

To:

An Coimisiún Pleanála
64 Marlborough Street,
Dublin 1,
D01 V902

Date: 4/10/2026

RE: North Irish Sea Array Submissions / Observations

Project Title: North Irish Sea Array (NISA) Offshore Wind Farm

Case Reference: ABP-319866-24

Observer Name: Kirsten Rutschke

Observer Address: aptm. 4, 17 The Meadow, Robswall, Malahide, Co. Dublin

Dear Sir/Madam,

I am writing to you as a concerned local resident and home owner in the potentially affected area to submit an observation regarding the recent significant additional information and design refinements submitted for the North Irish Sea Array (NISA) offshore wind farm (Case Reference: ABP-319866-24).

While I acknowledge the developer's efforts to mitigate marine noise by transitioning to jacket foundations with suction buckets, I wish to raise critical concerns regarding possible regional atmospheric impacts, localized microclimate changes, and their regional cumulative effects. These combined risks could present severe transboundary threats when combined with other planned East Coast wind farm developments.

1. Risk of Altered Precipitation

On August 12, 2026, researchers N. Akhtar, A. Elizalde, B. Geyer and C. Schrum published a critical study titled "Projected impacts of future offshore wind farms on coastal precipitation over the Northwest European shelf" (*Nature Communications Earth & Environment*, Vol 7, 651, 2026). Using high-resolution climate modeling (COSMO-CLM 6.0), this research demonstrates that large-scale offshore wind farms can extract kinetic energy from the wind and alter atmospheric boundary layers:

- The mechanical wake of massive turbines alters air-sea exchanges of heat and moisture, causing moist air to rise and condense prematurely. This potentially creates a significant 10–15% increase in precipitation over the offshore wind farm array footprint.
- Consequently, the transport of moisture downstream (downwind) is potentially depleted, leading to a corresponding 10–15% decrease in precipitation in regions situated downwind of the turbines.

2. Risk of Localized Anthropogenic Climate/Temperature Changes Caused by Turbines

In addition to possible precipitation shifts, the critical study refers to established atmospheric research which shows that large-scale wind arrays can create localized climate warming effects by acting as giant mechanical mixers within the atmospheric boundary layer. At night, the spinning blades pull warmer air from higher atmospheric layers down toward the surface while pushing cooler, moister air upward. This process alters the local microclimate by increasing local surface temperatures and disrupting the natural thermal stratification of the marine boundary layer, introducing non-natural climate forcing at a regional scale. This atmospheric research has recently been updated (e.g. Zhang, P. et al., “Research progress on the impact of wind farms on climate and ecology” <https://doi.org/10.1016/j.rcar.2026.06.002>).

3. Specific Impacts on the North-west Irish Sea SPA and Onshore Farmland

The NISA development plans to deploy 35 to 49 massive turbines with tip heights reaching up to 316 meters. This immense footprint potentially presents unexamined microclimatic risks to the local and regional environment based on the above mentioned 2026 findings and updates:

- **Possible impact on Protected Marine Avifauna (North-west Irish Sea SPA):** Because the potentially 10–15% localized increase in precipitation and turbine-induced thermal mixing occurs over the array footprint, the Northwest Irish Sea Special Protection Area (SPA) could bear the brunt of these shifts. The NISA project area overlaps vital foraging grounds for 21 protected species, including the Red-throated Diver, Great Northern Diver, Fulmar, Kittiwake, and Manx Shearwater. Shifts in local rainfall and changes in cloud coverage, fog and localized sea temperature threaten to alter fish prey distribution and degrade foraging conditions for these sensitive birds.
- **Possible risks to Onshore Farmland:** While Ireland's prevailing winds are south-westerly, the Irish east coast also experiences easterly and north-easterly wind patterns - primarily during critical spring growing seasons or winter blocks. During these meteorological conditions, the agricultural hubs of North Fingal, Meath, and Louth sit directly downstream of the NISA array. Moisture extraction over the Irish Sea risks starving coastal farmlands of rainfall and altering local frost/temperature dynamics during already dry easterly spells, threatening soil moisture and crop predictability.

4. The Critical Need for Cumulative Assessment of East Coast Phase One Projects

Under the EIA Directive and the Appropriate Assessment (AA) framework, a project cannot be viewed in isolation; its in-combination and cumulative impacts have to be explicitly evaluated.

The NISA development does not exist in a vacuum. It is part of a massive, contiguous industrial corridor of Phase One Irish Offshore Wind Projects simultaneously processing through the planning system along the narrow Eastern Irish Shelf, including Oriel Wind Farm (375 MW off Co. Louth), Dublin Array (824 MW off Dublin/Wicklow), Codling Wind Park (1,300 MW off Co. Wicklow) and Arklow Bank Wind Park Phase 2 (800 MW off Co. Wicklow).

Combined, these projects represent over 3.7 Gigawatts of capacity involving hundreds of very large turbines spanning from Louth down to Wicklow. While a single array of 35-49 turbines (NISA) could create a localized wake, a chain of multiple arrays could create a massive, almost uninterrupted barrier to atmospheric airflow over the western Irish Sea.

The cumulative barrier effect of stacking NISA, Oriel, Dublin Array, Codling, and Arklow Bank sequentially means that the collective extraction of kinetic energy and localized thermal boundary layer mixing could be amplified exponentially. This compound effect may significantly increase the risk of severe regional macroclimatic disruption - including coastal moisture deficits during easterly conditions and an entire structural shift in the marine microclimate over the shared Irish Sea avian migratory and foraging pathways.

The individual Environmental Impact Assessment Reports (EIARs) submitted by these developers are deficient, particularly as none account for the possible cumulative atmospheric macro-impact of over 3.7 GW of turbine arrays operating simultaneously along the same coastline.

5. Conclusion & Requested Action

Given that particularly the peer-reviewed research on coastal precipitation (N. Akhtar et al.) was only published in August 2026, it represents critical data that the NISA developer could not have evaluated. Furthermore, the cumulative atmospheric and microclimatic effects of stacking multiple Phase One projects along the East Coast have been omitted from the local impact analyses.

The Commission is respectfully requested to require the applicant to furnish further information as is necessary to address the following matters:

- a) **Relevance of the scientific evidence.** A reasoned technical appraisal of the cited publication, identifying the extent to which its assumptions, spatial scale, turbine representation and development scenarios are applicable to NISA.
- b) **Atmospheric and wake effects.** An explanation of whether the proposed turbine array could materially alter wind fields, turbulence, sea temperature or atmospheric moisture transport beyond the development footprint, taking account of the proposed layout and relevant design parameters.
- c) **Proportionate project-specific modelling.** Where the initial appraisal identifies a credible pathway to likely significant environmental effects, appropriate site-specific modelling, with sufficient spatial and temporal resolution, supported by an explanation of model suitability, validation, sensitivity and uncertainty.

- d) **Coastal meteorological conditions.** Consideration of potential precipitation shifts and, where scientifically justified, cloud formation or fog, including an explanation of whether the coastal areas fall within any potentially affected area.
- e) **Cumulative effects.** Consideration of relevant cumulative atmospheric and consequential environmental effects with other offshore wind developments, identifying which developments have been included and explaining the treatment of existing, approved and, where appropriate, proposed projects.
- f) **Indirect terrestrial effects.** Where a credible impact pathway is identified, assessment of potential consequences for soil moisture, agricultural land, surface-water runoff, groundwater recharge and the local water balance, distinguishing material effects from ordinary meteorological variability.
- g) **Ecological receptors.** Where supported by an identified impact pathway, consideration of consequential effects on protected habitats, bird foraging conditions and relevant marine or coastal ecological receptors.
- h) **Significance and uncertainty.** A transparent explanation of the magnitude, geographical extent, duration and likelihood of any predicted effects, the basis for determining their significance, and the implications of remaining uncertainties.

These requests are intended to secure a proportionate assessment.

I am not asking the Commission to presume that the proposed development would cause regional atmospheric impacts, localized microclimate changes, and regional cumulative effects. I am kindly asking it to ensure that a potentially relevant environmental issue is examined on an appropriate evidential basis and that the application is determined with sufficient information to discharge the applicable statutory assessment duties.

The statutory fee of €50 is paid.

Yours sincerely,

Kirsten Rutschke