



19 March 2021

[Tethys](#) is an online knowledge base that facilitates the exchange and dissemination of information on the environmental effects of wind and marine renewable energy (MRE). The bi-weekly *Tethys Blast* highlights new publications in the [Tethys Knowledge Base](#); relevant announcements, opportunities, and upcoming events; and news articles of international interest. [ORJIP Ocean Energy](#) has partnered with OES-Environmental to provide additional content. If you have specific content you would like circulated to the greater wind and MRE communities, please send it to tethys@pnnl.gov for consideration.

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Announcements

WREN Horizon Scan

The International Energy Agency (IEA) Wind Task 34, also known as [WREN](#) (Working Together to Resolve Environmental Effects of Wind Energy), is conducting a horizon scan of priority environmental issues for land-based and offshore wind energy over the next 5 to 10 years. WREN seeks expertise and geographic perspectives from a wide range of stakeholders. The results of the horizon scan will be publicly disseminated to help facilitate knowledge transfer and international collaboration. For more information, please review the [announcement](#).

New WREN Short Science Summary

WREN recently published a new [Short Science Summary on European Grouse and Wind Energy Development](#). Check it out on *Tethys* now!

EuropeWave Prior Information Notice

Wave energy developers interested in participating in [EuropeWave](#)'s Pre-Commercial Procurement, a tender which will open in June 2021, can now register their interest, ask

questions, and provide feedback. A [Prior Information Notice](#) has been published online and a free [webinar](#) will be held on 14 April 2021 at 9:00am UTC to provide an overview of the project and explain the innovative 'stage-gate' design of the procurement process.

Industry Surveys

The Interreg-funded Selkie project has launched a detailed [survey](#) focused on the innovation and networking activities, resource capacities, and performance of firms in the offshore renewable energy sector and its potential supply chain in Ireland and Wales.

The International Electrotechnical Commission System for Certification of Equipment for Use in Renewable Energy Applications (IECRE) has launched a [survey](#) to better understand the growing needs for certification in the marine energy sector. The survey closes 30 March 2021.

Calls for Abstracts

WindEurope, in collaboration with Wind Denmark, has extended the [Call for Abstracts](#) for [WindEurope ElectricCity](#) to 31 March 2021. The new onshore and offshore wind event will take place 23-25 November 2021 in Copenhagen, Denmark.

The Marine Alliance For Science and Technology For Scotland (MASTS), in partnership with the INfluence of man-made Structures In The Ecosystem (INSITE) programme, recently opened the Call for Abstracts for [Structures in the Marine Environment \(SIME2021\)](#). SIME2021 will take place 17-18 June 2021 online and will focus on the impact that the presence or removal of man-made structures may have on biological marine ecosystems. Abstracts are due by 4:00pm BST (3:00pm UTC) on 16 April 2021.

The Marine Technology Society and IEEE (Institute of Electrical and Electronics Engineers) Oceanic Engineering Society are now accepting abstract submissions for the [Global OCEANS 2021 Conference & Exhibition](#). OCEANS 2021 will take place 20-23 September 2021 in San Diego, California (US) and virtually. Abstracts are due 19 April 2021.

Funding/Testing Opportunities

The Supergen Offshore Renewable Energy Hub is inviting applications for the [Early Career Researcher \(ECR\) Research Fund](#). The fund is designed to be a flexible research fund for ECRs to support small activities that either support and develop your existing research activities, or develop your skills further. Applications are due by 12:00pm UTC on 26 March 2021.

Sustainable Energy Authority of Ireland (SEAI) has launched a €10 million funding call to support innovative energy research, development, and demonstration (RD&D) projects, including ocean energy, offshore wind, and green hydrogen-related developments. Applications for the [SEAI RD&D Funding Programme Call](#) are due by 3:00pm BST (2:00pm UTC) on 29 March 2021.

The U.S. Department of Energy (DOE) recently announced \$115 million for small businesses pursuing clean energy research and development projects through its Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) programs. This [funding opportunity](#) is open to small businesses that have previously received SBIR or STTR grants to compete for additional funding. Letters of Intent are due by 5:00pm EDT (9:00pm UTC) on 31 March 2021.

The U.S. DOE has also allocated \$100 million in funding through the Advanced Research Projects Agency-Energy's (ARPA-E) 2021 [OPEN Funding Opportunity](#) to support the development of potentially disruptive new technologies across the full spectrum of energy applications. Concept papers are due by 9:30am EDT (1:30pm UTC) on 6 April 2021.

INORE (the International Network on Offshore Renewable Energy) recently announced the 2021 [Call for BECS \(Blue Energy Collaborative Scholarships\) proposals](#) sponsored by OES (Ocean Energy Systems). The BECS grant, up to €1000, will enable collaboration between INOREans and can be put towards travel expenses and accommodation, or to fund remote work. The call closes on 9 April 2021.

The Interreg Atlantic Area's Blue-GIFT has extended the deadline for the [Third Call for Applications](#) to test MRE technologies at the project's test sites. This access will allow developers to perform low cost tests and validation of their floating offshore wind, wave, tidal, or floating solar energy technologies in real sea environments. Applications now close at 5:00pm UTC on 23 April 2021.

Employment Opportunities

Sustainable Marine Energy is recruiting for a [Head of Marine Ecology](#) to lead activities increasing the scientific knowledge and understanding of fish and marine mammal behavior in tidal flows. The company is currently building one of the world's largest tidal-stream energy projects at the Fundy Ocean Research Centre for Energy (FORCE) in the Minas Passage in Nova Scotia. Applications are due by 28 March 2021.

The Environmental Research Institute (ERI) at the University of the Highlands and Islands (UHI) is recruiting for a [Research Fellow in Marine Renewable Energy and the Environment](#) to join the multi-disciplinary team working across engineering, marine sensing, hydrodynamics and robotics to study environmental and bio-physical interactions. Applications are due 5 April 2021.

Vineyard Wind is looking for a [Manager of Environmental Affairs](#) and a [Senior Manager of Environmental Affairs](#) to join its team in support of the company's efforts to develop and permit well-sited offshore wind projects with minimal environmental impact.

Upcoming Events

Upcoming Workshop

The European Technology & Innovation Platform on Wind Energy (ETIPWind), with the support of the WindEurope Sustainability Working Group, is organizing an online workshop, “Delivering circularity through innovative materials and recycling technology”, from 10:00am-4:00pm CEST (8:00am-2:00pm UTC) on 4 May 2021. The number of participants is limited. Register for free [here](#).

Upcoming Webinars

The National Offshore Wind Research & Development Consortium is hosting a webinar, “Research Portfolios in Europe, the UK, and the US”, from 8:00-9:00am PDT (2:00-3:00pm UTC) on 23 March 2021. During the webinar, speakers from research institutes on both sides of the Atlantic will discuss their current offshore wind research agendas. Register [here](#).

WREN is hosting a webinar entitled ‘[Raptor Behaviour and Physiology as it Relates to Wind Energy Development](#)’ from 11:00am-1:00pm EDT (3:00-5:00pm UTC) on 23 March 2021. The webinar will share information regarding on-going research on raptor behaviour and physiology as it relates to interactions with wind turbines. The webinar is part of WREN’s priority activity to reduce uncertainty regarding risk for raptors at wind farms. View the agenda [here](#) and register [here](#). A recording will be made available on *Tethys* [here](#).

ETIP Ocean (the European Technology & Innovation Platform for Ocean Energy) is hosting a webinar entitled, “[Decommissioning bonds - learnings on best practices](#)”, at 2:00pm UTC on 23 March 2021. During the webinar, speakers from the European Marine Energy Centre and Fundy Ocean Research Centre for Energy will share their experiences with bonds, decommissioning, and finding the right balance between risk and reward. Register [here](#).

The New York State Energy Research and Development Authority’s (NYSERDA’s) Offshore Wind Team is hosting the first webinar as part of its new, educational *Learning from the Experts* webinar series from 1:00-2:00pm EDT (5:00-6:00pm UTC) on 24 March 2021. During the webinar, Luke Feinberg of the U.S. Bureau of Ocean Energy Management will discuss the federal process of siting and leasing offshore wind energy areas. Register [here](#).

The Offshore Energy Research Association of Nova Scotia (OERA) is hosting a webinar entitled, “[Automating the post-processing of noisy hydroacoustic fish surveying for monitoring tidal turbines](#)”, from 1:00-2:00pm ADT (4:00-5:00pm UTC) on 25 March 2021. Register [here](#).

The U.S. DOE Water Power Technologies Office is hosting a [R&D Deep Dive Webinar Series](#) to share updates on tools, analysis, and emerging technologies to advance marine energy. Register [here](#) for “Introduction to Working with the U.S. Department of Energy: A Deep Dive into Hydropower and Marine Energy Opportunities for Students, Researchers, and Faculty” on 6 April at 1:00pm EDT (5:00pm UTC).

The Ocean Exchange and the Marine Technology Society are hosting a joint webinar series entitled, *Engaging with the Blue Economy*. The next webinar in the series will focus on mobile power generation energy and will take place at 11:00am EDT (3:00pm UTC) on 7 April 2021. Register [here](#).

The DOSITS (Discovery of Sound in the Sea) Team is hosting a free, four-part [webinar series](#) on underwater sound. The first webinar, “Passive Acoustic Monitoring Overview – Applications for Marine Mammals and Fishes”, will take place at 12:00pm EDT (4:00pm UTC) on 8 April 2021. Register [here](#).

Upcoming Conferences

Energía Marina and its Marine Energy Research & Innovation Center (MERIC) are organizing an online international conference, [Chile Riding the Blue Energy Wave](#), on 12-13 April 2021. Register for free [here](#).

The [International Conference on Ocean Energy \(ICOE\)](#) will be held online from 28-30 April 2021. The theme for ICOE 2021 is “Energizing a Powerful Blue Economy”. Register [here](#) by 31 March 2021 for early bird rates.

The Business Network for Offshore Wind's [2021 International Partnering Forum \(IPF\)](#) will be held as a two-part series: virtual and in-person. IPF Virtual will be held online on 22 April, 13 May, and 17 June 2021. The main conference, IPF Together, will be held 24-26 August 2021 in Richmond, Virginia. Register [here](#).

New Documents on *Tethys*

Marine Renewable Energy

[Application of a multibeam echosounder to document changes in animal movement and behaviour around a tidal turbine structure](#) – Williamson et al. 2021

Changes in animal movement and behaviour at fine scales (tens of metres) in immediate proximity to tidal stream turbine structures are largely unknown and have implications for risks of animal collision with turbine blades. This study used upward-facing multibeam echosounder data to detect and track animal movement comprising fish, diving seabirds, and marine mammals. Measurements over spring-neap tidal cycles at a turbine structure (no blades present) are compared to a neighbouring reference area with no structure and comparable conditions, with measurements consecutive in time to maximize comparability.

[Influence of Power Take-Off Modelling on the Far-Field Effects of Wave Energy Converter Farms](#) – Fernández et al. 2021

The study of the potential impact of wave energy converter (WEC) farms on the surrounding wave field at long distances from the WEC farm location (also known as “far field” effects) has been a topic of great interest in the past decade. The Coastal Engineering Research Group of Ghent University has developed both a parameterized model using the sponge layer technique in the mild slope wave propagation model

MILDwave and a coupled model MILDwave-NEMOH, for studying the “far-field” effects of WEC farms. The objective of the present study is to perform a comparison between both numerical approaches in terms of performance for obtaining the “far-field” effects of two WEC farms.

Marine renewable energy and maritime spatial planning in Spain: Main challenges and recommendations – García et al. 2021

Like other Member States of the European Union, Spain is currently developing a process of maritime spatial planning (MSP) that should be concluded with the approval of a maritime spatial plan (POEM) for each of the five existing marine demarcations. This planning will have consequences for the uses and activities of the marine environment, including marine renewable energies. It also provides an opportunity to address existing non-technical barriers and promote the deployment of blue energy facilities. This investigation studies the MSP landscape in Spain from a holistic perspective and analyzes the repercussions of future POEMs in the offshore wind sector and other marine renewable energies.

Wind Energy

Vineyard Wind 1 Offshore Wind Energy Project: Final Environmental Impact Statement – Bureau of Ocean Energy Management (BOEM) 2021

This Final Environmental Impact Statement (FEIS) assesses the potential environmental, social, economic, historic, and cultural impacts that could result from the construction, operation, maintenance, and decommissioning of an approximately 800-megawatt offshore wind energy facility located more than 14 miles (23.6 kilometers) southeast of Martha’s Vineyard. This Vineyard Wind 1 Offshore Wind Energy Project (Project) is proposed by Vineyard Wind LLC and designed to serve demand for renewable energy in New England. The FEIS will inform BOEM in deciding whether to approve, approve with modifications, or disapprove the proposed Project.

Mortality limits used in wind energy impact assessment underestimate impacts of wind farms on bird populations – Schippers et al. 2020

The consequences of bird mortality caused by collisions with wind turbines are increasingly receiving attention. So-called acceptable mortality limits of populations, that is, those that assume that 1%–5% of additional mortality and the potential biological removal (PBR), provide seemingly clear-cut methods for establishing the reduction in population viability. We examine how the application of these commonly used mortality limits could affect populations of the Common Starling, Black-tailed Godwit, Marsh Harrier, Eurasian Spoonbill, White Stork, Common Tern, and White-tailed Eagle using stochastic density-independent and density-dependent Leslie matrix models.

Acoustic Impacts of Offshore Wind Energy on Fishery Resources: An Evolving Source and Varied Effects Across a Wind Farm’s Lifetime – Mooney et al. 2020

Wind farm lifetimes involve 40–50-year commitments, including site surveys, construction, operation, and eventual decommissioning. Because their areas often overlap with essential fisheries habitats, there is a need to understand, mitigate, and manage offshore wind farm impacts on fisheries and ecosystems. Activities during all phases of wind farm lifetimes produce underwater sound, a concern because high noise levels and/or persistent anthropogenic noise can impact marine life in many ways. Here, we review the current understanding of impacts of wind energy activities on fisheries resources, taking into account the varied noise conditions that occur from site survey to decommissioning.

News & Press Releases

Marine Renewable Energy

[Minesto and Schneider Electric join forces to commercialize marine energy](#) – Minesto

Leading marine energy developer Minesto and Schneider Electric, the global leader in the digital transformation of energy management and automation, have entered a Memorandum of Understanding to work together to develop and build ocean energy farms based on Minesto's Deep Green technology. Projects ranging from smaller microgrid installations to multimegawatt farms will be jointly identified, assessed, and developed, including exploiting the parties' existing pipelines of leads. The collaboration will reach from technical system integration and project management to sales and project finance opportunities.

[Federal Energy Regulatory Commission issues OSU license for wave energy testing facility](#) – Oregon State University (OSU)

The Federal Energy Regulatory Commission (FERC) has issued Oregon State University a license to build and operate the nation's first pre-permitted wave energy testing facility, culminating an unprecedented regulatory process that spanned nearly 10 years. PacWave South is the first commercial-scale, utility grid-connected test site in the United States to obtain a FERC license and will be the first marine renewable energy research facility in federal waters off the Pacific Coast. The test site, located about seven miles offshore southwest of Newport, Oregon, will offer wave energy developers the opportunity to try different technologies for harnessing the power of ocean waves and transmitting that energy to the local electrical grid.

[Joint UK-Ireland funding to boost research of ocean wave breaking](#) – Offshore Energy

UK's Engineering and Physical Sciences Research Council (EPSRC) and Science Foundation Ireland (SFI) have awarded funding for a £1.1 million multi-institution project that aims to assist the development of offshore renewable energy in challenging sea conditions. A joint project, led by Professor Ton van den Bremer and Dr Mark

McAllister at the University of Oxford and Professor Frederic Dias at University College Dublin, will start in summer 2021 and will run for two-and-a-half years with the aim of improving the understanding of wave breaking in crossing-sea conditions, and therefore assisting the development of offshore renewable energy.

Maine Developer to Move Forward with In-Water Testing of Current Energy Converter – U.S. DOE WPTO

The U.S. Department of Energy's Water Power Technologies Office (WPTO) recently announced the Ocean Renewable Power Company (ORPC) of Portland, Maine, will receive \$3,615,260 to build, test, and operate a modular current energy converter (CEC). Through the modular approach, each turbine-generator unit is installed as a standalone unit with the option for attaching adjacent modules to form horizontal or vertical arrays. This approach will allow future systems to be designed to specific river geometries and other river constraints. The ultimate project goal is to expand the number and geographic diversity of locations where CECs are commercially viable, while simultaneously advancing the state of CEC technologies.

EMEC to spearhead Scottish Isles transition to net-zero – Offshore Energy

The European Marine Energy Centre (EMEC) has been named a key delivery partner for the Islands Growth Deal, set to unlock £335 million of investments over the next 10 years, and will lead the development of the Islands Centre for Net Zero business case. A £100 million investment in the future economic prosperity of Orkney, Shetland and the Outer Hebrides was agreed on 3 March 2021, as representatives of the UK and Scottish governments joined the Leaders of Comhairle nan Eilean Siar, Orkney Islands Council, and Shetland Island Council to sign the Heads of Terms for the Islands Growth Deal. EMEC will lead the development of the Islands Centre for Net Zero business case.

Wind Energy

GE Research Demonstrates Breakthrough MW Scale Modular, Multi-Level Wind Power Converter – General Electric (GE)

A team of engineers in the Electrical Systems group at GE Research have achieved one of the world's firsts in the power conversion sector, demonstrating a MW-scale modular, multi-level wind power converter in its lab in Upstate New York. The demonstration successfully culminates the key objective a five-year project through the U.S. Department of Energy Advanced Manufacturing Office's Next Generation Electric Machines program. To pull off the wind converter demonstration, GE engineers turned one of their labs on campus into a virtual 3.5 MW wind turbine outfitted with an actual wind generator and gearbox from GE's Renewable Energy business.

UK to Invest GBP 95 Million in Two New Offshore Wind Ports – Offshore Wind

The UK government plans to invest up to GBP 95 million (around EUR 111 million) to build two new offshore wind port hubs on the Humber and on Teesside. Together, these new ports will have the capacity to house up to seven manufacturers to support the development of the next-generation offshore wind projects, directly creating around 3,000 new jobs each. Once complete, the two ports will have the capacity to support the development of up to 9 GW of offshore wind projects each year, the government said. The first offshore wind manufacturer to invest in the Teesside port has also been confirmed by the government. GE Renewable Energy will build a new offshore wind blade manufacturing factory at the site.

DEME Offshore and Sabca Test Drones for O&M and Critical Operations at a Wind Farm in the North Sea – DEME Offshore

In a pioneering project in the offshore wind industry, DEME Offshore and Sabca performed tests with autonomous drones at the Rentel offshore wind farm in Belgium. The pilot study represents the first commercial, cross-border, ‘beyond visual line of sight’ drone operations to take place at offshore wind farms in the North Sea. The partners performed a diverse range of tests on various use cases including Search & Rescue operations, environmental surveys, turbine and substation inspections, as well as parcel deliveries. Uniquely, both a ‘traditional’ multicopter drone and a fixed-wing surveillance drone, which has a wing span of more than 3 m, were deployed in parallel.

Statkraft wraps up 1GW Fosen – reNEWS

Statkraft has completed Europe’s largest onshore wind project, the 1057MW Fosen wind development comprising 277 turbines across six wind farms in Norway. The wind farms are co-located in the Trondelag region of Norway, on the country’s west coast. The Fosen wind development will supply up to 3.6 terrawatt-hours of electricity a year, supporting all the industrial consumption in the region. The development represents a total investment of almost £1bn and contributed £230m directly to the local economy through supplier contracts.

RWE supporting research into concrete foundations for Scottish supply chain – RWE

RWE is partnering with Offshore Renewable Energy Catapult - the UK’s leading technology innovation and research centre for offshore renewable energy, to study the potential for Scottish businesses to produce commercial scale concrete foundations for floating wind projects. The possible development of floating wind projects in Scotland puts a focus on the amount of local content that could be achieved. RWE is one of the world’s leading companies for renewable energy and has been involved in three floating wind demonstration projects in Norway, Spain and the US, two of which use concrete foundations that could also be suitable for ScotWind sites.