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Key Principles for a Bird-Friendly Electricity Grid in Europe

from the European conservation community

Introduction

To reach net-zero latest by 2050, in line with the Paris Agreement,¹ our societies need to transition to a renewables-based energy system. To integrate the increasing share of renewable energy sources (RES) and achieve the binding target of at least 42.5% RES of gross final consumption of energy by 2030², electricity grid infrastructure at both transmission and distribution levels across Europe should be reinforced and expanded in an accelerated manner.

The success of the energy transition is strongly linked to a proactive understanding and effective mitigation of the environmental impacts associated with the needed infrastructure. Nature-positive measures in connection with grid deployment will ensure that we holistically address the triple challenge of the climate, energy, and biodiversity crisis. Well-designed transmission and distribution electricity grids play a key role in safeguarding bird species and their important habitats (e.g. Natura 2000 habitats) by preventing individual mortality and sustaining the viability of specific populations. When birds and their important habitats are not considered in the design and maintenance processes, the risks that grids pose for them increase. Such risks include collisions with overhead power lines, occurring on distribution or transmission electricity grids, electrocution, mainly linked to medium voltage grids, and disturbance from human activities, during maintenance and monitoring operations that impact survival of certain species. Key measures to prevent and mitigate risks for bird species along power lines include avoiding construction in sensitive areas, installing bird flight diverters to reduce collision, using bird-friendly pole designs to reduce electrocution and, where possible, burying lines underground to entirely eliminate all risk for birds.


Addressing these challenges necessitates developing the needed electricity grid infrastructure hand in hand with nature protection and restoration experts, in line with the goals of the [EU Biodiversity Strategy for 2030](#), the associated nature legislation (i.e., [Birds](#) and [Habitats Directives](#)), as well as the upcoming [EU Nature Restoration Law](#).

In this context, the LIFE project '[SafeLines4Birds](#)'³ held a workshop in November 2023, entitled '[Connecting Biodiversity](#)'. 20 environmental NGOs from 12 countries in Europe gathered for two days to discuss the status-quo of bird protection along the electricity grid, exchange on solutions and potential mitigation strategies, and identify priorities and next steps towards bird-friendly electricity grid infrastructure.

1 <https://www.pac-scenarios.eu/>

2 [Directive \(EU\) 2023/2413 of the European Parliament and of the Council of 18 October 2023 as regards the promotion of energy from renewable sources](#)

3 [SafeLines4Birds](#) is a 6-year project which aims to reduce non-natural mortality of 13 bird species by reducing the negative impact of their interactions with power lines in France, Belgium and Portugal.



The Renewables Grid Initiative (RGI) acted as a convener and moderator of the workshop. Opinions expressed in this document are those of the NGO participants and do not necessarily reflect those of RGI.

This document summarises the workshop discussions and offers an overview of key principles for a bird-friendly electricity grid across Europe. The participants acknowledge that strong collaboration is needed for the principles presented below to be implemented in an effective way. Therefore, they will be discussed in a follow-up workshop in 2024 that will include electricity grid operators and other key stakeholders.

The European civil society signatories present the following seven principles that could serve as guiding points to be considered by decision-makers and further discussed with relevant stakeholders:

- 1** **Meaningful and constructive European multi-stakeholder exchanges**
- 2** **Member State level collaborations**
- 3** **Sustainable funding sources for civil society**
- 4** **Standardisation of bird data collection within an open-source approach**
- 5** **Comprehensive nation-wide bird risk maps**
- 6** **Improved implementation of the European legislative and regulatory framework**
- 7** **Strong European technical guidelines**

Collaboration and Engagement

1

Meaningful and constructive European multi-stakeholder exchanges

Open dialogue and knowledge exchange are essential to ensure mutual guidance and successful implementation of the mitigation hierarchy. While the effort is already underway, facilitating collaborations between stakeholders, a more comprehensive approach is necessary to effectively address the complexities of bird-grid interactions. This must be based on the latest research findings on bird conservation, technical innovations, and practical experiences.

We therefore propose the establishment of a biennial Europe-wide conference to provide a platform for stakeholders, including transmission system operators (TSOs), distribution system operators (DSOs) and conservation NGOs, to leverage existing collaborations and build new ones. This conference should aim to facilitate the presentation of research and progress, the exchange of expertise on critical issues, and the identification of needs for additional research.


Additionally, we encourage the centralisation of all existing studies worldwide into one online platform. This centralised database would provide relevant stakeholders with access to the most recent findings and facilitate the replication of successful practices. This platform should be populated collaboratively by stakeholders for the benefit of all, including policymakers, scientists, private industries, and the general public.

2

Member State level collaborations

Stakeholders within each Member State, including TSOs, DSOs, NGOs, and public authorities, should establish or build upon existing cross-sector national collaborations.¹ Together, they should develop national action plans aimed at promoting a bird-friendly electricity grid, outlining priority actions and clear timelines. These discussions should be facilitated by national working groups focussing on topics pertinent to each Member State's context.

¹ [Comité national avifaune](#) in France; [Bird Portal working group](#) in Germany



Among others, such an approach should enable knowledge exchange through mutual training sessions on ornithological aspects and technical aspects of electricity grid infrastructure, led by NGOs and grid operators respectively. These trainings should serve as a broader capacity building exercise within the relevant organisations. Both parties should also commit to share this knowledge within their own structure for widespread understanding of the issue.

3

Sustainable funding sources for civil society

The meaningful participation of civil society not only plays a crucial role in optimising bird conservation but also provides essential information to project developers. Overall, civil society will continue to leverage its strategic position and strengths to contribute to an accelerated development of the necessary electricity grids, fostering understanding among stakeholders and the general public.

Nevertheless, sufficient capacities, both qualitative and quantitative, are a prerequisite to increase effectiveness and quality of this work. We call on policymakers at both EU and Member State levels to ensure stable financial resources and capacity-building opportunities for conservation NGOs enabling meaningful engagement in consultation processes concerning electricity grid projects. These efforts include communication initiatives aimed at enhancing public understanding of bird mortality, available solutions and contribute to share knowledge about the electricity grids and their role in the energy transition.

Funding should not be restricted to European funds for nature conservation and research (e.g. LIFE and Horizon Europe) but should be considered as a necessary baseline funding for the protection of birds as part of safe construction and operation of the electricity grid infrastructure. Moreover, additional funding streams and opportunities should be explored and utilised such as national government grants, environmental impact funds, and dedicated environmental or conservation funds at regional or local levels.

Data

4

Standardisation of bird data collection within an open-source approach

Standardised data on bird casualties related to the electricity grid, technical data of the network and historical implementation of mitigation actions are an essential precondition to understanding the risk of existing infrastructure and inform future mitigation strategies. Furthermore, access to up-to-date, high-quality data on bird presence and migration routes is relevant to accurately assess the potential risk of new infrastructure and inform planning decisions.

Currently, such data are fragmented or lacking across European countries, making it challenging to fully understand and address the impact of electricity grid infrastructure on bird populations. To remedy this situation, we recommend the establishment of a standardised and centralised digital database for the management of both historical and forthcoming data on bird mortalities around grid infrastructure, technical data of the grid and bird presence, in line with data protection and safety conventions. This would facilitate comparisons between data regardless of origin, and accessibility for diverse stakeholders, thus enabling thorough scientific assessments and informed decision-making regarding bird conservation around existing infrastructure and future spatial planning. This online tool should be universally usable by electricity grid operators, bird conservation groups, competent authorities, and the general public. It should incorporate adaptable interfaces to accommodate varying user preferences, requirements, and access restrictions (e.g., technical details of the network would be accessible only to restricted stakeholders). To ensure uptake, this should leverage on existing and user-friendly platforms¹, and thus establish a fit to purpose open-source platform to incorporate the collection of bird mortality data, alongside data on bird presence and technical grid information.

1 Good examples include: [Waarnemingen.be](https://www.waarnemingen.be) and [Observations.be](https://www.observations.be) in Belgium, [NABU-RGI Bird-Portal](https://www.nabu-rgi.de) in Germany, 'Avifaune et Câbles' in France and internationally [iNaturalist](https://www.inaturalist.org). Data repositories such as the [Global Biodiversity Information Facility](https://www.gbif.org) (GBIF) might play an important role.

5

Comprehensive nation-wide bird risk maps

While some European countries¹ have collaborated with electricity grid companies to establish sensitivity mapping for bird populations in relation to infrastructure, there are gaps in comprehensive mapping efforts across the region. Effective spatial planning tools, informed by accurate data, can expedite electricity grid expansion by guiding new infrastructure placement away from high-risk areas for birds, considering their home range and important habitats.

In this effort, the creation of risk maps of the entire European region, would enable better integrated planning of new infrastructure. At the same time, it would ensure the adoption of appropriate and effective mitigation measures on the operational grid located within highest-risk areas for birds. To address ongoing bird monitoring efforts, and quickly varying bird distribution, these maps should be regularly updated with new spatial data of the grid networks as well as data on bird presence.

¹ [Sensitivity mapping informs mitigation of bird mortality by collision with high-voltage power lines \(Paquet et al., 2022\); Documenting and reducing avian electrocutions in Hungary: A conservation contribution from citizen scientists \(Demeter et al., 2018\)](#)

Regulation and Guidance



Improved implementation of the European legislative and regulatory framework

The EU Biodiversity Strategy for 2030 alongside the Birds and Habitats Directives, provide a comprehensive policy framework allowing all EU Member States to collaborate towards protection of EU's endangered species and their habitats. However, their implementation remains fragmented across EU Members States. The existing European framework should standardise enforcement mechanisms to guarantee the implementation of risk reduction measures around existing power grids, building on the existing legislative framework of some European countries¹ and leveraging provisions of the upcoming EU Nature Restoration law.

In addition, further research and development of solutions, including collaborative initiatives tailored to specific bird species, should be emphasised to clarify which measures are effective in protecting birds during grid planning, deployment, and operation. Crucially, in order to ensure that future monitoring efforts provide accurate and comparable data on bird-grid interactions, we underline the need for policymakers at EU and national level to provide clear guidance to all parties on – and where necessary revise – the expected scope of monitoring, methods in data collection, as well as data accessibility and transparency norms.

Regarding the implementation of mitigation strategies, the costs of adequate mitigation technologies should be recognised and incentivised by national regulators and included in the capital expenditures of new grid projects. Additionally, cost-benefit analyses should assess the risk stemming from inaction – e.g., security of supply and risk of fires due to bird electrocution – to better reflect the true benefits of taking action to prevent bird mortality. Overall, to ensure the successful implementation of mitigation strategies, comprehensive assessment criteria and benchmarks should be incorporated in reporting and monitoring frameworks.

¹ National legislation, such as the [Spanish Royal Decree 1432/2008](#) was implemented to comply with the requirements and objectives set forth in the [European Directive 2004/35/CE](#) to establish a framework of environmental liability to prevent and remedy environmental damage.



7

Strong European technical guidelines

Currently, there is a lack of universal awareness surrounding the most effective technical solutions aimed at avoiding and mitigating risks for birds along power lines, which in turn prevents their uniform and consistent application. Therefore, unified and coherent European guidelines should be established and disseminated, outlining best practices at the European level for:

- Existing bird-friendly pylon designs and their characteristics to prevent bird electrocution.
- The effectiveness of available insulation materials and technology
- The effectiveness of existing bird flight diverters to reduce bird collision of impacted species.
- Development of methods to avoid disturbance of breeding birds during grid maintenance and construction.
- Alternative practices, such as technical considerations of underground cables, and related costs.

Signatories





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