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[Tethys](#) is an online knowledge hub that facilitates the exchange and dissemination of information on the environmental effects of wind and marine energy. 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. Email tethys@pnnl.gov to contribute!

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Announcements

WREN Tech Tool Announcement

Working Together to Resolve Environmental Effects of Wind Energy ([WREN](#)) is requesting information on new technologies to include in the [Wind Energy Monitoring and Mitigation Technologies Tool](#) on *Tethys*. The free, online tool serves as a catalog of available technologies used to assess and reduce potential wind-wildlife effects, including related research on their use and effectiveness. Please complete this [short survey](#) to contribute technologies for consideration.

DOE Request for Information

The U.S. Department of Energy (DOE) Wind Energy Technologies Office (WETO) and Water Power Technologies Office (WPTO) are [requesting information](#) on university-based offshore wind energy centers and the co-location of aquaculture and ocean renewable energy. Responses are due by 5:00pm EDT (9:00pm UTC) on 15 March 2023.

JNCC Call for Evidence

The Joint Nature Conservation Committee (JNCC) has opened a [Call for Evidence](#) for any ongoing research or projects exploring the impacts of disturbances on typical prey species for Manx shearwater and harbour porpoise in UK waters. Responses are due 3 March 2023.

New WINDEXchange Guide

WETO's WINDEXchange initiative has launched a new web resource to provide information on the repowering or decommissioning processes for wind turbines and their related infrastructure. The [Wind Energy End of Service Guide](#) can help communities better understand what happens when a wind energy project reaches the end of its service.

BOEM Seeking Comments

The U.S. Bureau of Ocean Energy Management (BOEM) is seeking comments on the National Academies of Science, Engineering and Medicine's [new standing committee](#) on offshore wind energy and fisheries (due 23 February 2023), the draft Environmental Impact Statement for the proposed [SouthCoast Wind](#) (due 3 April), and a [proposed rule](#) to better protect shipwrecks and other cultural resources on the seabed from harm due to offshore energy activities (due 17 April).

Calls for Abstracts

The Business Network for Offshore Wind has opened the [Call for Posters](#) for the [International Offshore Wind Partnering Forum \(IPF\)](#) through 17 February 2023. IPF will take place 28-30 March 2023 in Baltimore, Maryland, U.S.

The [Call for Academic Posters](#) for the [All-Energy Conference & Exhibition](#) is open through 28 February 2023. All-Energy will take place 10-11 May 2023 in Glasgow, Scotland.

The Call for Abstracts for the [9th International Ocean Thermal Energy Conversion Symposium](#) is open until 1 March 2023. Email your title, authors, and abstract (<500 words) [here](#). The event will take place 4-5 May 2023 in Houston, Texas, U.S.

The Partnership for Research in Marine Renewable Energy (PRIMaRE) has opened the [Call for Abstracts](#) for the [10th PRIMaRE Conference](#) through 10 March 2023. The conference will take place on 27-28 June 2023 in Bath, England.

The Pan American Marine Energy Conference (PAMEC) Association is now accepting [Expressions of Interest](#) to submit an extended abstract for presentation at [PAMEC 2024](#) through 15 March 2023. Extended abstracts will be due 26 June 2023. PAMEC will take place on 22-24 January 2024 in Barranquilla, Colombia, with pre-conference workshops on 19-20 January 2024.

Funding & Testing Opportunities

The EMYN (Éoliennes en mer Îles d'Yeu et de Noirmoutier) GIS (Groupement d'Intérêt Scientifique) has launched a [Call for Proposals](#) to conduct environmental monitoring around offshore wind farms in France. Applications are due 1 March 2023.

The U.S. Testing and Expertise and Access for Marine Energy Research (TEAMER) program, sponsored by the U.S. DOE's WPTO and directed by the Pacific Ocean Energy Trust (POET), is now accepting [Request for Technical Support 9](#) applications until 3 March 2023.

The New York State Energy Research and Development Authority (NYSERDA) recently announced that nearly \$2.5 million is available to [support environmental and fisheries research](#) related to offshore wind energy development. Applications are due 13 March 2023.

The European Commission has also launched the third call for large-scale projects under the [European Union Innovation Fund](#). The call is open until 16 March 2023 for projects located in European Union Member States, Iceland, and Norway.

The U.S. DOE recently announced a \$30 million [funding opportunity](#) to advance composite materials and additive manufacturing for large wind turbines including for offshore wind energy systems. Concept papers are due 23 March 2023 and full applications are due 9 May 2023.

Student & Employment Opportunities

France Energies Marines is recruiting an [Engineer/Researcher](#) specialized in trophic models for the application of an ecosystem approach to the development of offshore renewable energies. Applications are due 22 February 2023.

France Energies Marines is also seeking a [Research Engineer](#) to contribute to the development of atmospheric modelling tools and in-situ data analysis to improve the characterization of offshore wind sites. Applications are due 28 February 2023.

France Energies Marines is also recruiting an [Engineer/Researcher](#) to contribute to the development of research activities and expertise in relation to avifauna and marine renewable energy issues. Applications are due 1 March 2023.

The Environmental Research Institute is seeking to appoint a [Postdoctoral Research Associate or Research Fellow](#) with interests in island energy systems, renewable energy or more widely in social sciences, environmental or resource economics, circular economy, environmental management and stewardship, or net-zero aviation. Applications are due 6 March 2023.

AZTI is seeking a [Postdoctoral Researcher](#) with experience in marine studies, ecosystem services, or socio-ecological systems to support the Horizon Europe project “Marine SABRES” (Marine Systems Approaches for Biodiversity Resilience and Ecosystem Sustainability).

Upcoming Events

Upcoming Webinar

The Renewable Energy Wildlife Institute is hosting a webinar, “[Eagle Flight Characteristics & Wind Turbines and Raptor Carcass Persistence](#)”, on 23 February 2023 from 3:00-4:30pm ET (8:00-9:30pm UTC). The webinar will explore two recent studies supported by the Renewable Energy Wildlife Research Fund highlighting work on eagles and wind energy. Register [here](#).

Upcoming Conferences

The Pacific Ocean Energy Trust is hosting the [Northwest Offshore Wind Conference](#) from 28 February to 1 March 2023 in Portland, Oregon, U.S. Register [here](#).

The Business Network for Offshore Wind is hosting the [International Partnering Forum](#) on 28-30 March 2023 in Baltimore, Maryland, U.S. Register [here](#).

The [7th Conference on Wind Energy and Wildlife Impacts](#) (CWW 2023) will take place on 18-22 September 2023 in Šibenik, Croatia. The Call for Abstracts will open soon.

The University Marine Energy Research Community (UMERC) is hosting the [UMERC 2023 Conference](#) on 4-6 October 2023 in Durham, New Hampshire, U.S.

Upcoming Summit

The U.S. Departments of Energy, the Interior, Commerce, and Transportation are hosting the [Floating Offshore Wind Shot Summit](#) on 22-23 February 2023 to convene offshore wind energy stakeholders to discuss the [Floating Offshore Wind Shot](#). Register [here](#) to learn more.

New Documents on *Tethys*

Marine Energy

[SafeWave Deliverable 2.5 Monitoring fish communities](#) – Uriarte et al. 2022

The SafeWAVE project aims to improve the knowledge on the potential environmental impacts from Wave Energy projects. In the project scope, Work Package 2 aims to collect, process, analyse, and share environmental data related to four priority areas of research: i) Electromagnetic Fields, ii) Acoustics (noise), iii) Seafloor integrity, and iv) Fish communities. The aim of the present report (Deliverable 2.5) is to present the work done related to the conditioning and tuning activities of ITSASDRONE (an autonomous marine surface drone), test and check its operational procedure and navigation system and, finally, explore the association between Wave Energy Converters and fish aggregations around the Penguin WEC-2 of WELLO Oy which was deployed off the coast Armintza, Basque Country, Spain in August 2021.

[Marine Renewable Energy: Policy, People, and Prospects](#) – Wickizer et al. 2023

In this chapter, we examine the state of offshore wind, wave, and tidal energies. Specifically, we analyze each respective technology, its present level of deployment, and projected future growth and costs. We then present insights related to attitudes toward marine renewable energy, focusing on the relevance of technology, people, place, and process. Finally, we appraise the marine renewable energy policy landscape, discussing the relevance of the law of the sea, leasing and zoning, marine spatial planning, and the

relationship between marine renewable energy growth and broader energy policies related to decarbonization.

Tidal range electricity generation: A comparison between estuarine barrages and coastal lagoons – Vandercruyssen et al. 2022

The potential power from coastal tidal range is becoming better appreciated due to the need to mitigate global warming. Great Britain (GB) is ideally situated to exploit tidal power but currently has no operational systems. Historically, estuaries have been proposed as sites for barrages, but more recently coastal lagoons are favoured due to a lower environment impact. To contrast the differences between barrages and lagoons two potential schemes are analysed using the Lancaster 0-D Tidal Range Model. Both schemes were analysed with a range of turbine numbers and generator ratings. The schemes are compared in terms of energy generation, flood protection, navigation, and selected environmental impacts.

Wind Energy

An integrated conceptual model to characterize the effects of offshore wind farms on ecosystem services – Baulaz et al. 2023

Coastal territories are particularly favorable to the development of offshore wind farms due to their high energy potential. However, these areas are also hotspots of biodiversity, provide attractive landscapes and are under strong anthropogenic pressures. Preserving and sharing the natural and cultural resources of coastal territories while intensifying renewable marine energies, represents one of the most important challenges for future management of coastal environments. Consequently, systemic models that consider all the effects of offshore wind farms on ecosystems and society are essential. Here, we propose a conceptual model for studying these effects, by mobilizing the concept of ecosystem service in a systemic and integrated assessment approach. phases.

Drivers of bat activity at wind turbines advocate for mitigating bat exposure using multicriteria algorithm-based curtailment – Barré et al. 2023

Wind turbine curtailment (hereafter referred to as “blanket curtailment”) in non-winter periods at low wind speeds and mild temperatures (i.e. when bats are active and wind energy production is low) can reduce fatalities, but show variable and incomplete effectiveness because other factors affect fatality risks including landscape features, rain, turbine functioning, and seasonality. The combined effects of these drivers, and their potential as criteria in algorithm-based curtailment, have so far received little attention. We compiled bat acoustic data recorded over four years at 34 wind turbine nacelles in France from post-construction regulatory studies, including 8619 entire nights (251 ± 58 nights per wind turbine on average).

An ecological risk assessment for the impacts of offshore wind farms on birds in Australia – Reid et al. 2023

An ecological risk assessment, based on life-history and behavioural attributes of 273 bird taxa, was used to identify which of those taxa are at high risk from negative interactions with offshore wind farms in Australia. The marine area of Australia was divided by state/territory boundaries perpendicular to the coast into eight regions, with Western Australia further divided into north and south, and a Bass Strait region bounded by the Victoria coast and the north coast of Tasmania. These regions were subdivided into coastal, inshore and offshore sub-regions and a risk summary for all bird taxa occurring in each of these sub-regions produced.

News & Press Releases

Marine Energy

[A HERO's Journey: NREL's Wave-Powered Desalination Device Returns to the Outer Banks](#) – National Renewable Energy Laboratory

North Carolina's Outer Banks come alive in the summertime. The sunshine and shorelines invite people from near and far—surfers, vacationers, and even engineers. In August 2022, National Renewable Energy Laboratory (NREL) researchers journeyed to the Outer Banks for more than the fresh seafood and lively piers. They were on a mission to deploy NREL's first wave-powered desalination device for a second in-water test. The hydraulic and electric reverse osmosis (HERO) wave energy converter (WEC) measures about 6 feet in diameter (or roughly the size of a round dining table) and weighs approximately 750 pounds. The HERO WEC can desalinate seawater using a hydraulic or electric power conversion system.

[Ocean thermal energy to power desalination plant in India](#) – Offshore Energy

Indian National Institute of Ocean Technology (NIOT), a research and development institute under the Ministry of Earth Sciences (MoES), is developing an ocean thermal energy conversion (OTEC) desalination plant in southwest India. The desalination plant is located on Kavaratti island in Lakshadweep and is powered by about 65 kW power generated from OTEC. At the same time, the Ministry of New and Renewable Energy (MNRE) informed that it is implementing its Renewable Energy Research and Technology Development Program to promote indigenous technology development for the widespread deployment of new and renewable energy, including ocean energy, in an efficient and cost-effective manner across the country.

[Plainsight and MarineSitu Using 'Computer Vision' To Protect Sea Creatures](#) – Forbes

The World Bank says the Blue Economy relates to the sustainable use of ocean resources for economic growth. Tidal turbines are one example. But how do you make sure that generating renewable energy on the seas doesn't do more aquatic harm than environmental good? Plainsight, an artificial intelligence (AI) company in the United

States, has partnered with MarineSitu, a hardware and software provider and spinoff from the University of Washington. The focus is on enabling marine energy devices to coexist harmoniously with aquatic life. MarineSitu was one of a dozen research and development projects funded by the U.S. Department of Energy in 2021, receiving support to develop a camera system to monitor an operating turbine at the University of Washington.

Scottish company secures over €1M to advance tidal energy turbine – Offshore Energy

Glasgow-based company Flex Marine Power has been awarded significant funding from the UK government's Energy Entrepreneurs Fund to further develop and demonstrate its low-cost tidal energy turbine. Flex Marine Power has secured a little over €1 million (£968,000) that will be used for the development of a lower-cost tidal turbine for coastal power generation within a microgrid which will be tested with community partners on the island of Islay. The establishment and powering of a microgrid on Islay is expected to demonstrate the social, economic and environmental benefits of the tidal energy technology. The company's 50kW tidal turbine, dubbed SwimmerTurbine, is being developed to offer a uniquely low price point and low user complexity.

TTI's NetBuoy™ scales-up with DOE funded transatlantic collaboration – Wave Energy Scotland

The long-term vision of utilising NetBuoy™ as a lightweight, low-cost, and robust prime mover for wave energy converters (WECs) takes a major step forward with TTI Marine Renewables Ltd (a Scottish based subsidiary of Tension Technology International Ltd) confirmed as a subcontractor to California-based wave energy technology developer, Centipod. Centipod, through its parent company Dehlsen Associates, has been awarded \$1.8 million by the U.S. DOE's WPTO to complete the design of its C1P6 WEC where TTI's unique NetBuoy™ concept will be used as the prime mover sub-system. The C1P6 design will be put through technology qualification, beginning the certification process that will allow for a seamless continuation into the fabrication, deployment, and prototype testing stages beyond the end of the award period in Q1 2024.

Wind Energy

Introducing the world's first commercial-scale seaweed farm located between offshore wind turbines – Amazon

Amazon is funding the world's first commercial-scale seaweed farm located between offshore wind turbines. By locating the farm in previously empty space between turbines, the project is able to expand seaweed cultivation in the otherwise heavily used North Sea. If seaweed farming were to expand to occupy the entire space occupied by wind farms, expected to be approximately 1 million hectares by 2040, it could reduce millions of tonnes of CO₂ annually. The project is managed by a consortium of scientific researchers and partners from the seaweed industry, led by non-profit organisation North Sea Farmers (NSF), and is expected to become operational by the end of this year. The

consortium hopes that North Sea Farm 1 will evolve into a blueprint for offshore seaweed farming the world over.

Equinor and SSE Renewables carry out early scoping work on potential 4th phase of Dogger Bank Wind Farm – Equinor

Leading energy companies Equinor and SSE Renewables are carrying out early scoping work to explore options for developing a fourth phase, Dogger Bank D, of the world's largest offshore wind farm. Equinor and SSE Renewables each own 50% of the proposed Dogger Bank D development. The Dogger Bank D proposal would require a new development consent order to progress into construction and could add an additional 1.32 GW in fixed-bottom offshore wind capacity to the 3.6 GW already in construction with phases A, B and C of the project. Dogger Bank D would be located in the eastern zone of the Dogger Bank C lease area, more than doubling the utilisation of existing acreage. The project's progression remains subject to agreement with The Crown Estate.

Vestas unveils circularity solution to end landfill for turbine blades – Vestas

Vestas is presenting a new solution that renders epoxy-based turbine blades as circular, without the need for changing the design or composition of blade material. Combining newly discovered chemical technology developed within the CETEC initiative, and partnerships with Olin and Stena Recycling, the solution can be applied to blades currently in operation. Once matured, this will eliminate the need for blade redesign, or landfill disposal of epoxy-based blades when they are decommissioned. In the future, the new solution also signals the possibility to make all epoxy-based composite material a source of raw material for a broader circular economy, potentially encompassing industries beyond wind energy.

Ørsted Starts Building Hornsea Three's Kittiwake Artificial Nesting Structures – Offshore Wind

Ørsted has commenced work on constructing artificial nesting structures for Black-legged kittiwake offshore Minsmere and Lowestoft in East Suffolk, UK, as part of a compensation scheme associated with its Hornsea Three offshore wind farm. The works were scheduled to start on 30 January for the site off Minsmere, where one artificial nesting structure (ANS) will be built some 1.4 kilometres offshore. The construction of two ANSs 1 kilometre off the coast of South Beach, Lowestoft, is expected to start on 4 February. By 31 March, all three artificial nesting structures should be completed. Under the Development Consent Order, the developer is required to include ecological compensation measures for the Black-legged kittiwake (*Rissa tridactyla*), a vulnerable seabird species whose populations could be affected by wind farms.

Renewable energy consortium awarded £1.5m funding to install world-leading Offshore Charging Station – Oasis Marine

A collaboration of UK green technology pioneers has been awarded a share of the Department for Transport and Innovate UK's £60 million Clean Maritime Demonstration Competition grant funding to install the world's first offshore charging station within a UK wind farm. Project leaders Oasis Marine (specialists in marine charging solutions) have partnered with Turbo Power Systems (power electronics and rapid charging specialist), Verlume (an intelligent energy management and storage technologies specialist) and the Offshore Renewable Energy (ORE) Catapult (the UK's leading technology innovation and research centre for offshore renewable energy) to deliver the world leading Offshore Charging Station. This smart energy storage and charging infrastructure will enable fully electric maritime operations within offshore wind farms.