MEASURE AND REDUCE ECOLOGICAL IMPACT OF WIND FARM CONSTRUCTION AND OPERATION ON BIRDS

RWE is one of the largest power producers in the UK, accounting for around 15% of all electricity generated amounting to over 10 GW pro rata - enough to power over 10 million UK homes. RWE is also the one of the largest renewables generators in the UK with a diverse operational portfolio of technologies including onshore wind, offshore wind, hydro and biomass and employing around 2,600 people. Overall, and including its committed investments in projects already under construction, RWE expects to invest up to £15 billion in new green technologies and infrastructure in the UK by 2030.

Sofia Offshore Wind Farm is 100% owned by RWE and is now under construction, onshore in Teesside and offshore on Dogger Bank in the central North Sea. RWE is actively exploring offshore wind related innovations with the potential to support not only Sofia, but other projects across the organisation's existing portfolio, and within its future development pipeline.

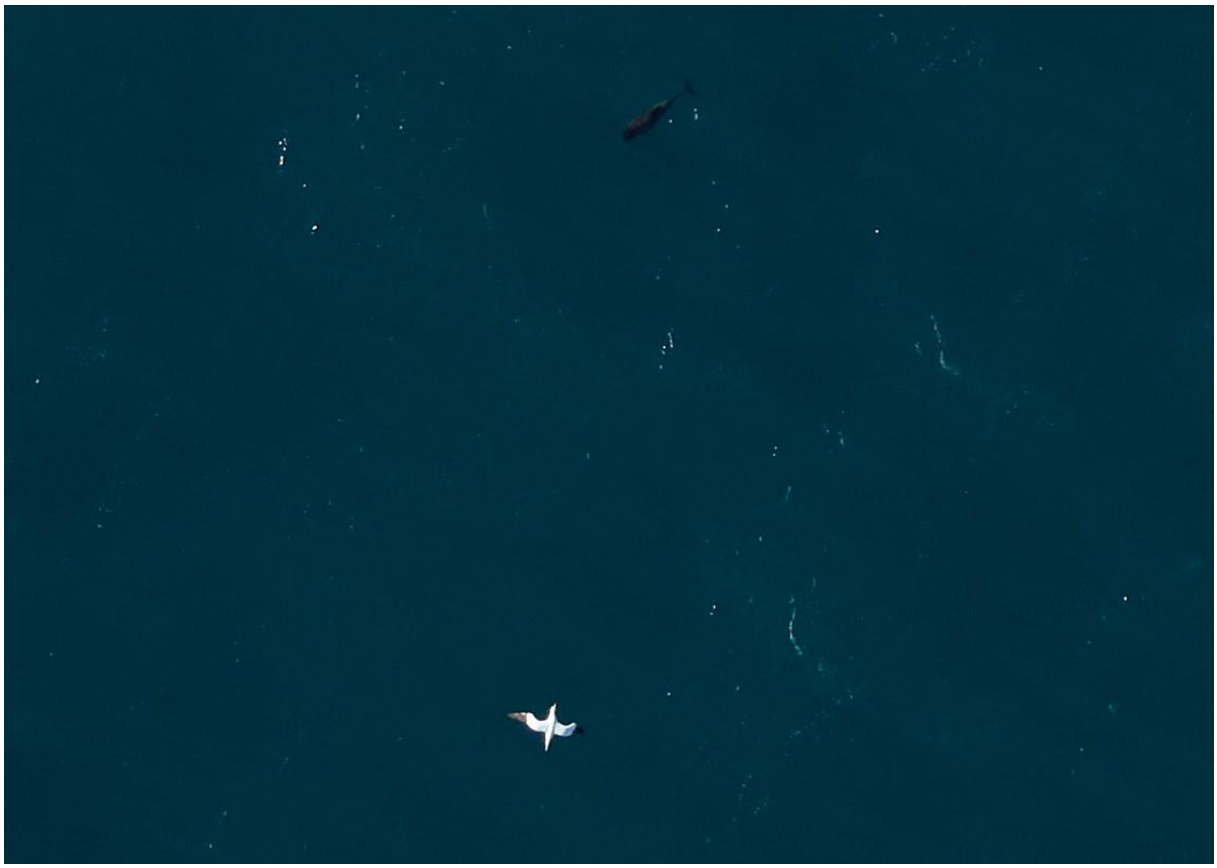

Figure 1: Gannet captured at one of RWE's Offshore Wind Farm Sites (Credit: RWE)

Challenge Background

RWE has recently announced the Growing Green strategy with a plan to invest 50 billion euros to achieve 50 GW of capacity by 2030. With offshore wind growth being a core part of this ambition, it is important to measure, evaluate and mitigate the impacts construction and operation of wind farms have on the surrounding environment.

Challenge Background

RWE is engaging with partners around the world to minimise potential negative ecological impacts of offshore windfarms and use the learnings for future projects. In the UK, RWE is an integral part of the research programmes ORJIP (Offshore Renewables Joint Industry Programme) and OWSMRF (Offshore Wind Strategic Monitoring and Research Forum) to further drive industry know-how on environmental topics. RWE has been driving developments and innovations within ecology across its wind farm portfolio and would like to take it further to make sure the rapid expansion of offshore wind happens without negative impacts on the environment.

In this challenge, we concentrate on the impact of offshore wind farm construction and operation on birds. Currently, pre-construction monitoring of kittiwakes and other species is ongoing at Sofia using LiDAR technology to capture information on flight height, flight speed and age class, however we continue to look for further innovations for Sofia and other UK projects in the areas described below to better understand bird behaviour and to mitigate any negative impacts.

Solution Requirements

Functional Requirements	We are open to solutions that correspond to challenges that include but are not limited to the following themes: • Improvements in GPS and non-GPS tracking/tagging (for example: lighter, smaller, more cost effective tags) • Innovations in assessing displacement of birds around individual turbines and wind farms • Innovations in the collection of flight speed data • Innovations in the collection of age class data • Innovations in the automized species definition • Innovations in potential ornithology compensation measures (artificial nests, habitat enhancement and so on) • Improvements in quantifying the number of collisions at individual turbine locations • Innovations in acoustic monitoring for seabirds • Innovations to mitigate negative impacts on birds including but not limited to blade collisions • Innovations in modelling required for impact assessments
Technical Characteristics	The main requirements for the solutions are for it to be: • safe – the technology should not have high operations risks associated with it • easily integrated into the offshore wind farm - possible to integrate on a large scale into future wind farms, and preferably the ability to be retrofitted into operational projects All solutions should pose no harm to the environment and put a high importance on sustainability. The technology or concept should ideally:

	• have low carbon footprint • include end-of life concept with a focus on recyclability or material reuse
Operating Conditions	Technologies should be prepared for harsh offshore conditions i.e. corrosive environment, strong winds, and if relevant: high waves, and therefore require minimal maintenance. If these conditions are not suitable for the operation, clear weather limits need to be defined.

Market Opportunity

Ecology is one of the most important focus points in the rapid expansion of the offshore wind industry and both developers and regulators should ensure the environment is adequately protected. It is certain there will be continued market interest and opportunity to trial and adopt improved bird monitoring and protection solutions into offshore industry.

Eligibility and Further Information

Eligibility	Entrants to this competition must be: • Established businesses, start-ups, SMEs (Small-Medium Enterprises) or individual entrepreneurs • UK based or have the intention to set up a UK base • Minimum of TRL (Technology Readiness Level) Four. See link for further detail on the TRL scale https://enspire.science/trl-scale-horizon-2020-erc-explained/
Assessment	Applications will be assessed on: • Applicability to the challenge • Innovativeness of the solution • Coherence of proposed business model and company vision • Feasibility and economic viability, including ability of the team to progress the solution • Development potential • Maturity of the solution • Ability to launch product and ease of implementation
IP & Commercial Route	• Existing background IP associated with a potential solution will remain with Launch Academy Applicant(s)/Participant(s). Where any new IP generation is envisaged during the Launch Academy programme, it will be subject to the mutual IP agreement of the Launch Academy Participant(s) and Launch Academy Sponsors if it is jointly developed. If new IP is developed solely by the Participant then it will remain with the Participant.

	• Where necessary, a non-disclosure agreement (NDA) may be signed to uphold confidentiality in the engagement between the Launch Academy Participant(s) and Launch Academy Sponsors. • ORE Catapult do not take any share of IP ownership or enter commercial ventures through the Launch Academy programme.