Electrocutions & Collisions of Birds in EU Countries: Main Problems & Solutions

29.07.2022 | Eric Neuling, Deputy Head and Policy Officer for Bird Conservation

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Impacts of power lines on birds

Displacement

- Loss of breeding and resting sites through avoidance of vertical structures for ground breeding birds

Predation

- Pylons attract avian and ground predators

Habitat loss and modification

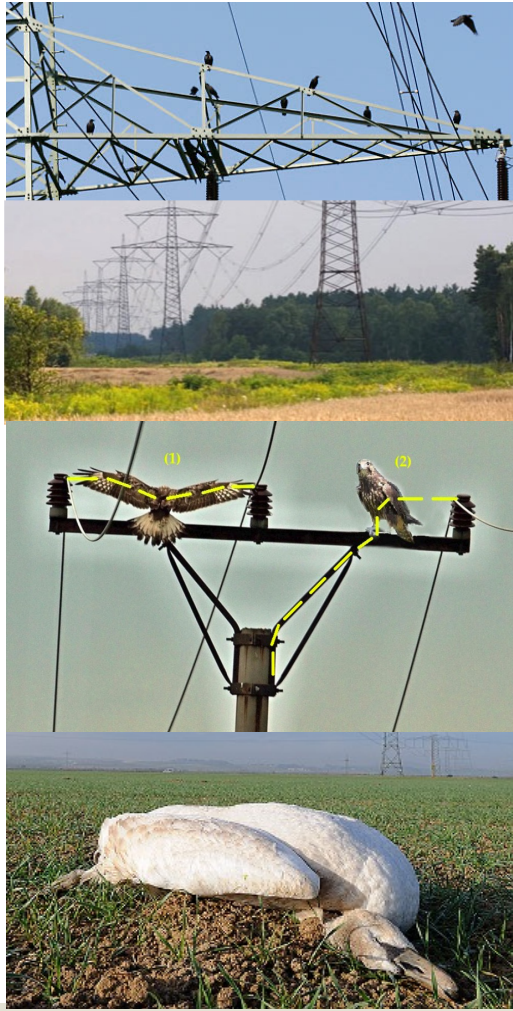
- Forest corridors can dissect habitats and effect microclimate

Electrocution (medium voltage)

- Unsecured pole components lead to short circuits and ground faults mainly for raptors, storks, owls and crows

Collision

- Mainly large birds, waterfowl and waders collide with power lines or less visible ground wires on top



Photos: RPS/M. Galis, NABU/M. Delpho, NABU/H. May, BMU

Impacts of power lines on birds

Estimation of **collision** incidents in Germany every year*
(only high + extra high voltage ~ 64.000 km)

- 1 - 1,8 million breeding birds
- 500.000 - 1 million resting/wintering birds
- **1,5 – 2,8 Mio collision victims**

Photo: NABU/M. Delpho

Existing German transmission (380 kV and 220 kV) and distribution grid (110 kV); Source: OpenStreetMap (07/2016)

* NABU-Gutachten „Vogel-Kollisionsopfer an Hoch- und Höchstspannungsfreileitungen in“, 2017, TNL Umweltplanung

Birds at risk in Germany and Europe

Electrocution

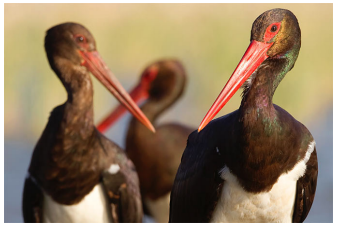
Collision

Photos:
C. Bosch, F. Derer, T. Krumenacker, A. Limbrunner, E. Neuling, C. Moning

Birds at risk in Germany and Europe

Lesser Spotted Eagle, photo F. Derer

White Stork, photo F. Derer



Black Stork, photo T. Krumenacker

What‘s NABUs goal?

- Eliminate or reduce bird electrocution and collisions on powerlines in the EU
- BirdLife recommendations for a EU wide guideline for implementing goals from CMS and Bern Convention
- Blueprint for Non-EU countries along migration routes

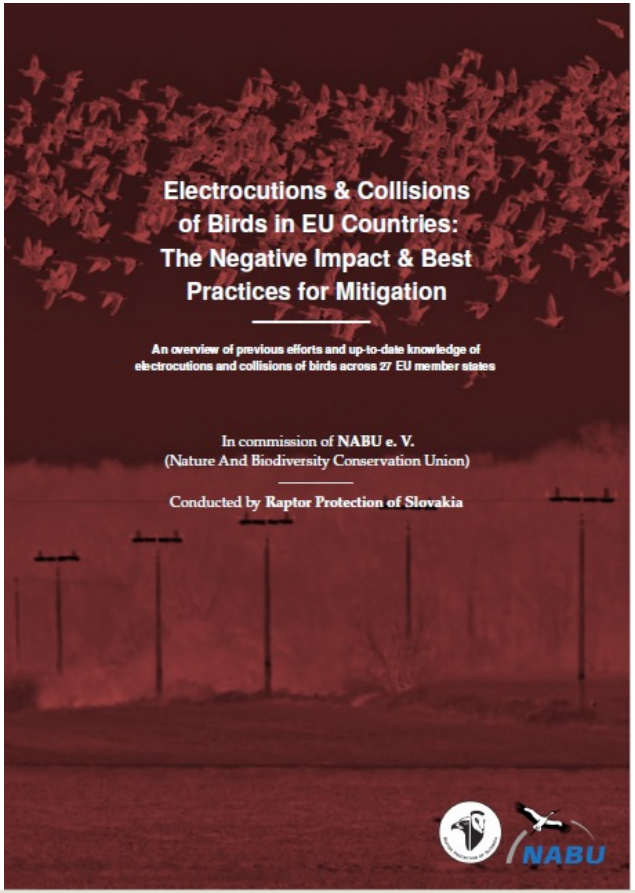
Photo: RPS

NABU/RPS study

- Contractor: Raptor Protection Slovakia (RPS)
- Main information from national NGO surveys on status quo in MS and national solutions

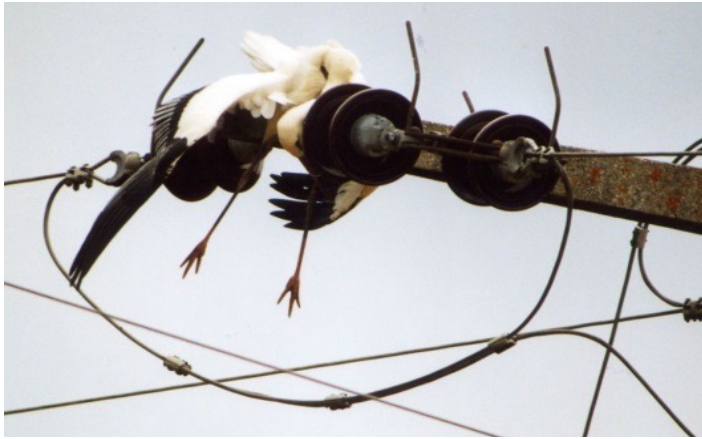
Study content:

- National grid structure and responsibilities
- Problem description and effected species for either electrocution or collision
- Technical approaches and efficient/non-effecient solutions
- National legal obligations and forms of cooperation
- Conclusion and Recommendations



Feedback on electrocution

- Research projects on electrocution in BUL, CZE, ITA, ROM, SLK, ESP, SWE
- Most progress against electrocution in: CZE, ESP, GER, HUN, SLK, SWE, (NED because of complete underground cabeling of medium voltage)
- Data missing or insufficient from a few northeastern and Mediterranean EU countries



Photos: F. W. Ziegler, RPS

Legal outcome electrocution

+ High percentage of medium voltage lines underground in Austria, Netherlands, Germany, Luxembourg and Sweden
+ retrofitting after incidents in most countries
- Disappearance or retrofitting of „killer poles“ on a large scale in several countries and general prohibition for construction of new „killer poles“after legislative enforcement
– still many countries in Europe with unequipped medium voltage lines

Photo: RPS

Technical outcome electrocution

- – Electrocution significantly higher on constructions with one pin insulator
- \+ Plastic insulators are more effective than perch exclusion devices or perch discouragers.
- Demand for durable, long-lasting materials. If damaged or incorrectly installed, possibly more dangerous than non-insulated poles.
- Special angled construction for cross-arms, insulators etc. to discourage birds from perching, like the shape of console
- Crossarm (45° angle of the arms) with a perch attached bellow
- Switch installation below the cross-arms with insulated jumper wires
- Upright insulators substituted with suspended insulation caps

45° angled crossarm + extra perch (upper photo)
Insulator cap on 20 kV pole pin-type (photo below)

Photos: RPS

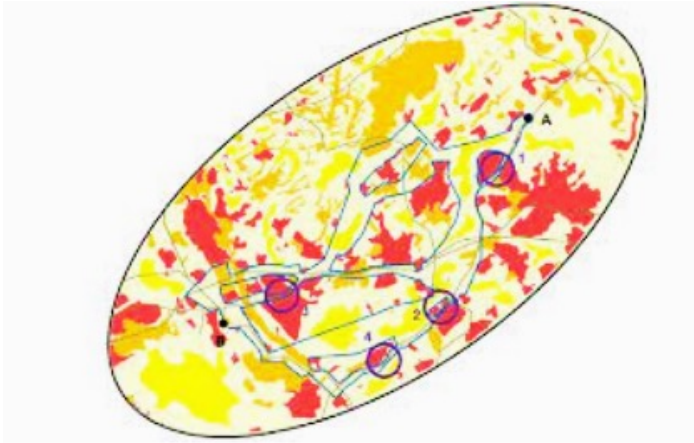
Feedback on collision

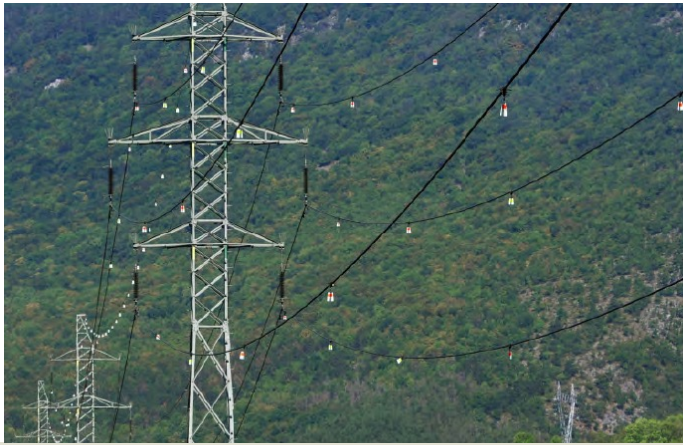
- Research projects on collision and diverters in AUT, BEL, CZE, ESP, GER, HUN, LIT, POR, SLK, SWE
- Progress generally not as far as with electrocution
- Bird diverters often installed on several power line sections but lack of efficiency evaluation (CZE, FRA, HRO, LTV, LUX, POL)
- Data missing or insufficient from some northern and southeastern European countries

Photos: RPS

Legal outcome collision

+ Less bird individuals (but more bird species) killed by collision than electrocution
– No systematic approach in the past but more attention now on the topic. Problem represents one of the main unnatural mortality causes for birds
• Potentially dangerous lines are only partly responsible for the majority of killed birds. Identification of these sections and treatment with mitigation measures needed

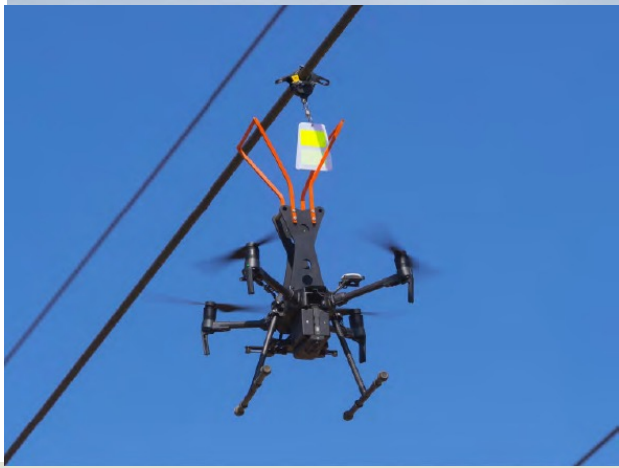




Photos: netzentwicklungsplan.de, RPS

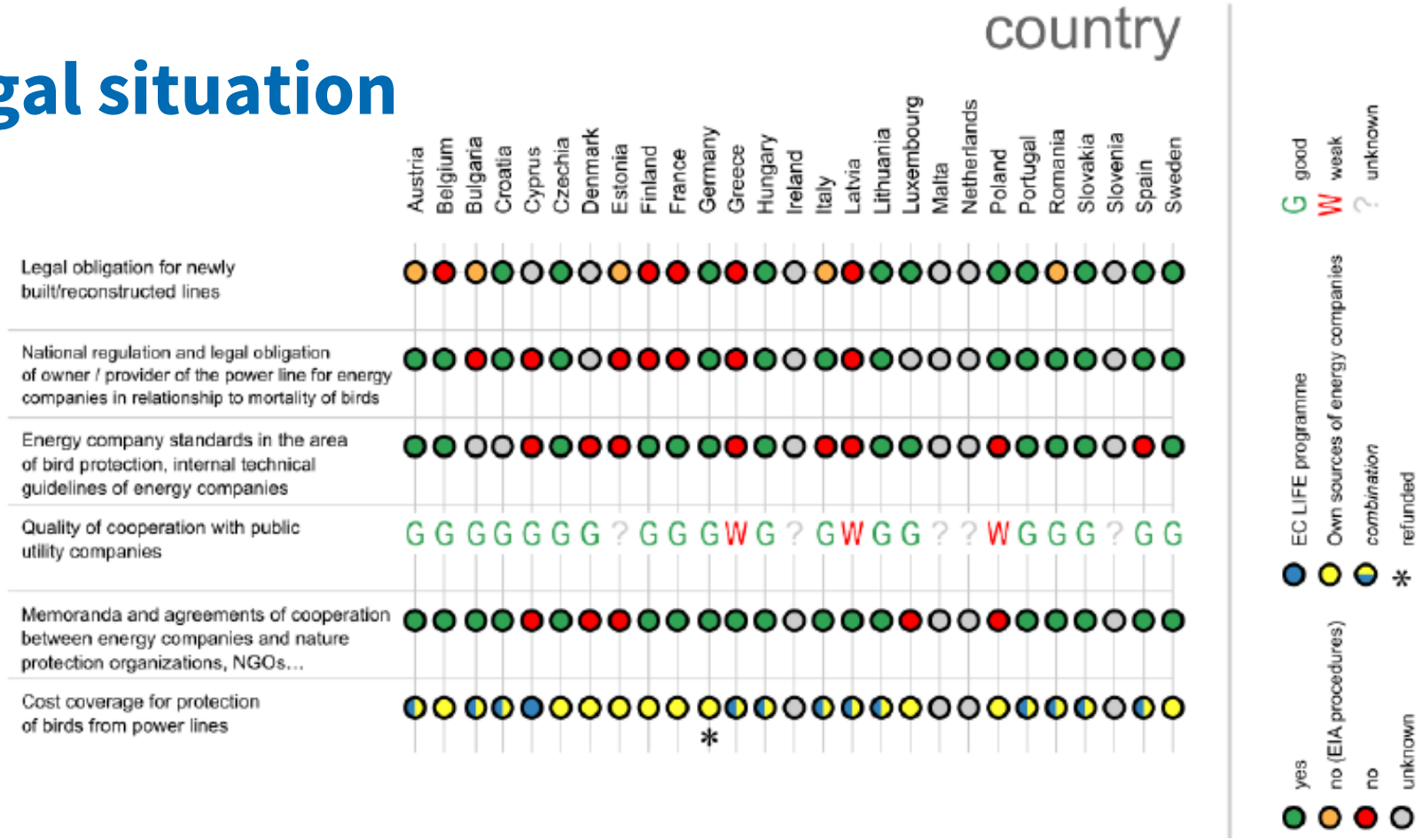
Technical outcome collision

- Ideally no construction of new overhead power lines in areas with a high risk of bird collisions, modification of existing ones by installing effective visual markers or underground cableing.
- For 110/ 220/ 400 kV overhead powerlines, the highest risk from the uppermost ground wire
- anti-collision luminous devices that reflect at day light and emit luminescence at twilight preferred
- clearly visible large, high contrast and/or moving and reflecting bird diverters



Photos: RPS

Legal situation

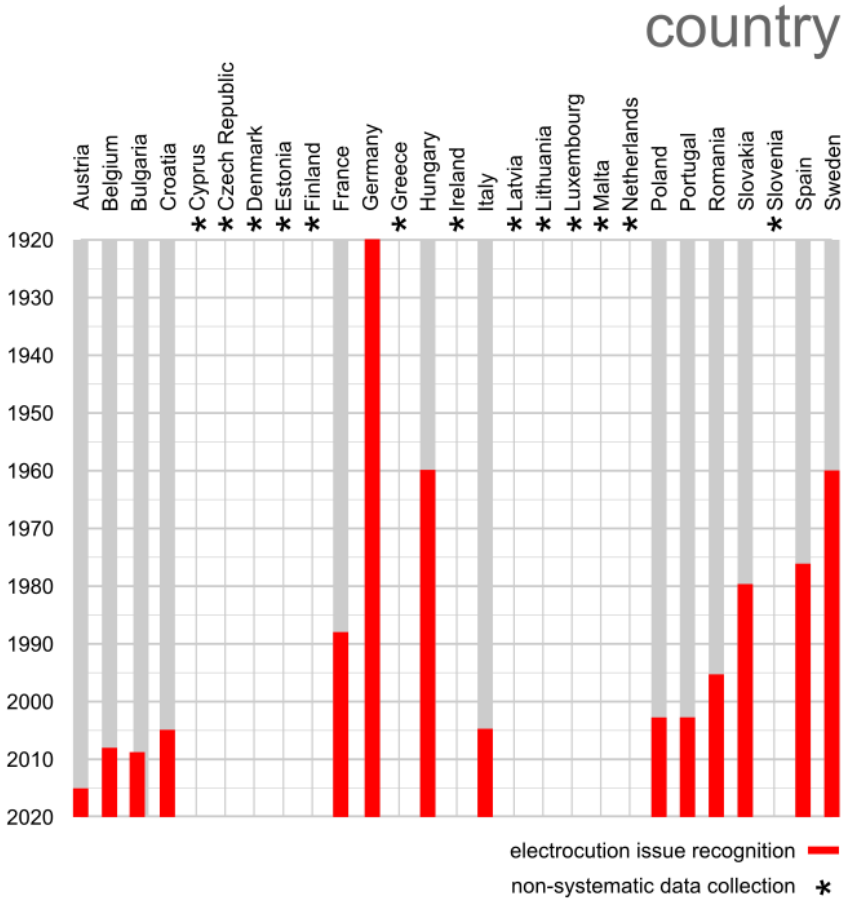


Legal situation

- No knowledge of legal situation in SLV, MLT, IRL, NED (low and med. voltage all underground)

Organisations on national level involved in topic:

- BirdLife partners in 15 countries
- Other organisations in CYP, SLK,
- No NGO coverage: POL, ROM
- No information from EST, FIN, IRL, ITA, LIT, MLT, NED, SLV



Legal situation

- EIA procedures in place in most countries
- good relationship/ cooperation with the electric companies are more effective and important than legal obligations
- Bird protection costs are covered mostly by the EU under the LIFE program, electric company sources and by relevant Ministries

Photo: NABU/Helge May

Main recommendations to EU

- Underground cabeling the best solution: long-term effectiveness does not decrease with use
- The competent administrations in the matter of conservation of wild species must take up on their responsibility in the solution of this problem
- Obligation to TSO and DSO to produce guidelines for technical solutions to mitigate bird strikes or electrocution on nat. level, and an implementation plan for mitigation measures
- Environmental managers need to identify the most problematic points of mortality, demand their modification and be actively involved in solving the problem
- Increase and support the systematic data monitoring, which would enable to persuade public opinion and electricity power companies for the need of mitigation measures in countries without relevant data
- Bird protection on power lines should be TOP priority especially in areas of important EU migration corridors

Main recommendations to EU

- More knowledge about the factors increasing collision and electrocution mortality rates necessary
- Preparation of a national/international sensitivity map for locating the most critical areas of bird and power line interactions to focus time and money to those sections
- Bird protection taken into account early in the planning stage: with expert field surveys, including at least one year of ornithological investigations to characterise local and regional avifauna, bird movements, key sites for breeding, feeding and resting areas as well as movements especially in dawn and dusk period
- Before-After Control-Impact (BACI) assessment and accompanied monitoring
- Design of an international database to collect information about bird collisions and electrocutions to help with preventing future bird/power line incidents and standardized protocols to improve reliability and potential utility in meta-analyses

Thank you!

NABU-Bundesgeschäftsstelle
Eric Neuling
Charitéstraße 3
10117 Berlin
Tel. +49 (0)30.28 49 84-1812
Fax +49 (0)30.28 49 84-3812
Eric.Neuling@NABU.de
www.NABU.de