SUPPLEMENTAL INFORMATION

**Life-cycle impacts of wind energy development on bird diversity in Norway**

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SUPPLMENTAL TABLES

The Excel file SI\_Tables.xlsx contains the following supplemental tables to the main manuscript:

**Table S1.** All bird species included in the life-cycle impact assessment for wind energy production in Norway.

**Table S2.** Bird group specific information used in the life-cycle impact assessment of wind energy production in Norway.

**Table S3.** Model performance of the MaxEnt species distribution models, aggregated per group of birds. The models evaluated the contribution of: annual mean temperature (AT), temperature seasonality (TS), annual precipitation (AP), precipitation seasonality (PS), elevation (ELEV), distance to the sea (DS), latitude (LAT), land cover (LC) and terrain ruggedness (TR).

SUPPLMENTAL DATA FILES

The following data files were acquired from other sources, and we therefore refer to them for obtaining access to these:

* Bird observation data, obtained from the Global Biodiversity Information Facility (GBIF).
* Environmental predictor maps for the Maxent modelling: annual mean temperature (°C), temperature seasonality (S.D.\*100), annual precipitation (mm) and precipitation seasonality (C.V.) downloaded from WorldClim 2.0 (1 km2 resolution; values based on data from 1970 – 2000) (Fick and Hijmans, 2017); digital elevation model (Norwegian Mapping Authority); land cover, latitude and distance to sea (AR50, Norwegian Mapping Authority); and terrain ruggedness index (Norwegian Water Resources and Energy Directorate (NVE)).

The following zip archives contain the input bird group maps, wind turbines location and model input data, R scripts and LCA output files from the calculation of LCA characterisation factors.

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| Data\_Maps.zip | LCA\_Modelling.zip |
| * Group\_info.csv * AllSpecies\_Results.csv * WindTurbines\_Norway.csv * HS\_Bird diversity.tif * HS\_<group name>.tif * <group\_name>\_Results.csv * Maxent\_output overview.csv | * Norway LCA.R * Norway LCA barriers.R * Cumulative\_PDF\_fg.csv * Cumulative\_CF\_fg.csv * Cumulative\_PDF\_wpp.csv * Cumulative\_CF\_wpp.csv * Cumulative\_PDF\_B\_fg.csv * Cumulative\_CF\_B\_fg.csv * Cumulative\_PDF\_B\_wpp.csv * Cumulative\_CF\_B\_wpp.csv * PDF\_<order name>.csv |

**References**

Fick, S.E., Hijmans, R.J., 2017. WorldClim 2: New 1-km spatial resolution climate surfaces for global land areas. International Journal of Climatolology 37, 4302-4315.