UN environment programme

Convention on the Conservation of Migratory Species of Wild Animals

CMS

6th Meeting of the Sessional Committee of the CMS Scientific Council (ScC-SC6)

Bonn, Germany, 18 – 21 July 2023

UNEP/CMS/ScC-SC6/Doc.12.3.2.2

ECOLOGICAL RISK ASSESSMENT FOR THE IMPACTS OF OFFSHORE WIND FARMS ON BIRDS IN AUSTRALIA

(Prepared by the Government of Australia)

Summary:

The Australian Government has established domestic arrangements to develop offshore wind farms as part of its renewable energy targets. However, it is recognised that offshore wind farms may also impact threatened and CMS-listed migratory species.

A semi-quantitative ecological risk assessment was therefore conducted to assess the potential impacts of offshore wind farms on coastal and marine birds within Australia's jurisdiction. The risk assessment examined 273 bird taxa that could be affected by the proposed development and included migratory and CMS-listed species.

The risk assessment identified 81 high-risk taxa, from which 11 external migrant shorebirds occurred in most regions assessed. High-risk migratory birds listed in CMS Appendices were the far eastern curlew (*Numenius madagascariensis;* CMS Appendix I), and nine albatross species (CMS Appendix II). These results enable establishing baseline data and developing mitigation measures, which could also be applied elsewhere.

Background

1. The Australian Government has established domestic arrangements to develop offshore wind farms as part of its renewable energy targets. The aim of these arrangements is to significantly reduce emissions to help Australia reach net zero by 2050. The legislative instruments giving effect to the arrangements are the Offshore Electrical Infrastructure Act 2021 and associated Offshore Electricity Infrastructure Regulations 2022. Under the legislation, offshore areas can be declared as suitable for offshore wind farm development.

2. However, it is recognised that offshore wind farms may also impact threatened and CMS-listed migratory species. Offshore wind farm developments have the potential to increase bird mortality, including through mortality from collisions, displacement from preferred habitats, or create a barrier effect to migration routes.

3. In late 2022, the Bass Strait region in Victoria was declared as the first offshore wind zone, covering an area of about 15,000 square kilometres. The declaration can be found under Offshore Electricity Infrastructure (Declared Area OEI-01-2022) Declaration 2022. The Bass Strait region could potentially generate more than 10 GW of year-round wind energy, meeting up to 20 percent of the Victoria's electricity needs. A number of other regions are being proposed for offshore wind farm projects within Australia, which are important habitat for threatened bird species, including the nationally critically endangered orange-bellied parrot (*Neophema chrysogaster*), the critically endangered swift parrot (*Lathamus discolor*), and the CMS-listed endangered far eastern curlew (*Numenius madagascariensis*).

4. Offshore wind farm risk assessments are well developed in the Northern Hemisphere but had not yet been applied in an Australian context to Australian birds. A semi-quantitative ecological risk assessment was therefore conducted to assess the potential impacts of offshore wind farms on coastal and marine birds, including migratory and CMS-listed species (Reid et al. 2023, Annex 1).

Discussion

5. The risk assessment examined 273 bird taxa, including threatened species listed under Australia's national environmental law, the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The assessment was based on life-history data and behavioural attributes. The marine area of Australia was divided by state and territory boundaries in eight regions, and subdivided into coastal, inshore, and offshore sub-regions. The regional interest in offshore wind farm proposals and the movement of birds through those regions were also accounted for. Each taxon then received an overall risk score as a combination of a vulnerability score and a conservation score. Attribute scoring was based on peer-reviewed, publicly available data. Variables included in the analyses were productivity risk scores, which were based on conservation status and generation time; and susceptibility risk scores, which were based on flight height, flight manoeuvrability, and habitat specialization.

6. The risk assessment identified 81 high-risk taxa, from which 11 external migrant shorebirds occurred in most regions assessed. High-risk migratory birds included in CMS Appendices were the far eastern curlew (*Numenius madagascariensis;* CMS Appendix I), and nine albatross species (CMS Appendix II). Offshore regions in Victoria, New South Wales, Queensland, South Australia, Tasmania, and South-west Western Australia received the highest risk scores. These results enable establishing baseline data and developing mitigation measures.

7. The most effective mitigation measure is to site the wind farms and associated infrastructure in areas of low numbers or low importance for birds. Large-scale bird distribution data is needed for this purpose. Technical measures to mitigate impacts could include changing the timing of turbine operation, for example by shutting down the turbines during migration periods or by developing automated curtailment systems; or building taller turbines that do not interfere with

the birds' flight height. Research, development, and validation of existing and emerging mitigation measures is therefore of utmost importance.

8. Future efforts should encompass collecting life history data and behavioural attributes of species likely to be affected by offshore wind farms. The spatial and temporal variability of the affected taxa should also be clear. Research, development, and testing of methods to predict and quantify the impacts on bird populations are needed to determine long-term population viability. The accuracy of ecological risk assessments could be further enhanced by using a combination of standardised monitoring approaches, which enables comparison across studies.

9. Additional recommendations include conducting the sensitivity analyses at regional scales to minimise the confounding effects of regional differences. Sharing of research findings will further enhance the reliability of ecological risk assessments and mitigation measures.

10. The cumulative impacts of offshore wind farms on bird populations should be considered when developing and assessing wind farm proposals. Population declines can only be prevented by assessing potential impacts of offshore wind farms, identifying high-risk taxa, and ensuring that appropriate mitigation measures are in place.

11. Given the increasing prevalence of offshore windfarms around the globe, it is critical to collaborate and share information, particularly innovative risk assessments that could be applicable elsewhere.

Recommended actions

12. The Sessional Committee of the Scientific Council is recommended to:

   (a) take note of this document; and

   (b) share the ecological risk assessment (Annex 1) with the CMS Energy Task Force.

References:

Australian Government, 1999. Environment Protection and Biodiversity Conservation Act 1999, Canberra, Australia.

DCCEEW, 2022. Area in Bass Strait off Gippsland declared suitable for offshore renewable energy. Department of Climate Change, Energy, the Environment and Water, Canberra, Australia.

NOPSEMA, 2023. NOPSEMA research strategy 2023–2025. National Offshore Petroleum Safety and Environmental Management Authority, Perth, Australia.

Reid, K., Baker, G.B. and Woehler, E.J., 2023. An ecological risk assessment for the impacts of offshore wind farms on birds in Australia. *Austral Ecology* 2023:00: 1–22. https://doi.org/10.1111/aec.13278.

ANNEX

Please click on the open access link below to access to the full paper

https://onlinelibrary.wiley.com/doi/full/10.1111/aec.13278