive bird species and their national and international status and the status of the area through in which the power lines are present.

Technical standards and catalogues of bird-safe power pole design and mitigation measures have been developed and are being implemented on a national level. More information on this issue can be obtained from the power companies.

Serbia / Serbie

Organisation:	Ministry of Energy, Development and Environmental Protection
Name and position of responsible person:	Snezana Prokic,
E-mail:	Snezana.prokic@merz.gov.rs
Phone:	+38 111 269 733 9

In Serbia no national group of experts on bird safety and power lines has been identified, but the organisation of seminars in 2013 or 2014 on monitoring bird safety and power lines with the energy sector is planned. There are also no regional groups of experts, as monitoring is the statutory responsibility of Institute for Nature Conservation of Serbia (INC) and the Provincial Institute for Nature Conservation Novi Sad.

There is no national bird monitoring protocol in place. The national experience on bird safety and power lines has recently been published in scientific publications, Doctor and Master Theses and publications of distribution and transmission companies. Serbia supported the exchange of experience on birds and power lines with other countries through a project on the conservation of White Storks by Bird Protection and Study Society of Vojvodina together with partners from Hungarian Ornithological and Nature Conservation Society, League of Ornithological Action, Provincial Secretariat for Environmental Protection and Sustainable Development and INC in which the Hungarian experience was used to provide safe nesting platforms for the White Storks.

Voluntary cooperation on bird safety and power lines between industry, public administration and civil society is on-going through educational seminars for managers from the Elektromreza Srbije power company organized by the Bird Protection and Study Society of Vojvodina. Serbia recently supported research projects on bird safety and power lines, such as the project by the NGO Bird Protection and the scientific organization Study Society of Vojvodina describe above. Monitoring of mitigating measures is carried out by companies, research institutes and nature protection NGOs.

The impact of railway infrastructure on electrocution and collision has been studied as part of Doctor and Master Theses.

Underground cabling of distribution and transmission lines is promoted as standard technique in urban areas. There is currently no legislation which ensures that new and fully reconstructed power lines are bird-safe by design. However, a rulebook on particular technical and technological solutions which facilitate undisturbed and safe communication of wild animals will be established by the Ministry of Environment and Spatial Planning and the Ministry of agriculture, forestry and water management. The impact of power lines on birds is monitored by research institutes through the official monitoring system by Institute of Nature Conservation of Serbia and Provincial Institute for Nature Conservation and by NGOs.

No power lines to be retrofitted or changed for bird conservation and distribution have been identified. Technical standards and catalogues of bird-safe power pole design and mitigation measures are being developed as part of the rulebook described above.

Slovak Republic / République Slovaque

Organisation:	State Nature Conservancy of the Slovak Republic (expert body of the Ministry of Environment of the Slovak Republic)
Name and position of responsible person:	Michal Adamec
E-mail:	Michal.adamec@sopsr.sk
Phone:	+ 42 190 329 811 5

In the Slovak Republic a national group of experts on bird safety and power lines has been identified through the State Nature Conservancy of the Slovak Republic (SNC) represented by Michal Adamec (Email) and the NGOs Raptor Protection of the Slovak Republic (RPS) represented by Josef Chavko (Email) and Lucia Deutschová (Email) and SOS / BirdLife Slovakia. This group actively cooperates with the Slovak power companies.

There is no national bird monitoring in place as such in the Slovak Republic, but a common procedure of monitoring and documentation has been established which specifies how the listing and registration of the power pylon has to be done and how possible occurrence of injured / dead bird should be documented (GPS coordinates, photo, type of pylon, type of insulator, etc.). National experience on bird safety and power lines has recently been published in publications of government agencies, scientific publications and other publications. The Slovak Republic supported the exchange of experience on birds and power lines with other countries through participation in two LIFE+ projects on the conservation of the Saker Falcon with Bulgaria, Hungary and Romania described below.

Voluntary cooperation on bird safety and power lines between industry, public administration and civil society is on-going. Energy distribution companies support monitoring of birds affected by power lines and are voluntary partners in different projects (including LIFE+), in which they cooperate with SNC and NGOs, underpinned by Memoranda of understanding. In addition the Eastern Energy Distribution Company supported a project with the Carpathian Foundation on bird safety and power lines described below.

The Slovak Republic recently supported several research projects of companies, scientific organisations and NGOs through several LIFE+ projects. In total six LIFE+ projects focussed on identifying and changing electric infrastructure for the conservation of the Saker Falcon, the Eastern Imperial Eagle (*Aquila heliaca*) and the Great Bustard. In addition an on-going research project of the Carpathian Foundation and the Eastern Energy Distribution Company is currently investigating the efficiency of using mortality-reducing equipment on bird electrocution and collision.

Monitoring of mitigating measures is carried out by government agencies and nature protection NGOs. For example a recent project in eastern Slovakia monitored the efficiency of hat-protector insulators and found out that these were not working properly.

The impact of railway infrastructure on electrocution and collision has not been studied in the Slovak Republic.

Underground cabling of distribution and transmission lines is promoted as standard technique close to important bird resting places (for example Ramsar sites, other wetlands, etc.) and on important migration routes, mostly international. Legislation for new and fully reconstructed distribution power lines and for new transmission power lines ensures they are bird-safe by design through Act No. 543/2002 Coll. on Nature and Landscape Protection as amended. Under this law the owner of lines is responsible for preventing electrocution of birds and must make arrangements to prevent electrocutions when erecting or reconstructing electric lines or when it is proved that a bird is killed on a pole. Everyone who constructs or carries out scheduled reconstruction of overhead electricity lines is obliged to use such technical solutions that prevent the death of birds. If the death of birds on power

lines or telecommunication facilities is proven, the nature protection body may rule, that an administrator of power lines or telecommunication facilities has to adopt measures to prevent killing birds. In addition, all plans and projects regarding the construction of power lines should comply with the Directives on SEA and EIA requirements (EIA Act. No 24/2006 Coll).

Impact of power lines on birds is monitored by Government agencies and NGOs. The monitoring protocol is based on recommendations by NABU (available here).

Priority lines to be retrofitted or changed for bird conservation have been identified in the Slovak Republic, for example through the LIFE projects mentioned above. The owner is then legally obliged to retrofit or change dangerous poles and lines. Technical standards and catalogues of bird-safe power pole design and mitigation measures have been developed and are implemented nationally. A policy of elimination of threats to birds has been developed by SNC and power companies and a technical provision on the use of consoles for electric overhead lines has been developed by the RWE Group (available here).

Spain / Espagne

Organisation:	Deputy Directorate on Wildlife. Ministry of Agriculture, Food and Environment
Name and position of responsible person:	Luis Mariano González. Head of Conservation Actions Unit
E-mail:	LMGonzalez@magrama.es
Phone:	+34 915 976 710

In Spain a national group of experts on bird safety and power lines was identified in the form of a formal working group within the Committee on Wildlife of the Ministry of Agriculture, Food and Environment. This working group was established in 2003 for preparing draft legislation to regulate the technical adaptation of dangerous power lines for birds and for the construction of new power lines in compliance with appropriate technical criteria. The group consists of experts from the regional competent authorities.

There is no national monitoring in place in Spain. The national experience on bird safety and power lines has recently been published in publication of government agencies, scientific publications and publications by distribution and transmission companies. Spain supported the exchange of experience on birds and power lines with other countries, such as Bulgaria and Portugal by coordinating projects on monitoring bird mortality and identifying dangerous power infrastructure. In addition several Spanish NGOs have developed joint activities with organizations in other countries such as Morocco and Portugal.

Voluntary cooperation on bird safety and power lines between industry, public administration and civil society is on-going. Power companies, regional and national government authorities and conservation organizations have signed several agreements to take action on dangerous power infrastructure. These actions have been supported financially by government authorities and power companies. There have also been coordinated policies from the competent Spanish authorities for endangered species and for industries to develop better regulations and to tackle the problem of collision and electrocution of endangered birds and power lines.

Spain recently supported research projects on bird safety and power lines by companies, scientific organisations and NGOs. National and regional authorities have invested in the monitoring of power lines and the identification of dangerous power lines. The data from this research has formed the basis for research projects by NGOs, scientific institutions and by the authorities themselves. In addition, the Ministry of Agriculture, Food and Environment is developing a handbook to help identify bird remains at species level, which will assist in assessing power line mortality.

Monitoring of mitigating measures in Spain is carried out by research institutes, government agencies and nature protection NGOs.

The impact of railway infrastructure on electrocution and collision has not been studied in Spain.

Underground cabling of distribution and transmission lines is promoted as standard technique in priority areas such as national and natural parks. Legislation for new and fully reconstructed power lines ensures they are bird-safe by design through Real Decreto 1432/2008 (available here). There are also regional regulations which the application of technical standards to new power lines.

Impact of power lines on birds is monitored by Government agencies, research institutes and NGOs. No national monitoring protocol has been established, although some NGOs and scientific institutes have developed sampling methods which allow for comparison of mortality between regions.

Priority power lines to be retrofitted or changed for bird conservation and distribution have been identified in Spain. Retrofitting and changing power lines have been going on in Spain since the 1990's, but cost of removing critical electrocution hotspots by far exceeds the available budget. In total € 15,5 million has been invested in retrofitting dangerous power lines between 2008 and 2012.

Technical standards and catalogues of bird-safe power lines have been developed and are being implemented as part of the national legislation (available here).

Switzerland / Suisse

Organisation:	Federal Office for the Environment
Name and position of responsible person:	Sarah Pearson Perret
E-mail:	sarah.pearson@bafu.admin.ch
Phone:	+41 313 226 866

In Switzerland no national group of experts on bird safety and power lines has been identified, although there have been different activities related to this issue. There is no national bird monitoring protocol in place. The national experience on bird safety and power lines has recently been published in scientific publications (available here), a report by the Schweizerischen Vogelwarte Sempach (available here) and a report by the Association of Swiss Electricity Companies VSE, the Federal Inspectorate for Heavy Current Installations ESTI, Schweitzer Vogelschutz SVS/BirdLife Switzerland, Schweizerischen Vogelwarte Sempach and the Federal Office for Environment FOE (available here). Switzerland supported the exchange of experience on birds and power lines with other countries through participation in international fora such as the Convention on Migratory Species (CMS) and the African-Eurasian Waterbird Agreement (AEWA).

Voluntary cooperation on bird safety and power lines between industry, public administration and civil society is on-going through the cooperation between the FOE, VSE, ESTI, the Federal Office of Transport FOT, the Swiss Federal Railways SFR and SVS/BirdLife Switzerland, which aims at improving bird safety in relation to power lines. This cooperation resulted in guideline on bird safety on power lines greater than 1 kV (available here). However there is still scope for intensification of the cooperation with regard to implementation of activities in the field.

Switzerland did not recently support research projects of companies, scientific organisations or NGOs. There is no monitoring of mitigating measures is, for although the fundamentals for mitigation measures are in place, further efforts are needed to implement them effectively.

The impact of railway infrastructure of electrocution and collision have been studied in Switzerland and as result protective measures for birds have to be undertaken during the construction of railway infrastructure (see the guidelines here). Further activities are currently being discussed.

Underground cabling of distribution and transmission lines is not promoted as a standard technique, although the use of underground cabling is currently being discussed. In Switzerland, the installation of new transmission lines is governed by the Ordinance on electric transmission lines (available here). Under this Ordinance it has to be decided on basis of objective criteria whether underground cabling should be implemented. The FOE has developed a catalogue of criteria (available here), however these criteria do currently not take bird protection into account. In this respect the guidelines on electricity transmission and landscape conservation of the Federal Department of Home Affairs from 1980 should however be taken into account, which provide that important bird areas, habitats of sensitive species and the closer vicinity of breeding sites of vulnerable species as well as nationally important landscapes, species and habitats should be avoided. However before underground cabling is considered as an option, alternative routes have to be investigated first.

Legislation which ensures that new and fully reconstructed power lines are bird-safe by design is provided through Ordonnance RS743.31 (available here) which requires power lines to be constructed using technologies that avoid electrocution and requires new power lines in important areas for birds to be planned and constructed in a way that minimizes the risk of collision. In addition, under Swiss EIA legislation (available here) the construction of new transmission lines and most new distribution lines is subject to strict EIA procedures. Furthermore the Federal Act on the Protection of the Environment (available here) requires that the environmental impact of new facilities or expansion of existing ones must be subject to an assessment before approval, and the Ordinance on EIA identifies new construction and modification to existing electric power infrastructure and power lines to be subject to an EIA.

Impact of power lines on birds is *ad hoc* monitored through the national ringing scheme by the Swiss Ornithological Institute which allows for the monitoring of mortality caused by power lines through the recovery of ringed birds. However, the national ringing scheme does not provide a complete national overview on the impact of power lines on birds.

No priority power lines to be retrofitted or changed for bird conservation and distribution have been identified. Technical standards and catalogues of bird-safe power pole design and mitigation measures have been developed in 2009 by the cooperation described above (available here).

United Kingdom / Royaume-Uni

Organisation:	Department for Environment, Food and Rural Affairs
Name and position of responsible person:	Dave Wootton
E-mail:	dave.wootton@defra.gsi.gov.uk
Phone:	+44 117 372 360 2

In the United Kingdom no national group of experts on bird safety and power lines has been identified because this issue is not seen as a priority. There is no national bird monitoring protocol in place, although electricity companies generally maintain coded information to record evidence of bird strikes in general (and swan strikes specifically). Faults on the lines resulting from bird strikes are also recorded. These reports generally relate to the power lines rather than the birds themselves; information about individual birds may however be held informally and locally in some cases. There is no information on the publication of national experience on bird safety and power lines. The exchange of national experience with other countries is not planned.

Voluntary cooperation on bird safety and power lines between industry, public administration and civil society is not planned. The United Kingdom has not recently supported research project of companies, scientific organizations and civil society on bird safety and power lines. Monitoring of mitigating measures is not carried out.

The impact of railway infrastructure on electrocution and collision has not been studied.

Underground cabling of distribution and transmission lines is not promoted as standard technique but is considered where appropriate having regard to cost and possible habitat damage that could ensue.

There is no legislation which ensures that new and fully reconstructed power lines are bird-safe by design. Electricity companies have responsibility for power line design, including supporting poles, however it is believed that many of the most dangerous types for birds are not used in the UK. The construction of new infrastructure is subject to an EIA requirement, governed by a National Policy Statements (available here). The impact of power lines on birds is monitored by NGOs such as the Wildlife trusts, but only locally and on an informal level.

No priority power lines to be retrofitted or changed for bird conservation have been identified and no technical standards and catalogues of bird-safe power pole design and mitigation measures have been developed.

4. REVIEW OF PREVIOUS REPORTS ON POWER LINES AND BIRDS

Belgium / Belgique

Belgium has recently supported a research project on the impact of transmission power lines in the protected area the Yser Valley.

Bosnia and Herzegovina / Bosnie-Herzégovine

In 2010 there was no legislation which ensured that new and fully reconstructed power lines are bird-safe by design in Bosnia and Herzegovina. However, a draft legislative proposal on nature protection was being prepared for the Federation of Bosnia and Hergovina. Article 47 of that draft proposal provided that poles and technical components of power lines should be manufactured in a way that is safe for bird and protects them from electric shock. The proposal also stated within ten years all power infrastructure that represents a threat to bird safety should be retrofitted.

Technical standards and catalogues of bird-safe power pole design and mitigation measures were being developed in 2010 through a rulebook drafted by the Ministry of energy, mining and industry of Federation of Bosnia and Herzegovina, with the agreement of the Federal ministry of environment and tourism

Bulgaria / Bulgarie

In Bulgaria national experience on bird safety and power lines has recently been published in scientific publications and other publications. Bulgaria supported the exchange of experience on birds and power lines through meeting between BSPB / BirdLife Bulgaria and the Bulgarian distribution power company EVN with Hungarian experts as part of a LIFE-project.

Voluntary cooperation on bird safety and power lines between industry, public administration and civil society was on-going in Bulgaria in 2010 through joint action of the Ministry of Environment and Water and their Regional Inspectorates BSPB / BirdLife Bulgaria, the transmission company National Electric Company and the distribution companies EVN, CEZ and EON. Bulgaria supported research projects by NGOs through their Operational Programme Environment which supported surveys and activities for reduction the effect of the power lines on the raptors by the Green Balkans Federation of nature conservation NGOs. This project focussed on the conservation of Lesser Kestrel (*Falco naumanni*), Black Vulture (*Aegypius monachus*) and Eastern Imperial Eagle.

In 2010 there was no legislation for new and fully reconstructed power lines which ensured they are bird-safe by design. Some Special Protection Areas include a ban on construction of new dangerous power lines. In addition, EIA procedures can result in underground cabling. The Bulgarian government is planning to implement legislative and preventive mechanisms by a restriction or ban of the most dangerous types of poles, using the recommended technical standards for bird safety for new and retrofitted power lines and encouraging underground cabling where possible in technical and financial terms. The government is also planning to impose of appropriate requirements on plans and projects by EIA decisions in locations of particular importance to birds and where birds may be vulnerable to collisions.

The impacts of power lines on birds were monitored as part of research projects and on an *ad hoc* basis by NGOs.

Priority power lines to be retrofitted or changed for bird conservation and distribution were identified locally for the conservation of the Imperial Eagle in 2008 and 2009 as part of LIFE-project of BSPB/BirdLife Bulgaria and the EVN power company and in 2010 in the Bourgas wetlands as part of another LIFE-project of BSPB/BirdLife Bulgaria and the EVN power company. These projects included the retrofitting of the dangerous power lines identified.

Czech Republic / République tchèque

In Czech Republic, legislation for new and fully reconstructed power lines ensures they are bird-safe by design through Act No. 114/1992 Gazette on the Protection of Nature and the Landscape. Article 6 of this Act provides that anybody who constructs or reconstructs aboveground high-voltage

line to furnish it with protective means, effectively preventing killing of birds by electric current. Birds are also covered by the general protective provisions of Article 50 of this Act. In addition building new power lines or fully reconstructing power lines in SPAs or near SPAs which are likely to cause damage are subject to permission by the Nature Conservancy authority. Furthermore, Act No. 100/2001 Gazette on EIA specifies that the intention for building or reconstruction of above-ground electricity transmission lines is assessed in the category as "impact" which falls under the conditions of the Act and therefore scoping, screening and assessment of impacts on the environment (including announcement, documentation, expert opinion etc.) has to be carried out. The Nature Conservancy authority provides input during all phases in the procedure.

The impact of power lines on birds is monitored through a national scheme.

Priority power lines to be retrofitted or changed for bird conservation and distribution have been identified in Czech Republic in 2003 and 2007 by the NGO Ochrana fauny ČR. The Czech Republic was divided in three zones based on bird distribution and power lines density, with power lines in Zone I (areas with high bird density, important migratory flyways, important wintering sites and areas with occurrence of Specially Protected birds) being a priority. In addition, between 1998 and 2001 in some parts of the Czech Republic 8 000 poles were retrofitted in sites with the Peregrine Falcon (*Falco peregrinus*) and Saker Falcon.

Technical standards and catalogues of bird-safe power pole design and mitigation measures were being developed in the Czech Republic in 2010 and will be included in guidelines by the Ministry of the Environment to the Nature Conservancy authorities. The guidelines cover the assessment of bird collisions on new and fully reconstructed power lines, the placement of power lines in the landscape and technical standards for avoiding collision with wires and for avoiding bird electrocution based on Recommendation 110 of the Bern Convention. Only projects which comply with the requirements on placement and the technical standard can be considered for permission. In addition, new or fully reconstructed power lines in SPAs are subject to additional requirements.

Estonia / Estonie

In Estonia, underground cabling of distribution and transmission lines is promoted where economically feasible.

Legislation for new and fully reconstructed power lines ensures they are bird-safe by design in SPAs through the Conservation act, which requires an EIA for plans which can significantly affect SPAs, including building new and fully reconstructing power lines. The need for underground cabling and safer poles is assessed as part of the EIA. In addition a SEA requirement applies to strategic planning documents for power lines and an EIA requirement applies to new large transmission lines.

The impact of power lines on protected birds is monitored by the Environmental Board. Under the Conservation Act a person who finds a dead specimen of a protected animal species should immediately inform the Environmental Board, who keeps a registry of the species found, the location and the cause of death.

Priority power lines to be retrofitted have been identified locally for the White stork. To reduce the effect of power lines on White Stork populations power companies have done nest relocation work and also built 200 safe artificial nest bases which have been quickly colonised.

European Union / Union européenne

The European Union has developed a Species Action Plan (SAP) for several species on Annex I of the Birds Directive. Retrofitting or changing power lines has been identified by the European Union as part of the SAP for the following species:

- Corso-Sardininian Goshawk (*Accipiter gentilis arigonii)*
- Spanish Imperial Eagle (*Aquila adalberti*)
- Imperial Eagle (*Aquila heliaca*)
- Lesser Spotted Eagle (*Aquila pomarina*)

- Bittern (*Botaurus stellaris*)
- Dupont's Lark (*Chersophilus duponti*)
- Canary Islands Houbara Bustard (*Chlamydotis undulata fuertaventurae*)
- European Roller (*Coracias garrulus garrulus*)
- Cream-Coloured Courser (*Cursorius cursor*)
- Lanner Falcon (*Falco biarmicus*)
- Gyrfalcon (*Falco rusticolus*)
- Bonelli's Eagle (*Hieraaetus fasciatus*)
- Egyptian Vulture (*Neophron percnopterus*)
- Great Bustard (*Otis tarda*)
- Dalmatian Pelican (*Pelecanus crispus*)
- Red kite (*Milvus milvus*)
- Red-footed Falcon (*Falco vespertinus*)

In addition, in the SAP for Greater Spotted Eagle (*Aquila clanga*), Dupont's Lark (*Chersophilus duponti*) and Little Bustard (*Tetrax tetrax*) it is recommended not to construct new power lines in areas where this species occurs. In the SAP for Lammergeier (*Gypaetus barbatus*) and the Management Plan for Lapwing (*Vanellus vanellus*) it is mentioned that collision with power lines can be a threat to these species but no mitigating measures were identified.

Germany / Allemagne

Germany supported the exchange of experience on birds and power lines with other countries through a translation of the brochure on electrocution of birds produced by the NGO NABU into different languages (available here).

Legislation which ensures that new and fully reconstructed power lines are bird-safe by design is provided through the Article 41of the National Nature Conservation Law (Bundesnaturschutzgesetz) which provides that new poles and other parts of medium voltage transmission lines are to be installed in a way that allows bird species to be protected from electrocution. Existing high risk poles and other parts of mid-voltage transmission lines should undergo the necessary changes to protect bird species from receiving electric shocks before 21 December 2012. Railway infrastructure was originally exempt from the requirement to change dangerous infrastructure, but the legislation has recently been amended to also include railway infrastructure. In addition, bird collisions and habitat loss from new power lines are covered also covered by the National Nature Conservation Law through general provisions on interventions within natural and landscape areas.

Technical standards and catalogues of bird-safe power pole design and mitigation measures have been developed and are being implemented nationally. The first version of the guidelines has been developed in 1991, but was being updated in 2009 under the coordination of the Federal ministry for the Environment.

Iceland / Islande

Legislation ensures that new and fully reconstructed transmission power lines are bird-safe by design through EIA requirements for power lines with a voltage of 66 kV or more outside urban areas. The EIA should include effects on birds, as was decided by the Icelandic National Planning Agency in a landmark EIA (available here).

The impact of power lines of birds was not being monitored in Iceland in 2009.

Latvia / Lettonie

Voluntary cooperation on bird safety and power lines was on-going in Latvia in 2010 through cooperation between the distribution company Sadales tikli AS, the NGO Latvian Ornithological Society and the State Nature Protection authorities on the development of special instructions for employees of Sadales tikli on White Stork nests on power lines.

Republic of Moldova / République de Moldova

There was no legislation which ensured that new and fully reconstructed power lines were bird-safe by design in Moldova in 2010, although the current legislation was being reviewed in this respect.

Sweden / Suède

There was no specific legislation in Sweden in 2009 which ensured that new and fully reconstructed transmission power lines are bird-safe by design, although EIA requirements apply to some power lines.

The impacts of power lines on birds are monitoring *ad hoc* by the Swedish Museum of Natural history through collecting information on electrocuted birds that is sent to them. During 2007 and 2008 the most commonly found species were Eagle Owl, White-tailed Eagle (*Haliaetus albicilla*), Golden Eagle (*Aquila chrysaetos*) and Ural Owl (*Strix uralensis*).

Technical standards and catalogues of bird-safe power pole design and mitigation measures have not been developed in Sweden. It should be noted however that the Swedish Rail Administration has implemented mitigating measures regarding the impact of railway infrastructure on birds and has developed internal guidelines on this topic. The mitigating measures include underground cabling, reflectors attached to power lines, insulating dangerous parts of power poles and substations and planting trees to make birds avoid power lines, in order to reduce the risk of collision.

First of all it should be noted that the response rate to the questionnaire by the Standing Committee has been low. Only seventeen out of the fifty contracting parties (34 %) that received the questionnaire have sent a reply. Another ten contracting parties had previously provided relevant information on power lines and bird safety to the Standing Committee. It should be noted however that some contracting parties also have reported to AEWA and CMS on bird safety and power lines (see Annex IV) indicating some actions on bird safety and power lines.

The present evaluation of implementation of action points of the Budapest declaration can therefore by no means be seen as a general report on the implementation of the action points in all contracting parties of the Bern Convention.

The implementation of preparatory actions under the Budapest declaration to be completed by the end of 2012 has been limited.

Expert groups on bird safety and power lines have been identified in Cyprus, France, Hungary, Norway, Portugal, the Slovak Republic and Spain. A national programme for prevention and mitigation of bird electrocution and collision has only been reported from Hungary.

No internationally coordinated start-up programme for knowledge exchange has been initiated.

The exchange of experience between EU and non-EU countries is on-going and has been actively supported by Bulgaria, Croatia, France, Germany, Hungary, Norway, Portugal, Serbia, the Slovak Republic, Spain and Switzerland. The exchange included the organization and participation in international conferences, cooperation in international projects and international reporting of best practice.

Some progress has already been made in the implementation of planning and standard verification actions under the Budapest declaration to be completed by the end of 2015.

A national prioritisation of power lines for retrofitting and adaptation has been undertaken in Croatia, Czech Republic, France, Hungary, Portugal and Spain, although not always for all bird species at risk. In Germany, all power lines will be retrofitted or adapted. Regional prioritisations have taken place in Bulgaria, Estonia, Norway, Poland and the Slovak Republic.

Technical standards and catalogues of bird-safe power pole designs for new lines and mitigation measures for retrofitting existing lines have been developed and implemented in Czech Republic, France, Germany, Hungary, Portugal, the Slovak Republic, Spain and Switzerland and are being developed in Bosnia and Herzegovina, Poland and Serbia.

Good progress has also already been made on the elimination of bird losses on new and fully reconstructed power lines which have to be bird safe from 2016 onwards. Legislation which ensures that new and fully reconstructed power lines are bird-safe by design has been introduced in Croatia, Czech Republic, Estonia, France, Germany, Hungary, Iceland, Poland, Portugal, the Slovak Republic, Spain, Sweden and Switzerland. The positive role of EIA in many contracting parties should be noted in this respect, although an EIA is generally not required for distribution lines.

Some progress has already been made in mitigation actions on existing power lines, which are to be completed by the end of 2020. Dangerous pole types have been retrofitted or changed in Czech Republic, Hungary, Poland, Portugal, the Slovak Republic and Spain.

There has no progress on monitoring and limited reporting. The development of an international standardised monitoring of impacts of power lines is has not started yet. Although monitoring of impacts of power lines on birds and mitigating measures is on-going in several contracting parties, a national protocol for monitoring bird electrocution and collision has only been put in place in Norway and is being developed in France. Only seventeen contracting parties have reported to the Standing Committee.

The questionnaire contained questions on several topics related to bird safety and power lines other than the action points of the Budapest declaration. Several contracting parties have recently supported research projects on bird safety and power-lines and publication of national experience on power lines and bird safety is on-going, including many scientific publications and publications by government agencies.

Voluntary cooperation on bird safety and power lines between industry, public administration and civil society is on-going in several contracting parties and includes voluntary agreements, financial support and the development of guidelines. The active role of the power industry and the nature protection NGOs in this cooperation deserves mentioning here.

The impact of railways on bird electrocution and collision has only been studied in Hungary and Serbia and will be evaluated next year in Poland. Underground cabling is promoted as a standard technique everywhere in France and Monaco and in priority zones for birds in Cyprus, Hungary (distribution lines only), Malta, Portugal (distribution lines only), the Slovak Republic, Spain and Switzerland.

6. RECOMMENDATIONS

On the basis of the conclusions presented in the previous chapter a number of specific key recommendations are made to the Expert Group on Birds:

1. Invite contracting parties who have not submitted a report yet to report on implementation of the action points of the Budapest Declaration;
2. Invite contracting parties who have not identified a national group of experts are to step up their efforts to identify such a group;
3. Invite the contracting parties to establish an international group of experts;
4. Invite contracting parties who have not developed a National Programme of Action to develop and implement such a programme;
5. Invite contracting parties to initiate an internationally coordinated start-up programme for knowledge exchange;
6. Invite contracting parties to coordinate their efforts to develop an international monitoring protocol for the impact of power lines on birds;
7. Invite contracting parties to do a quick scan of the impacts of railway infrastructure on birds as this topic has not been studied in most countries examined.

ANNEX I - RECOMMENDATION NO. 110 (2004)

Convention on the Conservation
of European Wildlife and Natural Habitats

Standing Committee

Recommendation No. 110 (2004) of the Standing Committee, adopted on 3 December 2004, on minimising adverse effects of above-ground electricity transmission facilities (power lines) on birds

The Standing Committee of the Convention on the Conservation of European Wildlife and Natural Habitats, acting under the terms of Article 14 of the Convention,

Having regard to the aims of the Convention to conserve wild fauna and its natural habitats;

Recalling that Article 2 of the Convention requires Parties to take requisite measures to maintain the population of wild fauna at a level which corresponds in particular to ecological, scientific and cultural requirements, while taking account of economic requirements;

Recalling that Article 3.2 of the Convention requires each Contracting Party to undertake, in its planning and development policies and in its measures against pollution, to have regard to the conservation of wild fauna.

Recalling also the Convention on the Conservation of Migratory Species of Wild Animals (CMS) Resolution 7.4 on Electrocution of Migratory Birds adopted by the 7th meeting of the Conference of the Parties (2002) and recognising the intention of the CMS to increase cooperation with the Bern Convention;

Recognising the importance of maintaining energy supplies and for actions taken to protect birds to be proportionate in terms of cost and to avoid reduction in overall level of safety of transmission lines or in stability of supply**;**

Recognising the importance of maintaining a stable energy supply and avoiding a reduction in the overall level of safety of transmission lines;

Recognising also that actions taken to protect birds should be proportionate in terms of cost,

Referring to the information presented in the report T-PVS/Inf (2003) 15 *Protecting birds from powerlines: a practical guide to minimising the risks to birds from electricity transmission facilities*, prepared by BirdLife International for the Council of Europe, informing of the negative impact on many species of wild bird (including migratory species) across Europe and the world, from overhead electricity transmission lines, conductors and towers (including those associated with railway infrastructure) through increased mortality due to electrocution, collision and also through reduction of suitability of staging, wintering and breeding areas, especially when powerlines cross open landscapes;

Concerned that a significant number of bird species suffering from electricity transmission facilities are listed in Annex II to the Convention, and that the threat is increasing due to the continuing construction of dangerous electricity transmission facilities;

Concerned particularly that, without action to minimize threats to birds from electricity transmission facilities, many populations and potentially species, including globally threatened species such as *Aquila adalberti* may be severely affected;

Recognising that, especially in arid zones, electrocution of birds on transmission lines can cause disastrous forest fires affecting both wildlife and people and for which electric utility companies can expect to be made liable;

Aware that technical solutions are available to eliminate or reduce transmission line electrocution and collision risk posed to birds and that such solutions which are safer for birds also correspond to a better energy supply and therefore are an advantage to supplying companies; most existing facilities do not incorporate such solutions

Desiring to raise awareness among the public, developers and decision-makers of the serious, widespread risks posed to birds by powerlines and that these can readily be minimised;

Recommends that Contracting Parties to the Convention:

1. take appropriate cost-effective measures to reduce bird mortality from electric transmission facilities taking into account Resolution 7.4 of the Seventh meeting of the Parties of the Convention on Migratory Species of Wild Animals (Appendix 2), applying those cautions to cases where non-migratory species may be affected;

2. apply as far as possible the measures for bird safety suggested in the report mentioned in the *consideranda* above, and in particular those suggested in the enclosed Appendix 1, taking into account that, to ensure appropriately located and safe constructions, the following measures need to be considered:

To avoid electrocution

a) banning of the most dangerous types of pole

b) use of state-of-the-art recommended technical standards for bird safety for new and retrofitted facilities

To avoid collisions and reduction of habitat availability, while improving air safety

c) encouraging underground location of cables where possible in technical and financial terms; or

d) in locations of particular importance to birds, and where birds may be vulnerable to collision, consents should be conditional upon examination of different routing alternatives prior to and during the planning phase, involving a minimum of one year of ornithological investigations including of bird movements during both day and night ;

e) constructions should obstruct only a minimum of air space in a vertical direction i.e. single-level arrangement of conductor cables with no neutral cable above or clearly visible black-and-white markers should be attached to high-risk cables;

3. consider replacing underground overhead powerlines in areas of exceptional high interest for birds, particularly in protected areas and in areas designated for the Natura 2000 and Emerald Networks for their bird interest.

4. systematically collect information with respect to collisions and electrocutions on electricity transmission lines;

5. communicate to the Standing Committee the relevant steps that have been adopted or envisaged concerning the implementation of this recommendation as well as information on the outcome of measures adopted;

Invites observer states to take note of this recommendation and implement it as appropriate.

APPENDIX 1

Examples of measures that may be considered as appropriate for minimising the negative impacts on birds of electricity transmission facilities are listed for implementation by Contracting Parties. Additional standards, including stricter standards, may be adopted by Contrating Parties. The design and route of electricity transmission lines is critically important to avoiding deleterious impacts on birds.

In considering these examples of possible bird mitigation measures, it is recognised that the electricity industries in Contracting Parties will necessarily have to work at actions that might be taken to protect birds in a wider context. This includes cost, stability of supply and overall safety of transmission lines

A. Criteria for Environmental Assessment

(a) Thorough environmental assessment[1] should be undertaken for all electricity transmission lines that have the potential for damaging effects on wild birds or in areas where there is uncertainty as to the potential effects. .

(b) The use of standard methods is essential to ensure comparability, adopting the Before-After Control-Impact (BACI) approach with consistent application of these methods before, during and after construction in the vicinity of the power line and a reference area for comparison

(c) There is a need for best practice guidance on standard study methods, to inform the EIA process.

(d) In case of lacking knowledge and in areas of particular importance to birds, a **minimum** one-year baseline field study should be undertaken to determine the use of the study-area by birds.

(e) Post-construction monitoring needs to enable short- and long-term effects and impacts to be distinguished and satisfactorily addressed.

The following list of bird families are indicative of those that should tend to be focal species for environmental assessments where they are at risk as they are considered to be particularly sensitive, or potentially so, to power lines (electrocution, collision, displacement including barrier to movement). Key: 0 - no casualties reported or likely; I - casualties reported, but no apparent threat to the bird population; II - regionally or locally high casualties; but with no significant impact on the overall species population; III - casualties are a major mortality factor; threatening a species with extinction, regionally or on a larger scale.

	(a) due to electrocution	(b) due to collisions
Loons (*Gaviidae*) and Grebes (*Podicipedidae*)	0	II
Shearwaters, Petrels (*Procellariidae*)	0	I - II
Bobbies, Gannets (*Sulidae*)	0	I - II
Pelicans (*Pelicanidae*)	I	II - III
Cormorants (*Phalacrocoracidae*)	I	II
Herons, Bitterns (*Ardeidae*)	I	II
Storks (*Ciconidae*)	III	III
Ibisses (*Threskiornithidae*)	I	II
Flamingos (*Phoenicopteridae*)	0	II
Ducks, Geese, Swans, Mergansers (*Anatidae*)	0	II
Raptors (*Accipitriformes* and *Falconiformes)*)	II - III	I - II
Partridges, Quails, Grouses (*Galliformes*)	0	II - III
Rails, Gallinules, Coots (*Rallidae*)	0	II - III

[1] For example, as set out in Directive 2001/42/EC of the European Parliament and of the Council '*Assessment of certain public and private projects on the environment'*(EIA Directive) as amended by Directive 97/11/EC.

Cranes (*Gruidae*)	0	II - III
Bustards (*Otidae*)	0	III
Shorebirds / Waders (*Charadriidae* + *Scolopacidae*)	I	II - III
Skuas (*Sterkorariidae*) and Gulls (*Laridae*)	I	II
Terns (*Sternidae*)	0 - I	II
Auks (*Alcidae*)	0	I
Sandgrouses (*Pteroclididae*)	0	II
Pigeons, Doves (*Columbidae*)	II	II
Cuckoos (*Cuculidae*)	0	II
Owls (*Strigiformes*)	I - II	II - III
Nightjars (*Caprimulgidae*) and Swifts (*Apodidae*)	0	II
Hoopoes (*Upudidae*) and Kingfishers (*Alcedinidae*)	I	II
Bee-eaters (*Meropidae*)	0 - I	II
Rollers (*Coraciidae*) and Parrots (*Psittadidae*)	I	II
Woodpeckers (*Picidae*)	I	II
Ravens, Crows, Jays (*Corvidae*)	II - III	I - II
Medium-sized and small songbirds (*Passeriformes*)	I	II

B. Precautions for route selection for electricity transmission lines

(a) There should be precautionary avoidance of locating power lines farms in designated or qualifying sites for nature conservation, including Important Bird Areas (IBAs).

(b) As part of effective regional planning, there is a need to identify species and areas of concern, to map potential and potentially sensitive locations for electricity transmission lines based on nature conservation concerns, for example avoidance of migratory corridors and other large concentrations of birds.

C. Technical Standards to protect birds from electrocution

> Newly erected power poles and technical hardware should be constructed to exclude the possibility of bird electrocution. Crossarms, insulators and other parts of medium voltage (1KV – 60 KV) powerlines should be constructed so that birds are not able to perch near energized powerlines that might be hazardous.

Mitigating measures should be undertaken on existing power poles and technical hardware in the medium voltage range in locations of particular importance for birds

Power poles for medium voltage (1KV – 60 KV) should reflect the state-of-the-art in design for bird safety and should follow the detailed design guidelines and criteria described in the catalogue „Vogelschutz an Freileitungen“, VDEW-Verlag, 2nd edition, 1991 (Comments on Section 8.10 Bird Protection of German Industry Norm VDE 0210/12.85).

The following describes the most widely used types of power poles worldwide, their potential risk and steps towards mitigation. Recommendations are made for power poles made of concrete, steel, composite steel and wood. This report is based on standards set up by the Vereinigung Deutscher Elektrizitätswerke (1991) as well as studies carried out by the NABU National Working Group on Electrocution (2002).

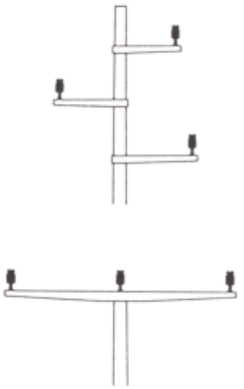
The safety of the installations depends primarily on

- how insulators are attached to the poles and
- the actual space between the power cables and other energized and grounded parts.

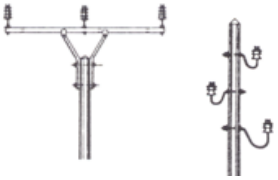
A) POWER POLES WITH UPRIGHT INSULATORS

Power poles, constructed on pre-stressed concrete or metal with upright insulators, are widely used and rank as the most dangerous of all types. The gap between the cables and the crossarm is small.

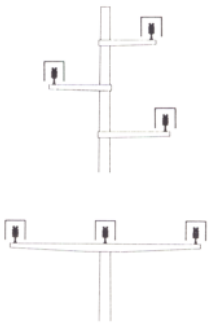
Risk: high



In wet weather **wooden poles** with upright insulators can be a hazard as well as poles that are grounded. For mitigation, the top of armless poles has to be well above the uppermost wire (right).



Mitigating electrocution effectively is possible either by treating poles (a) with insulating caps made of plastic for outdoor use 130 cm in length or (b) insulating powerlines with tubing 130 cm in length. The conductors have to be spaced at a distance of at least 140 cm. If this is not possible, they should be insulated with tubing.



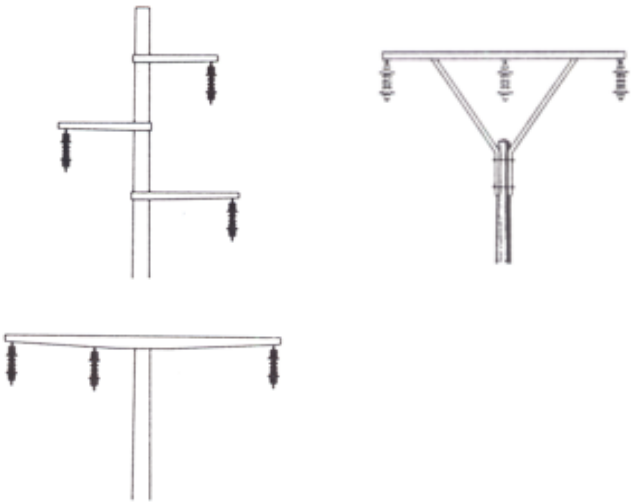
Suggested Practices:

(a) Insulated caps (above)
(b) Tubing (below)

B) POWER POLES WITH SUSPENDED INSULATORS

Poles with suspended insulators are fairly safe provided the distance between a likely perch (crossarm) to the energized parts (conductors) is at least 60 cm. Conductors should be spaced at least 140 cm apart. Hardware that is used to prevent arcing ("St. Elmo´s fire" on both sides of the insulators) should not be used.

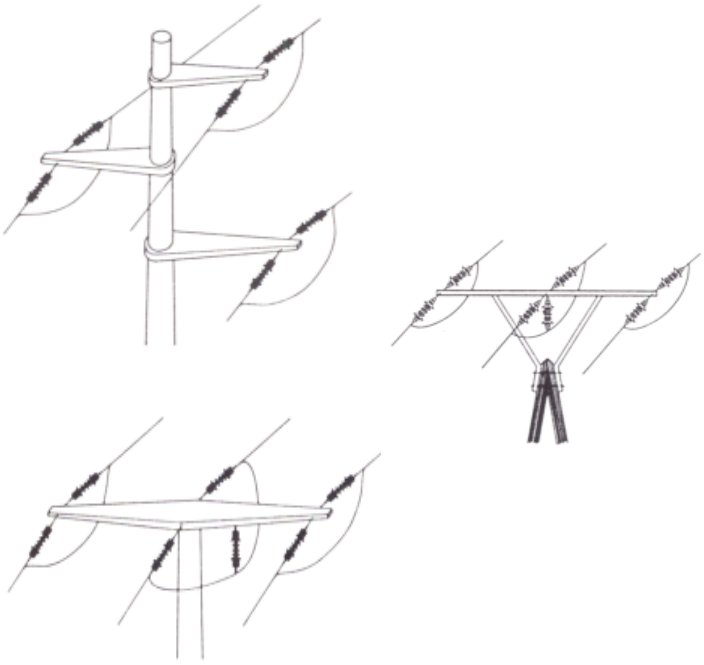
Risk: low



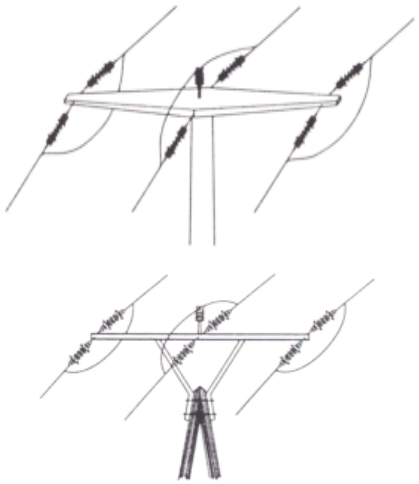
C) STRAIN POLES

Strain poles with powerlines below the crossarm:

Risk low, if the insulators are long enough (at least 60 cm).



Strain poles with one conductor above the crossarm.
Risk high (see also Fig. 3):

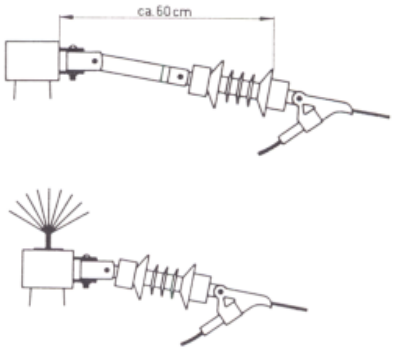


Bird-safe strain poles require insulating chains at least 60 cm in length. Hazardous constructions can be mitigated by
(a) lengthening the chains or
(b) installing perch rejectors (upright "whisk brooms") on the crossarms.

Suggested practices:

Lengthening of the chain (a, above)

Perch rejectors, made of plastic rods (b, below)



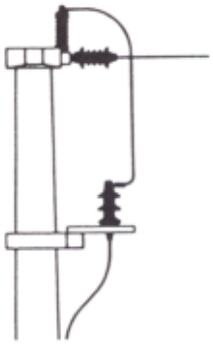
In instance where the conductors run above or too close to the crossarm, (c) tubing should be used. Junction power poles should be treated in the same way (insulation of conductors which come too near to a perching site – closer than 60 cm).

Suggested practices:

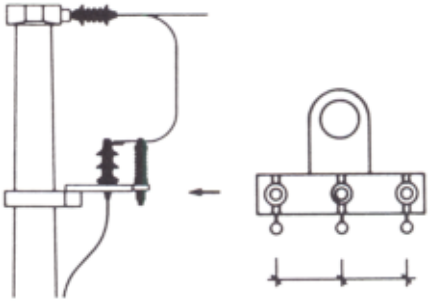
Insulated hood or insulated tubing (c)
(see also Fig. 30)

D) TERMINAL POLES AND TOWER STATIONS

Terminal pole



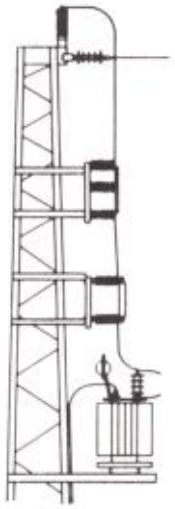
Risk: high



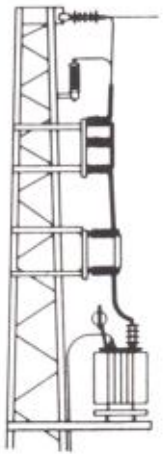
Suggested practices (see legend)

Frequently over voltage reactors extend above the tops of terminal poles and tower stations. This hazard for birds can be avoided if the over voltage reactor is attached below the crossarm and all down leading wires are insulated with tubing. On tower stations all contacts directly above the switch as well as between the switch and transformer should be treated likewise. Hardware used to prevent electrical arcs should not be used (mitigation measure : dismantle).

Tower Station



Risk: high

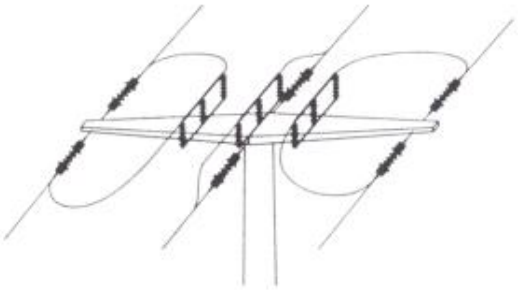


Suggested practices (see legend)

E) SWITCH TOWERS

The safest switch towers have their switches attached below the crossarm. Otherwise, mitigation measures are more complicated and do not provide the same high degree of safety for birds. As hooding is usually not possible, various techniques have been tested.

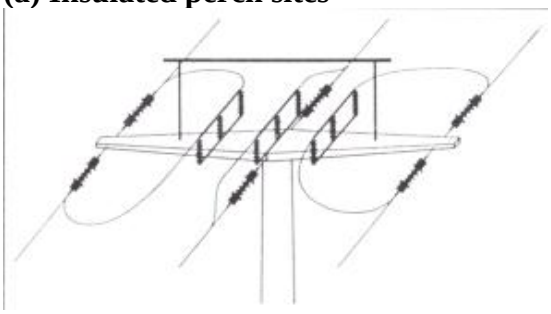
Switch tower



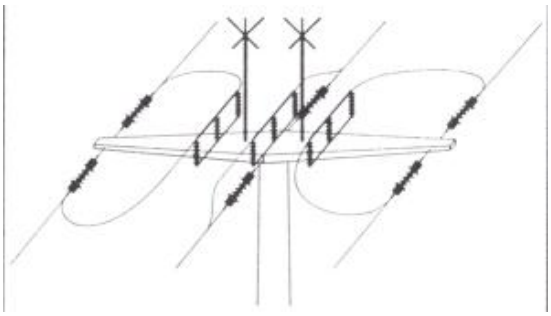
Risk: high

Insulated perch sites can be installed (a) lengthwise to the crossarm or (c) at its edge. They should be as long as possible and have a rough texture. Perching deterrents ("St. Andrew`s Cross") (b) installed above the switch keep birds from perching on the poles, as does the installation of acrylic glass rods (c).

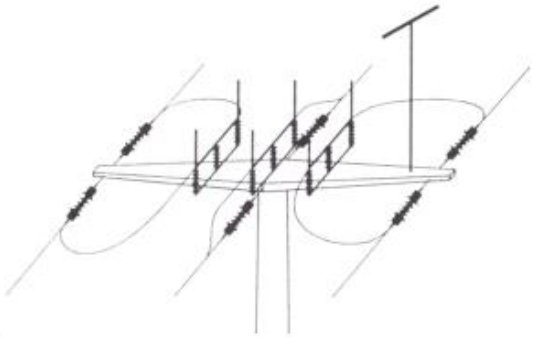
Suggested practices:
(a) Insulated perch sites



(**b) St. Andrew`s Cross**



(c) Insulated perch sites lengthwise to the crossarm and acrylic glass rods



In the case of medium-voltage **railway powerlines** , similar modifications or new constructions must become mandatory: they reduce bird losses and improve railway safety. In Germany, railway engineers, conservationists and government representatives are in the process of elaborating detailed technical standards and design guidelines, which take into consideration bird safety. Fig. 16 illustrates that bird safety can be introduced without large technical effort.

D. Priorities for research to enable impacts of electricity transmission lines to be minimized

(a) Research and monitoring should be implemented by national governments and the energy utility companies, in consultation with relevant experts, to improve our understanding of the impacts of electricity transmission installations. This will be an iterative process that will inform decision-making, appropriate route selection and design of installations. The results of research should be published in international scientific journals, including a summary, preferably in English, to ensure wider dissemination including to electro-engineering periodicals.

(b) Research and monitoring requirements should encompass the following:

i effects and potential population level impacts on birds of electrocution, collision and displacement from habitats and barriers to movement;

ii effectiveness of different designs of installation at minimising bird mortality, while taking account of their cost effectiveness, including durability.

(c) There need to be incentives to ongoing technological development of electricity transmission installations which minimise impacts on birds eg while being durable and removing neutral cables which are at different heights from other cables.

(d) A useful subject for further study is to look in detail at individual case studies to evaluate examples of conflict resolution, case law, or trends in casework throughout the Council of Europe area.

APPENDIX 2

Convention on the Conservation of Migratory Species of Wild Animals

RESOLUTION 7.4*

ELECTROCUTION OF MIGRATORY BIRDS

Adopted by the Conference of the Parties at its Seventh Meeting (Bonn, 18-24 September 2002)

Recognising that, under Article II of the Convention, Range States agree to take action for the conservation of migratory species whenever possible and appropriate, paying special attention to migratory species the conservation status of which is unfavourable, and taking individually or in cooperation appropriate and necessary steps to conserve such species and their habitats;

Recognising that Article II of the Convention requires all Parties to take action to avoid any migratory species becoming endangered and, in particular, to endeavour to provide immediate protection for migratory species listed in Appendix I to the Convention;

*Recognisin*g that Article III (4) (b) of the Convention requires Parties to endeavour *inter alia* to prevent, remove, compensate for or minimise, as appropriate, the adverse effects of activities or obstacles that seriously impede or prevent the migration of migratory species;

Concerned by the information presented in document UNEP/CMS/Inf.7.21 to the Seventh Meeting of the Conference of the Parties concerning the worldwide and increasing impact of electricity transmission lines, conductors and towers in causing injury and death by electrocution to species of large birds, including migratory species;

Noting that a significant number of migratory bird species that are significantly exposed to electrocution danger are listed in the Appendices to the Convention;

Concerned that such species are increasingly threatened by continuing construction of medium-voltage overhead transmission lines;

Concerned particularly that, without action to reduce or mitigate threats of electrocution, many populations and potentially species, including *Aquila adalberti* and *Hieraaetus fasciatus*, may be severely affected;

Recognising that, especially in arid zones, electrocution of birds on transmission lines can cause disastrous forest fires affecting both wildlife and people;

*Desirin*g to raise awareness among the public, developers and decision-makers of the serious, widespread electrocution risk posed to birds;

Aware that technical solutions are available to eliminate or minimise transmission line electrocution risk posed to birds;

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* The original draft of this resolution, considered by the Conference of the Parties, was numbered 7.12.

Recognising that power lines that are considered safer for birds also correspond to a better energy supply and therefore are an advantage to supplying companies;

Bearing in mind that collision with power lines is also a problem for birds, and that preventive measures should also be applied to mitigate its effects; and

Bearing in mind that electrocution on electricity transmission lines of railway infrastructure may also be a problem, and preventive measures should be envisaged;

The Conference of the Parties to the
Convention on the Conservation of Migratory Species of Wild Animals

1. *Calls* on all Parties and non-Parties to curb the increasing electrocution risk from medium-voltage transmission lines to migratory birds and to minimise this risk in the long term;

2. *Calls* on all Parties and non-Parties to include appropriate measures in legislation and other provisions for planning and consenting medium-voltage electricity transmission lines and associated towers, to secure safe constructions and thus minimise electrocution impacts on birds;

3. *Encourages* constructors and operators of new medium-voltage transmission lines and associated towers to incorporate appropriate measures aimed at protecting migrating birds against electrocution;

4. *Call*s on Parties and non-Parties to appropriately neutralise existing towers and parts of medium-voltage transmission lines to ensure that migratory birds are protected against electrocution;

5. *Invites* all concerned to apply as far as possible the catalogue of measures contained in document UNEP/CMS/Inf.7.21, which are based on the principle that birds should not be allowed to sit on parts that are dangerously close to the transmission parts under voltage;

6. *Encourages* constructors and operators to cooperate with ornithologists, conservation organizations, competent authorities and appropriate financial bodies in order to reduce the electrocution risk posed to birds from transmission lines; and

7. *Requests* the Secretariat to collect more information with respect to collisions and electrocutions on electricity transmission lines of railway infrastructure and other related issues.

* * *

ANNEX II - BUDAPEST DECLARATION

Budapest Declaration on bird protection and power lines

Adopted by the Conference "Power lines and bird mortality in Europe"
(Budapest, Hungary, 13 April, 2011)

The Conference **"Power lines and bird mortality in Europe"** (the Conference) was co-organised by MME/BirdLife Hungary, the Ministry of Rural Development of Hungary and BirdLife Europe and was kindly hosted by MAVIR (the Hungarian Transmission System Operator Company Ltd.), as part of the official programme of the Hungarian EU Presidency in 2011. It was attended by 123 participants of 29 European and Central Asian countries, the European Union, UNEP-AEWA, six energy and utility companies, experts, businesses and NGOs. Following the review of state of art of bird safety on power lines across Europe and taking stock of the progress achieved and future challenges in ensuring the implementation of the relevant international and national legislations by the parties and by sharing their national experiences, the participants of the Conference adopted the following Declaration:

We call on the European Institutions (Commission and Parliament) and national governments

- as they formulate, commit to, and pursue an ambitious set of climate, energy and biodiversity conservation targets and strategies to ***reconcile energy generation, transmission and distribution with the protection of wild birds*** *within and beyond protected areas;*
- to maintain high levels of implementation of the EU's environmental acquis including the Birds and the Habitats Directives and relevant international legislation[2] through the application at national or regional level of *effective legal, administrative, technical or other requisite measures for:* ***1) minimisation of the negative impacts of power lines on the natural environment and wild birds and 2) ensuring a system of general protection of wild birds as requested by the Birds Directive, and 3) ensuring that such measures are incorporated in the assessment of investment projects*** *such as the electricity 'Projects of European Interest'* that will be advanced through the follow-up of the EU's Energy Infrastructure Package.

We call on all interested parties to jointly undertake a programme of follow up actions leading to effective minimisation of the power line induced bird mortality across the European continent and beyond. Such actions are, for example:

[2] CMS (Bonn) Resolution 7.4 (2002) and Bern Recommendation 110 (2004) provide strong recognition and acceptance of the birds and power line problem and the availability of effective solutions.

I. Preparatory actions, to be implemented by the end of 2012

Action	Applies to
1. Set up **groups of experts on bird safety on power lines** in each country and at international level to review and consolidate the available technical standards for bird safety on power lines; to develop National and European programmes for prevention and mitigation of bird electrocution and collision; to facilitate exchange of technical, biological and managerial experience and support implementation of such programmes.	Governments : National (EU) National (non-EU) International Industry, NGOs
2. Develop and kick off an **internationally coordinated start-up programme** for knowledge transfer, including the maintenance of an international roster of experts and regular communication on technical and managerial issues; to collate and publish bird-electrocution and collision related literature; to develop internationally standardised monitoring protocols; to expedite a Pan-European movement towards improving bird safety on power lines, including research and development as well as communication projects and voluntary cooperation between industry, public administration, and civil society.	National (EU) National (non-EU) International
3. Support ongoing **exchange of experience between EU and non-EU countries** to reduce and eliminate bird electrocution and collision on power lines.	National (EU) National (non-EU)

II. Planning and standard verification actions, to be completed by the end of 2015

4. **Prioritise power lines** for mitigation in accordance to bird distribution data and in consultation with relevant governmental, industry, academic and NGO experts. **Set up a detailed mid-term strategy and an implementation plan for mitigation** measures.	National (EU) National (non-EU)
5. Develop and approve **national technical standards** and **catalogues of bird-safe power pole designs** (for new lines) and **mitigation measures** (for retrofitting existing lines) relevant for each country. **Promote these standards through formal training** of technical staff and sub-contractors and regular conferences.	National (EU) National (non-EU)

III. Ensure that bird losses are to be eliminated on new and fully reconstructed power lines from 2016 onward

6. Ensure that **new and fully reconstructed power line sections are safe for birds by design.**	National (EU) National (non-EU)

IV. Mitigation actions on existing power lines, to be completed by 2020

7. Ensure that **priority power lines** in term of bird conservation/distribution **and the most dangerous pole types in all lines** are retrofitted/**changed to bird-friendly lines and pole types.**	National (EU) National (non-EU)

V. Monitoring and reporting of progress

8. Promote and support financially an internationally standardised **monitoring of the impacts of power lines** on birds, including the necessary evaluation of the effectiveness of mitigation measures.	National (EU) National (non-EU) Industry
9. To **report every two years** (starting from 2012) the actual progress in the implementation of Resolution 110 of the Bern Convention and of this Declaration.	National (EU) National (non-EU)

ANNEX III - QUESTIONNAIRE SENT TO THE CONTRACTING PARTIES

Strasbourg, 25 October 2012 **T-PVS/Inf (2012) 20**
[inf20e_2012]

CONVENTION ON THE CONSERVATION OF EUROPEAN WILDLIFE
AND NATURAL HABITATS

Standing Committee

32nd meeting
Strasbourg, 27th-30th November 2012

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QUESTIONNAIRE FOR THE REPORTING OF PARTIES TO THE BERN CONVENTION ON THE IMPLEMENTATION OF THE ACTION POINTS LISTED IN THE BUDAPEST DECLARATION ON BIRD PROTECTION AND POWER LINES

Document
prepared by
BirdLife International

QUESTIONNAIRE
FOR THE REPORTING OF PARTIES TO THE BERN CONVENTION ON THE IMPLEMENTATION OF THE ACTION POINTS LISTED IN THE BUDAPEST DECLARATION ON BIRD PROTECTION AND POWER LINES
[DOCUMENT T-PVS/INF (2011) 14]

CONTACT DETAILS:

Country:
Organisation:
Name and position of responsible person:
E-mail:
Phone:
Date of completing the form:

DEFINITIONS USED IN THE QUESTIONNAIRE:

Transmission lines: electricity transmission is the transfer of electricity from generating power plants to high-voltage electrical substations located near demand centres. Large amounts of electricity are transmitted at high voltages (110 - 750 kV in Europe). Transmission lines mostly use high-voltage three-phase alternating current (AC).

Distribution lines: electric power distribution is carrying electricity from the transmission system to the final customers (medium voltage, less than 33 kV).

Electrocution of birds may take place when a bird touches two phase conductors or one conductor and an earthed device simultaneously. There is a strong consensus that the risk posed to birds depends on the technical construction type and detailed design of power facilities. Electrocution mainly occurs on overhead distribution lines

Collisions by hitting overhead transmission and distribution lines cause the death or injury of bird. Species with rapid flight, and the combination of heavy body and small wings restricts swift reactions to unexpected obstacles.

Q1: IN YOUR COUNTRY A NATIONAL GROUP OF EXPERTS ON BIRD SAFETY AND POWER LINES IS:

- not identified yet, but planned for ……/….. (M/Y)
- not identified due to lack of funding
- not identified because no priority/ nobody available to do it
- not identified because of lack of experts
- identified and coordinated by: (please mention name, organisation, e-mail)

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- in your country regional groups of experts on bird safety and power lines are coordinated by: (please mention region, name, organisation, e-mail)

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Q2: NATIONAL BIRD MONITORING PROTOCOL IS IN PLACE FOR:

- transmission lines: electrocution (yes/no) – collision (yes/no), if NO it is planned for …../…… (M/Y)
- distribution lines: electrocution (yes/no) – collision (yes/no), if NO it is planned for …../…… (M/Y)

Q3: NATIONAL EXPERIENCE ON BIRD SAFETY AND POWER LINES IS RECENTLY PUBLISHED IN:

- publication of government agencies
- scientific publications
- publication of distribution companies
- publication of transmission companies
- other

If there are no recent publications please indicate why?

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Q4: DID YOUR COUNTRY SUPPORT THE EXCHANGE OF EXPERIENCE ON BIRDS AND POWER LINES WITH OTHER COUNTRIES?

- is planned for …./ ……. (M/Y)
- not planned
- yes, please specify how:

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……

Q5: VOLUNTARY COOPERATION ON BIRD SAFETY AND POWER LINES BETWEEN INDUSTRY, PUBLIC ADMINISTRATION AND CIVIL SOCIETY:

- is planned for …./ ……. (M/Y)
- not planned
- yes is ongoing, please specify how:

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Q6: DID YOUR COUNTRY RECENTLY SUPPORT RESEARCH PROJECTS OF COMPANIES, SCIENTIFIC ORGANISATIONS AND/OR NGOS?

- No
- Yes, please specify how:

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Q7: MONITORING OF MITIGATING MEASURES IS CARRIED OUT:

- Yes by: - companies
  - research institutes
  - government agencies
  - nature protection NGOs
  - other
- No

Q8: IS THE IMPACT OF RAILWAY INFRASTRUCTURE ON ELECTROCUTION AND COLLISION STUDIED?

- No
- Planned for: …./…….. (M/Y)
- Yes

If yes, please specify how and where

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Q9: UNDERGROUND CABLING OF DISTRIBUTION LINES IS PROMOTED AS STANDARD TECHNIQUE

- No
- Yes, everywhere
- Yes, but only in priority zones

If only in priority zones, please specify how and where:

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Q10: UNDERGROUND CABLING OF TRANSMISSION LINES IS PROMOTED AS STANDARD TECHNIQUE

- No
- Yes, everywhere
- Yes, but only in priority zones

If only in priority zones, please specify how and where:

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Q11: LEGISLATION FOR NEW AND FULLY RECONSTRUCTED POWER LINES ENSURES THEY ARE BIRD- SAFE BY DESIGN:

- for distribution lines: yes/no
- for transmission lines: yes/no

If yes, please provide weblinks to the legislation.

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Q12: IMPACT OF POWER LINES ON BIRDS IS MONITORED:

- No
- Yes, by Government agencies
- Yes, by research institutes
- Yes, by NGOs

If yes, please provide details on the monitoring protocol.

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Q13: PRIORITY POWER LINES TO BE RETROFITTED OR CHANGED FOR BIRD CONSERVATION AND DISTRIBUTION ARE IDENTIFIED:

- Yes
- No
- Planned for: …./…….. (M/Y)

If yes, please provide details on the prioritisation process.

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Q14: TECHNICAL STANDARDS AND CATALOGUES OF BIRD-SAFE POWER POLE DESIGN AND MITIGATION MEASURES:

- are being developed
- are developed national / regional
- are developed and implemented national/regional

If yes, please provide weblinks to the technical standards and catalogues.

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Please do not hesitate to contact us to help you fill in the questionnaire or for any other questions you may have: BirdLife Europe, Willem Van den Bossche, e-mail: willem.vandenbossche@birdlife.org, Tel.: +32 2 541 07 82

ANNEX IV - SUMMARY OF REPORTS ON POWER LINES AND BIRDS TO CMS AND AEWA

This Annex summarizes the relevant elements of the responses of six Contracting Parties to a questionnaire on bird safety and power lines by CMS and AEWA in 2011. The full report on the outcome of the questionnaire is available here.

Azerbaijan / Azerbaïdjan

There was no legislation which ensured that new and fully reconstructed power lines are bird-safe by design in Azerbaijan in 2011. The impact of power lines is monitored *ad hoc* by the Ornithological Institute.

Denmark / Danemark

In Denmark underground cabling is promoted as standard technique everywhere. In 2011 a long-term project had been approved to replace all overhead distribution cables with underground cables.

Legislation which ensures new and fully reconstructed power lines are bird-safe by design is provided through EIA requirements.

Finland / Finlande

There was no legislation which ensured that new and fully reconstructed power lines are bird-safe by design in 2011 in Finland. The impact of power lines on birds was not monitored, although ringing studies indicated some mortality.

Germany / Allemagne

In Germany a national group of experts on bird safety and power lines has been identified. The working group 'Birds and power lines' by the NGO NABU has been activitely addressing this issue for over 30 years and cooperates closely with the umbrella organisations of electricity companies and authorities.

Legislation for new and fully reconstructed power lines ensures that they are bird-safe by design through Federal legislation from 2002 and SEA and EIA procedures on bird and power line interactions. The Federal legislation includes mandatory technical standards for all companies. All dangerous poles should have been retrofitted by the end of 2012.

Technical standards and catalogues of bird-safe power pole design have been developed by NABU and are being implemented nationally. The guidelines are available here.

"the former Yugoslav Republic of Macedonia" / l' "ex-République yougoslave de Macédoine"

No relevant information

Portugal / Portugal

In Portugal the national experience has recently been published in scientific publications. Voluntary cooperation between industry, public administration and civil society is on-going.

Legislation for new and fully reconstructing power lines ensures they are bird-safe by design through wider legislation on new infrastructure. The legislation on new infrastructure provides for a requirement for authorisation by the conservation authorities, which ensures that possible electrocution and collision are taken into account. In addition EIA procedures are in place. Conservation authorities are a member of the national EIA commission and can prevent the building of power lines in or near areas with a high risk of collision such as IBAs and nature reserves.

Technical standards and catalogues of bird-safe power pole design and mitigation measures have been developed by the conservation authorities and are being implemented by the power companies.

Romania / Roumanie

There was no legislation for new and fully reconstructing power lines which ensured they were bird-safe by design in Romania in 2011. The impact of power lines on birds was monitored *ad hoc* by NGOs.