Convention on the Conservation of Migratory Species of Wild Animals

April Virtual Meeting of the CMS Multi-Stakeholder Energy Task Force

28 April 2021

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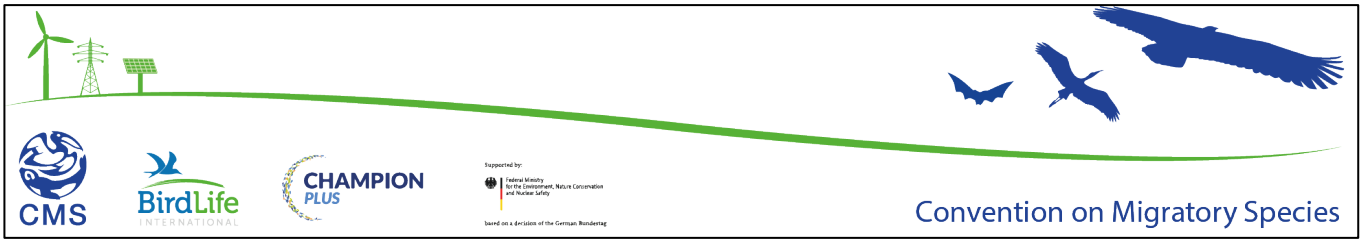
ENERGY TASK FORCE RESEARCH PRIORITIES 2021-2022



CHAMPION PLUS

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Prepared by the ETF Technical Working Group
April 2021

Overview

The key step towards reconciling the tension between renewable energy deployment and migratory species is evidence—evidence on the impacts of different technologies, evidence on the distribution of vulnerable species and habitats, and evidence on the effectiveness of mitigation and offset actions. The role of the ETF Technical Working Group (TWG) is to advise the wider task force on key knowledge gaps and research priorities and to pursue opportunities to conduct research, communicate new knowledge and promote best practice. This document outlines the focal areas, research priorities, and key outputs currently identified by the TWG as priorities. The TWGs recommendations principally relate to the agreed ETF priorities of wind and solar energy and powerlines and the impact these have on birds and bats. However, opportunities to expand on this scope are explored.

Areas requiring increased focus

Regions: Renewable energy is expanding at pace around the world, including across Asia, Africa and Latin American, yet the vast majority of academic research has been conducted in Europe and North America. Whilst there is now a good understanding of the avian groups that are of greater risk of collision with wind turbines and powerline in these regions, elsewhere, far less is known. For example, little is known of the risk posed to avian groups such as psittacines (parrots) or bucerotids (hornbills). Similarly, research on impacted bats is heavily skewed to northern hemisphere insectivorous species; far less is known about the impacts on frugivorous and nectarivorous species in the tropics.

Most guidance, tools and best-practice approaches have also been developed in Europe and North America and reflect the technological specifications and legislative frameworks common to those regions. However, these approaches may not always be the most appropriate in other regions; for instance, site assessment regulations often stipulate levels of data collation that may be difficult to achieve in other regions of the world.

- ***The ETF should promote research in regions outside Europe and North America, especially in emerging renewable energy markets in high biodiversity regions.***

- ***The ETF should promote research into taxa not encountered in Europe and North America and consequently under-studied.***

- ***The ETF should consider how European and North American recommendations can be translated to other regions. In particular, it should consider what constitutes a robust baseline EIA in a data-poor region.***

Impacts: Most research to date and has focused on the impact of collision and to a lesser extent displacement. Other impacts are, however, likely to be similarly important, if not ultimately more significant. For instance, it may be that the most serious impacts associated with offshore wind facilities are changes to seafloor dynamics and benthic communities that disrupt and alter marine food webs. Similarly, there is increasing evidence that light pollution may be a serious, but currently overlooked, issue for many bat species.

Renewable energy in the tropics is likely to be associated with threats rarely considered in Europe and North America. For instance, renewable energy facilities could threaten forest ecosystems through forest loss and fragmentation and by creating access roads that are then utilised by illegal loggers and hunters. In Africa, windfarms are typically enclosed within fencing; if large areas are fenced off, this could create barriers to the movements of large mammals like elephants. Indeed, even in the absence of physical fences, wind farms may still present a barrier to movement if animals are averse to entering turbine arrays. In addition, there is some evidence that the noise associated with wind turbines impedes the low frequency communications of elephants and other megafauna.

As the scale of renewable energy deployments continues to grow there is an increasing need to understand the cumulative impacts associated with multiple facilities, particular along migratory pathways. It is also important to better understand the interplay of renewable energy with other threats within the landscape. Likewise, there is still much to understand regarding the seasonal variability of risk and population level impacts.

- ***The ETF should anticipate and investigate novel impacts.***

- ***The ETF should promote research into cumulative impacts to equip developers and regulators with tools and guidance to calculate acceptable thresholds of impact.***

- ***The ETF should promote research on population level impacts.***

Technologies: Most research on the wildlife impacts of renewable energy has focused on windfarms. More research is needed to understand other technologies, such as solar. Within wind energy there are new and emerging technologies, such as floating offshore turbines, which require much greater scientific scrutiny. There is also an urgent need to explore the role that small-scale, decentralised and off-grid renewable energy solutions could play in achieving energy targets in a wildlife-sensitive manner.

- ***The ETF should promote research into novel and understudied technologies.***

- ***The ETF should improve collaboration, engagement and alignment with multi-stakeholder groups, such as developers and engineers.***

Strategic assessment and planning

It is widely acknowledged that the best way to avoid wildlife conflict with renewable energy is to avoid siting facilities in sensitive locations. Wind and solar radiation are widespread resources and there is considerable scope to choose locations for development where the impact on wildlife will be minimal. With careful, strategic and proactive planning, it is possible to meet renewable energy targets without adversely affecting wildlife. However, there are still many knowledge gaps that present a challenge to developing truly robust spatial planning approaches such as sensitivity mapping.

Improving species distribution knowledge: Ultimately, robust strategic planning depends on the availability of good quality data on the distribution and abundance of high-risk taxa. Sensitivity mapping approaches are unlikely to be reliable for taxa, like bats, where distributional data is often limited. However, even in these circumstances, simple maps of bat colonies or known migratory routes can aid decision making. Whilst habitat suitability and collision risk models, supported by systematic surveys need to be established to understand the distribution of key groups, such as vultures and bustards, and establish indicator taxa, there should also be research into how existing wildlife recording schemes can be adapted to better inform energy planning. For example, raptor migration watches are carried out at bottleneck sites around the world; it may be beneficial to ensure that additional information that could be useful in energy planning, such as flight height, is recorded. It would also be useful to explore how the growing body of citizen science data amassed through wildlife observation recording platforms like eBirds could be used to inform spatial planning.

In order to truly mainstream strategic planning, it will be necessary to fully integrate all the elements that dictate site selection, such as resource potential, geology, grid connectivity, competing land use, social conflicts, proximity to aviation, etc. This will require engaging with a wide range of stakeholders, including engineers, social scientists and planning authorities.

- ***The ETF should promote the collation of biodiversity data necessary to inform robust spatial planning tools.***

- ***The ETF should work to facilitate multidisciplinary planning that brings together experts in all aspects of energy development.***

Environmental Impact Assessments

Robust Environmental Impact Assessments (EIAs) prior to development are essential. Unfortunately, there are still many regions where EIAs are not legally mandated or where there is little or no guidance on best practice.

- ***The ETF should work to promote EIAs as necessary precursors to renewable energy deployment globally and create and promote global best practice standards to ensure consistent and rigorous assessments.***

Mitigation and compensation offsets

Considerable research is needed into the efficacy of widely deployed mitigation measures, such as powerline flight diverters, and into novel solutions and technologies, such as turbine blade painting and automated, sensor driven, turbine shutdown.

- ***The ETF should promote research into the efficacy (and technical constraints) of mitigation and compensation offsets with consultation from the energy sector.***

Post construction monitoring

Data on the impact of operational energy infrastructure is vital to better understand the threats and to improve planning and mitigation techniques. Consequently, it is vital that post construction fatality monitoring is conducted in a robust and standardised manner and that the resulting data is made available to researchers.

Ad hoc data on fatalities is also valuable, and the ETF should promote tools such as E-FAUNALERT and work with the developers of tools such as iNaturalist, BirdLasser, BirdTrack and eBirds to ensure that these platforms allow users to capture information on any casualties of energy infrastructure they encounter.

- ***The ETF should promote the best practice Handbook on Post Construction Fatality Monitoring, encourage the sharing of monitoring data and investigate the possibility of developing a centralised database of collision data.***

Education and awareness raising

Not only is it important to build our knowledge base, it is then vital to disseminate that information to key stakeholders. A key role of the ETF can be the dissemination of important scientific research that has the potential to improve the outcomes for migratory species.

- ***The ETF should develop and disseminate materials, films, webinars and other educational tools to make all relevant stakeholders, including the general public, aware of the issues and potential solutions.***

- ***The ETF should engage with other relevant stakeholder networks, groups and task forces to ensure collaboration, to fill knowledge gaps and to avoid the duplication of effort.***

Key outputs

- **Survey:** The TWG intend to conduct an in-depth survey of relevant stakeholders to better understand the key issues, regions and obstacles associated with reconciling energy infrastructure and migratory wildlife. This survey should take advantage of the various networks at our disposal—CMS, AEWA, EUROBATS, the BirdLife Partnership, etc.
- **Stakeholder mapping:** The TWG will undertake a stakeholder mapping exercise to identify wider international research groups and scientific communities.
- **White paper/horizon scan:** The TWG will compile the results of the survey, as well as the finding of research undertaken, in a “white paper/horizon scan”.