

BirdLife Position statement on Power lines and Grid development in the European Union

For external use. Adopted by the BirdLife Birds and Habitats Directive Task Force on 15 November 2016. Replacing the position on power lines and birds adopted on 10 May 2007

This BirdLife Position Statement includes references to relevant legislative instruments of the EU, but it could be applied in all countries that are signatories to the Bern Convention and Convention on Migratory Species (CMS), as the underlying principles are just as relevant. Therefore, BirdLife Partners in the respective countries are invited to adopt this position.

Summary

Climate change is a major threat to nature. In addition to increased energy efficiency, renewable energy is needed to cut emission and save nature. Grid development and the resulting new powerlines bring risks for birds, notably electrocution, collision, displacement, habitat loss and modification and increased predation.

BirdLife supports grid development if it serves the transition to a stable global climate, the total amount of new network infrastructure needed is minimised through ambitious energy saving and demand management and the grids integrate more small scale decentralised renewables.

The length of new powerlines should be minimised, sensitivity maps for vulnerable birds and other groups should be developed and the routing of powerlines should as a matter of precaution avoid sensitive areas. Appropriate assessment and EIAs and SEAs should be carried out, and powerlines should be developed in line with national standards and international agreements. New distribution lines should be placed underground where possible and generally bundled with existing infrastructure.

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Introduction

1. Global warming and more frequent extreme weather are already affecting nature. Climate change threatens to become a major cause of wildlife population declines and extinctions around the world. The greenhouse gas emissions from fossil energy use are the main cause of climate change.
2. Investments in energy efficiency are needed and should be urgently prioritised. However, energy efficiency alone will not be sufficient to reduce our greenhouse gas emissions to the level that is needed to avoid dangerous climate change. Therefore we also need renewable electricity generation, such as from adequately located and designed wind and solar power, to cut emissions and save nature.

3. Renewable energy is the major source of new power generation in Europe, accounting for 85% of new net capacity in 2012. European transmission grid operators estimate that 80% of planned new high voltage grid capacity is needed to facilitate renewable energy development. Renewable energy is an essential part of the solution to preventing dangerous levels of warming. With careful planning both renewables and grid development can help tackle climate change with only limited risks for today's biodiversity.
4. Grid development is needed in Europe as our energy systems change with the increase of electricity from renewable sources. New power lines are needed to connect up the new generation sources, to transfer this electricity to consumption centres, and to enable electricity to be traded when there is too little wind and sun locally, or too much. It should be noted that not all new power lines help in developing low carbon energy systems.
5. Power lines create risks for wildlife, principally through bird collisions and electrocutions and changes to habitats, such as tree clearance.
6. In electricity distribution networks (low and medium voltage lines serving buildings) the major risk relates to bird electrocutions on badly designed support structures. Birds are also at risk of collision with distribution power lines. Underground distributions cables are in some areas a practical solution but potential changes to above ground habitats needs to be taken into account.
7. In electricity transmission networks (high voltage lines between major generation sources and substations) birds are especially at risk of collision, in particular with the highest 'earth' wire. Bird electrocution is rare, since live and earthed parts are sufficiently far apart. Underground cables are possible, but expensive and technically challenging. Both underground cables and overhead transmission lines can result in significant habitat changes.
8. This position statement (i) reviews the risks to birds and (ii) steps that must be taken to avoid them, based on key requirements in international conventions, EU law and joint position statements. Climate risk mitigation benefits and opportunities to enhance nature associated with power line development are also highlighted.

Impact of grid powerlines on birds

9. **Electrocution.** Electrocution occurs on badly engineered medium voltage power lines in the electricity distribution networks¹. When medium-sized and large birds such as storks and raptors perch or roost on the support structures that are not properly insulated, there is a risk of them touching two live parts, or one live part and an earthed part. This causes severe injuries and death, and can cause forest fires. It also causes electricity outages and costly repairs. Population level impacts on bird populations have been recorded². New lines can be engineered so electrocution does not occur, and existing lines can be retrofitted with insulation, re-designed or replaced.

¹ See Prinsen, H.A.M. et al. (2011) Review of the conflict between migratory birds and electricity power grids in the African-Eurasian region http://www.cms.int/sites/default/files/document/mop5_38_electr_review_ikrev_0.pdf and references therein.

² E.g. Schaub M, Aebischer A, Gimenez O, Berger S, Arlettaz R (2010) Massive immigration balances high anthropogenic mortality in a stable eagle owl population: Lessons for conservation. *Biol Conserv* 143: 1911–1918 and González LM, Margalida A, Mañosa S, Sánchez R, Oria R, et al. (2007) Causes and spatio-temporal variations of non-natural mortality in the Vulnerable Spanish Imperial Eagle (*Aquila adalberti*) during a recovery period. *Oryx* 41: 495–502.

10. **Collision.** Flying birds of all species can collide with any structure, including aerial wires of all kinds³. Heavy birds with poor manoeuvrability in the air, such as bustards, cranes, pelicans, geese and waterfowl are at greatest risk; and migrating birds flying at heights of 20-50 meter are at considerable risk of collision, especially at night and/or when flying in flocks. On transmission lines a single, thin earth wire usually runs above the power cables, and is often the most risky for birds as it is less visible, particularly in poor weather. Population level impacts have been recorded⁴. Avoiding locations used by vulnerable species is the best solution. Visible bird deflectors attached to power lines can provide effective mitigation⁵.
11. **Displacement.** The presence of a power line can displace certain species. Avoidance of above-ground power lines can lead to the loss of useable feeding areas in staging and wintering habitats.
12. **Predation.** In areas with no previous vertical structures such as trees, electricity pylons can attract avian predators which perch on the pylons. Power lines and the vegetation under them can also attract predators such as foxes. Breeding birds in these areas may be at heightened predation risk of their eggs and chicks and may avoid nesting near the lines⁶.
13. **Habitat loss and modification.** Tall trees cannot be allowed to grow under overhead transmission power lines, and normal practice is to clear and then cut back all vegetation every few years in a corridor extending 20-30 meter either side of the line. This can result in loss of valuable wildlife habitat, such as old growth forest, if these areas are not avoided in routing decisions. However there are also opportunities to benefit biodiversity through habitat modification. In existing corridors through forests, small trees and other native flora can be established instead of regular clearance. In forests with low biodiversity value, such as conifer plantations, new power line routing, combined with conservation management, may add to habitat diversity and species richness.
14. Some impacts of **electromagnetic fields** on breeding success have also been documented⁷, however the effects on birds are inconsistent between species and not well-understood.

BirdLife Position on Grid development and power lines

15. BirdLife supports the further development of the electricity grid to facilitate the transition to renewable sources of electricity, under the following conditions:
 - a. Grid development must serve the transition to a stable global climate by supporting deployment of renewable electricity and the balancing of supply and demand of these renewable sources across the continent. Achieving ambitious climate targets must be built into the assumptions that inform network planning and development of national energy systems.

³ See Prinsen, H.A.M. et al. (2011) Review of the conflict between migratory birds and electricity power grids in the African-Eurasian region http://www.cms.int/sites/default/files/document/mop5_38_electr_review_jkrev_0.pdf and references therein.

⁴ Crivelli, A.J. (1988) Electric power lines: a cause of mortality in *Pelecanus crispus* Bruch, a world endangered species. *Col. Waterbirds* 11: 301-305.

⁵ William DR, Pople RG, Showier DA, Dicks LV et al (2013). Bird Conservation: Global Evidence for the Effects of Interventions. Synopses of Conservation Evidence, Volume 2. Pelagic Publishing, Exeter, U.K. 575 pp

⁶ Altemüller AJ and Reich 1997. Influence of high-tension power lines on breeding meadow birds (in German with English summary). *Vogel und Umwelt* 9 (Sonderheft): 111-127.

⁷ Fernie, K.J. & Reynolds, S.J. (2005) The effects of electromagnetic fields from power lines on avian reproductive biology and physiology: a review. *J. Toxicol. Environ. Health, B.*, 8, 127-140.

- b. The total amount of new network infrastructure needed should be minimised through ambitious energy saving and demand management.
 - c. Distribution grids need to be made 'smarter' using information technology to enable electricity demand management and to integrate more small scale decentralised renewables.
16. The total length of new power line corridors should be minimised through following existing routes or upgrading existing infrastructure wherever possible, with adjustments to routes to further protect nature.
17. Careful routing must be used as the principal means to avoid adding to mortality risks for vulnerable birds and damage or loss of important wildlife habitats.
18. The European Commission needs to start and facilitate initiatives at European and national levels to develop bird and power line sensitivity maps to guide the routing of new power lines and the application of mitigation measures in new and existing power lines. Bird species that are vulnerable to electrocution and collision are well known, as are their distributions, and this information should inform the development of sensitivity maps.
19. There should be precautionary avoidance of routing power lines through the following sensitive areas:
- a. Special Protection Areas (SPAs) under the Birds Directive and Important Bird and Biodiversity Areas (IBAs).
 - b. National sites for nature conservation.
 - c. Other locations of significance for bird species identified by BirdLife International as being of Unfavourable Conservation Status in Europe.
 - d. Sites along major migration routes or with major daily movements of birds, especially migration bottlenecks where large numbers of birds are highly concentrated, for example coast lines.
 - e. Habitats where power lines are known to pose high collision risks to birds (to be assessed through site specific risk assessment).
20. Where new routes are unavoidable these should follow existing infrastructure such as major roads and railways (bundling) as far as possible.
21. Appropriate Assessments (AA), in accordance with the requirements of Article 6 of the EU Habitats Directive must be carried out for all power line construction plans or projects if it cannot be excluded, on the basis of objective information, that the plan or project will have a significant effect on a Natura 2000 site.
22. All plans and projects regarding the construction of power lines should comply with the Directives on Strategic Environmental Assessment (SEA) and Environmental Impact Assessment (EIA).
23. Energy companies and governments, conservationists and ornithologists should cooperate to identify and reduce threats of bird electrocution, collision and habitat losses caused by power lines.

24. National governments should introduce technical standards and legislation requiring construction of power lines that are safe for birds, and develop and implement programmes to eliminate electrocution risks in existing networks.
25. The national technical standards should be based on international standards. There are several international standards available covering the most frequently used pylon designs. A general standard for distribution power lines has been developed by MME/BirdLife Hungary⁸.
26. BirdLife Europe calls on governments, regulators and developers across Europe to fully implement the relevant international agreements on power lines, such as the Budapest declaration⁹ and the European Grid Declaration to ensure existing and new power lines are safe for wildlife and grid development contributes fully to preventing dangerous climate change. A full overview of all relevant international agreements is given in Annex II.
27. Underground cabling can prevent the creation of new bird collision risks in transmission and distribution networks. However it can cause significant damage to habitats during construction and requires vegetation management during operation, and restoration afterwards. Overhead route deviations to avoid important habitats and areas used by vulnerable birds will often be the more affordable option for transmission networks, and can be more acceptable in terms of ecological impacts.
28. Where new and existing power lines of all kinds cannot avoid areas used by vulnerable birds, visible bird deflectors should be attached to the lines. Independent ornithological and other experts should be consulted on the priority locations and best designs of deflectors for the location and species present, especially when there are no appropriate guidelines.
29. Grid operators should undertake pilot projects to improve the biodiversity value of the land in power line corridors, for example by creating a managed grassland or shrubland rather than non-intervention with periodic clearance, accompanied by monitoring of wildlife populations and their reproduction success. Opportunities to benefit nature by creating habitat diversity in low nature value forests should also be investigated.
30. More research and monitoring is needed to understand the interactions of key species with power lines and to understand the effectiveness of mitigation methods.

⁸ http://www.birdlife.org/sites/default/files/attachments/guidelines_mme_distribution_power_lines.pdf

⁹ <http://migratorysoaringbirds.undp.birdlife.org/sites/default/files/Budapest%20Declaration.pdf>

Annex I Glossary

- **Bundling:** Aligning power lines with existing infrastructure such as roads and railways.
- **Distribution power lines:** low and medium voltage lines serving buildings.
- **Transmission power lines:** high voltage lines between major generation sources and substations.

Annex II International Agreements with relevance to power lines

CMS and AEWA

The UN Convention on the Conservation of Migratory Species (CMS) adopted Resolution 7.4 on Electrocutation of Migratory Birds¹⁰ in 2002. The Resolution calls on signatory and non-signatory governments to introduce legislation and other measures to ensure safe construction of new power lines so that electrocution cannot occur, and to work with ornithologists to eliminate existing risks.

In 2012 the Convention and the UN African Eurasian Waterbird Agreement (AEWA) published a *Review of the conflict between migratory birds and electricity power grids in the African-Eurasian region*¹¹ and *Guidelines on How to Avoid or Mitigate Impact of Electricity Power Grids on Migratory Birds in the African-Eurasian Region*¹². The 2012 documents cover electrocution, collision and habitat modification. AEWA Resolution 5.11 (2012) on *Power Lines and Migratory Birds*¹³, calls on parties to implement the recommendations in the Guidelines. Parties to the Bonn Convention include all European nations except Bosnia Herzegovena, totalling 121 states including many in Africa, Asia and South America.

Bern Convention

In 2004 the Council of Europe Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention) adopted *Recommendation 110 on minimising the adverse effects of above-ground electricity transmission facilities (power lines) on birds*¹⁴. Contracted parties are recommended to take steps to avoid and reduce electrocution and collision risks. The Recommendation also provides a practical guide to doing so. In 2011 the convention agreed on the *Budapest Declaration on Bird Protection and Power Lines*¹⁵, which calls on the EU institutions and national governments to implement action plans to eliminate power line risks to birds by 2020. The Council of Europe's membership comprises 47 European states.

Renewables Grid Initiative

The Renewables Grid Initiative is a voluntary coalition of transmission system operators and NGOs, including BirdLife Europe. It advocates and develops best practices in environmental protection and stakeholder engagement in high voltage grid development. In 2011 its members and other parties signed the *European Grid Declaration on Electricity Network Development and Nature Conservation in Europe*¹⁶. The Declaration expresses the NGOs' support for environmentally sensitive grid development to tackle climate change, and grid operators' commitment to good practices including full implementation of EU nature protection legislation. In total 31 organisations had signed in 2016, including transmission system operators in the following countries: Switzerland, France, Germany, Spain, the UK, Norway, Belgium and Italy. In 2016 there were 17 members of the Renewables Grid Initiative.

¹⁰ http://www.cms.int/sites/default/files/document/RES_7_04_Electrocution_0_0.pdf

¹¹ http://www.cms.int/sites/default/files/document/mop5_38_electr_review_ikrev_0.pdf

¹² http://www.unep-aewa.org/sites/default/files/publication/ts50_electr_guidelines_03122014.pdf

¹³ http://www.unep-aewa.org/sites/default/files/document/res_5_11_power_lines_0.pdf

¹⁴ <https://wcd.coe.int/ViewDoc.jsp?id=847305&Site=COE>. Note the Recommendation's title mentions transmission, but it also addresses distribution networks and electrocution risks.

¹⁵ <http://migratorysoaringbirds.undp.birdlife.org/sites/default/files/Budapest%20Declaration.pdf>

¹⁶ <http://renewables-grid.eu/documents/eu-grid-declaration.html>