



30 September 2022

[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

New Wind Technologies Tool

Working Together to Resolve Environmental Effects of Wind Energy (WREN) has launched a free online tool, the [Wind Energy Monitoring and Mitigation Technologies Tool](#), to serve as a catalog of available technologies used to assess and reduce potential wind-wildlife effects, including their state of development and related research on their effectiveness.

SEER Booklet

The U.S. Offshore Wind Synthesis of Environmental Effects Research (SEER) project recently published a booklet titled, [Environmental Effects of U.S. Offshore Wind Energy Development: Compilation of Educational Research Briefs](#). View additional SEER resources on *Tethys* [here](#).

ORISE Application Opens

The U.S. Department of Energy's (DOE) Water Power Technologies Office (WPTO) and Oak Ridge Institute for Science and Education (ORISE) recently opened applications for the next cohort of students for the [Marine Energy Graduate Student Research Program](#). The program is accepting applications from master's and doctoral students with a marine energy-focused research thesis and/or dissertation at a U.S. institution. Applications are due 2 December 2022.

NREL Survey

National Renewable Energy Laboratory (NREL) is inviting wind energy consumers, members of the wind energy industry, and community leaders to participate in a [brief survey on wind energy development and social equity](#).

BOEM Seeks Comments

The U.S. Bureau of Ocean Energy and Management (BOEM) is [seeking public comments](#) on the Draft Environmental Impact Statement for the proposed Revolution Wind energy project offshore Rhode Island through 17 October 2022.

INORE BECS

The International Network on Offshore Renewable Energy (INORE) has announced a [Call for Blue Energy Collaborative Scholarships \(BECS\) Proposals](#), targeted at INOREans from Latin America, Africa, and Asia. If you have a research project that can provide collaborative work with other INOREans, the grant can be used for travel expenses and accommodation at the institution where the work will take place or be presented. Applications are due 31 October 2022.

Calls for Abstracts

The European Energy Research Alliance (EERA) has opened the [Call for Abstracts](#) for the [EERA DeepWind Conference](#) through 15 October 2022. The conference will take place 18-20 January 2023 in Trondheim, Norway.

The Business Network for Offshore Wind has opened the [Call for Workshops](#) for the [2023 International Offshore Wind Partnering Forum \(IPF\)](#) through 1 November 2022. IPF will take place on 28-30 March 2022 in Baltimore, U.S.

Funding & Testing Opportunities

The U.S. DOE'S WPTO has released a \$10.3 million funding opportunity, "[Marine Energy Systems Innovation at Sea](#)", to accelerate the development and testing of marine energy technologies with a focus on wave and ocean current. Concept papers are due 4 November 2022. WPTO is hosting an [informational webinar](#) on 13 October 2022 at 3:00pm EDT (7:00pm UTC).

Iberdrola, through its start-ups program PERSEO, is [inviting innovative proposals that seek to develop, test, or monitor nature-inclusive solutions](#) that could be implemented in an offshore wind farm environment, with a focus on habitats and species of conservation importance. Applications are due 30 September 2022.

Innovate UK and the UK Department for Environment, Food and Rural Affairs have opened a funding opportunity entitled, "[Improving observation capabilities of biodiversity in UK waters](#)". UK registered organizations can apply for a share of up to £750,000 for innovation projects. Applications are due 5 October 2022.

The California Energy Commission (CEC) has released a solicitation entitled “[Advancing Environmental Monitoring Technologies for Floating Offshore Wind](#)”, which aims to fund applied research and development projects. Applications are due 17 October 2022.

The U.S. Testing and Expertise for Marine Energy Research (TEAMER) program is now accepting [Request For Technical Support \(RFTS\) 8](#) applications through 4 November 2022. Developers can apply for support in numerical modeling and analysis, bench/lab or tank/flume testing, and open water activities. TEAMER is hosting an [informational webinar](#) on 6 October 2022 at 11:00am PDT (6:00pm UTC) to provide details on the new application.

Student & Employment Opportunities

Pacific Northwest National Laboratory's Coastal Sciences Division is recruiting a [Post Masters Research Associate - Marine Energy](#). The position will work primarily on projects associated with coastal community energy transitions, as well as marine renewable energy for small scale applications, such as aquaculture and ocean observing. Applications are due 19 October 2022.

Oregon State University is seeking a [Safety and Compliance Officer](#) to join the PacWave team and ensure compliance with all safety and environmental regulations and requirements through the construction and operational phases of the project. Applications are due 31 October 2022.

Upcoming Events

Upcoming Webinar

As part of its *Learning from the Experts* series, the New York State Energy Research and Development Authority's Offshore Wind Team is hosting a webinar on Outer Continental Shelf Air Permitting for Offshore Wind on 26 October 2022 from 1:00-2:00pm EDT (5:00-6:00pm UTC). Register [here](#).

Upcoming Workshop

The National Renewable Energy Laboratory (NREL) and the Hydropower Foundation are hosting an [International Workshop on Marine Energy Workforce Development and Education Efforts](#) on 20 October 2022, as part of the International Conference on Ocean Energy in Donostia-San Sebastián. Email [Arielle Cardinal](#) with any questions and to RSVP.

Upcoming Conferences

The University of the Highlands and Islands and Heriot Watt University are hosting [Environmental Interactions of Marine Renewables \(EIMR 2022\)](#) on 4-6 October 2022 online. Register [here](#). Student tickets are available at a discounted rate.

The European Technology & Innovation Platform on Wind Energy is hosting a hybrid event, [How Targeted Research and Innovation in Wind Energy Contributes to Delivering REPowerEU](#), on 13 October 2022 from 9:00am-2:30pm CEST (7:00am-12:30pm UTC).

New Documents on *Tethys*

Marine Energy

[Influence of coating type, colour, and deployment timing on biofouling by native and non-native species in a marine renewable energy context](#) – Nall et al. 2022

Biofouling on marine renewable energy devices presents engineering challenges for this developing sector, and has implications for the spread of marine non-native species (NNS) in coastal waters. This is particularly true at sites with abundant energy resource, little existing infrastructure, and few established NNS. Device coatings, such as antifouling paints, could reduce the risk of NNS spread. Settlement on coatings of various types and colours, representing those likely to be used on renewable energy devices, was assessed in the Orkney Islands, northern Scotland. Assemblage composition, but not overall biofouling cover, varied initially among different coloured surfaces, although differences decreased over time.

[Can artificial magnetic fields alter the functional role of the blue mussel, *Mytilus edulis*?](#) – Albert et al. 2022

Along European coasts, the rapid expansion of marine renewable energy devices and their buried power cables, raises major societal concerns regarding the potential effects of their magnetic field emissions (MFs) on marine species and ecosystem functioning. MFs occur at a local spatial scale, which makes sessile species the primary target of chronic and high-intensity exposures. Some of them, as ecosystem engineers, have critical functions in coastal habitats whose behavioral alteration may drive profound consequences at the ecosystem level. In this context, the present experimental study explored the effects of short exposure to direct current MFs, on the feeding behavior of a widespread ecosystem engineer, the blue mussel (*Mytilus edulis*).

[Hydro-environmental Modelling and Interaction of Tidal Lagoons around the UK Coast](#) – Guo 2022

Despite the great advantages of tidal lagoons, such as predictable renewable energy generation and flood risk reduction, tidal lagoons are expected to have an impact on the coastal and riverine environment. The uncertainties regarding the environmental impacts can potentially affect the development and influence the design of tidal lagoons. This research study involves developing a refined two-dimensional hydrodynamic model to provide an accurate assessment of the hydro-environmental impact and the interaction of tidal lagoons. Improvements are made through simulations of island wakes, which

provides a similar scenario to the flow patterns around obstacle, such as lagoons, in a macro-tidal environment.

Wind Energy

Environmental impact assessment framework for offshore wind energy developments based on the marine Good Environmental Status – Abramic et al. 2022

The present contribution has conducted an extensive literature review on the environmental effects and changes that the offshore wind farm (OWF) can pose on the Good Environmental Status (GES) described by the European Marine Strategy Framework Directive (2008/56/EC). Consequently, an environmental impact assessment (EIA) checklist has been developed to encompass the construction, operative, and decommissioning phases of the OWF and aimed at enabling the evaluation of whether the OWF developments are conducted compatibly with the maintenance of the GES of the marine environment or not. We have then applied to our case study the developed EIA-GES checklist through a multi-criteria analysis, to evaluate and map the potential level of impact expected from the OWF developments of a area off an Atlantic archipelago.

Noise pollution from wind turbines and its effects on wildlife: A cross-national analysis of current policies and planning regulations – Teff-Seker et al. 2022

The quest for cleaner energy has caused governments to expand renewable energy infrastructure, including wind turbine farms. However, wind turbines (WTs) can also pose a risk to certain wildlife species, with wildlife-related research predominantly focusing on the potential harm caused to birds and bats from impact injuries. New evidence suggests that WT noise (WTN) impacts on wildlife can also be detrimental to wildlife, but rarely receive attention from planners. Potential types of WTN impact, including damage to wildlife physical wellbeing, vital survival mechanisms, social and reproductive processes, and habitat continuity. This article reviews the current literature on WTN effects on wildlife, and analyzes the planning guidelines relating to WTN and wildlife in three selected locales where WT infrastructure is being expanded: California, Germany, and Israel.

Environmental licensing for offshore wind farms: Guidelines and policy implications for new markets – de Vasconcelos et al. 2022

Offshore wind energy is a key driver of the global energy transition towards climate change. The regulatory framework in environmental licensing for renewable energy sources is specific for each country, however there are basic elements that can be replicated for new markets. This article aims to propose guidelines and policy implications in environmental licensing for offshore wind projects for new markets based on the state of the art and lessons learned from three mature countries and one emerging market. The research involved three phases: literature review on sustainable development and environmental licensing procedures for offshore wind farms; research cases in the

United Kingdom, Germany, Denmark, and Taiwan; and the structuring of guidelines and policy implications.

News & Press Releases

Marine Energy

[Sustainable Marine Begins Full-Scale Testing for Smart Grid Project Supporting Islands and Remote Communities](#) – Sustainable Marine

Sustainable Marine's tidal energy technology is set to play a central role in the Ocean Energy Smart Grid Integration Project, in Nova Scotia, Canada, as final testing gets underway. The BMT-led project was launched in December 2020 by Canada's Ocean Supercluster as part of its Accelerated Ocean Solutions Program (AOSP). Challenged with integrating multiple renewable and distributed power sources, including ocean energy solutions, additional project partners include Rainhouse Manufacturing Canada, the University of Victoria, and Turtle Island Innovations. This week the project enters full-scale testing at the Sustainable Marine Energy's substation in Nova Scotia, with teams on the ground connecting solar, tidal, and other energy sources to the BMT Smart Grid Controller to regulate and distribute power to a microgrid.

[Tidal Energy Momentum Builds with the Latest Re-Deployment at MeyGen Site](#) – Simec Atlantis Energy (SAE)

SAE is pleased to announce the latest turbine re-deployment at its MeyGen site. The successful re-deployment of the 1.5MW turbine is another critical step in returning the Phase 1 array to full power and demonstrating tidal technology at commercial scale. With the latest turbine now back in the water, and the AR1500 re-deployed in March continuing to exceed expectations, SAE is confident that the MeyGen site will continue to break records for tidal generation. The site has already produced c.75% of the global tidal stream generation to date. With 3 turbines now fully operational, SAE remains on schedule to re-deploy the final turbine in March 2023. The turbine is being retrofitted with a wet-mate connection system, which more than halves the cost of future operation and maintenance deployments.

[Sabella signs tidal energy deal in Indonesia](#) – Offshore Energy

French company Sabella has formed strategic partnership with state-owned Indonesian corporation PT PLN (Persero) and PT Meindo Elang Indah to jointly perform a feasibility study for the first tidal energy farm development in the world's largest archipelagic state. The cooperation document, signed on September 22, 2022, is expected to contribute to the acceleration of energy transition initiatives in Indonesia. Indonesia has one of the biggest tidal stream energy potentials in the world, with more than 13,000 islands. PT PLN is in charge of electric power distribution in the country and generates the majority of its electrical power.

TEAMER Network Director Announces RFTS 7 Technical Support Recipients – TEAMER

On August 30, 2022, the U.S. Testing Expertise and Access to Marine Energy Research (TEAMER) program selected seven projects through its seventh Request for Technical Support (RFTS), reflecting a total funding amount of approximately \$766,307. These projects will receive support for testing expertise and access to numerical modeling, laboratory or bench testing, and tank/flume testing and expertise within the growing TEAMER Facility Network. Selected applicants, along with the supporting Facility, will now submit their completed Test Plans, a requirement before assistance activities can commence. Applications for RFTS 8 are currently being accepted through November 4.

Several environmental measurement stations successfully installed on the Paimpol-Bréhat test site! – Bretagne Ocean Power

The Paimpol-Bréhat test site now hosts new environmental measurement stations, useful for improving the characterization of this exceptional site dedicated to the testing and optimization of tidal turbine demonstrators. On Monday, September 19, 2022, thanks to the presence of the ship Inyanga Entsha, the partners of the test site of Paimpol-Bréhat, SEENEOH, EDF, BDI associated for the occasion with the company ENERGIE DE LA LUNE have been able to deploy many stations of environmental data measurements. This operation was organized within the framework of the Interreg TIGER France Manche England project.

Wind Energy

Research black rotor blades for bird protection – RWE

RWE is part of the Dutch “Black Blade” study. Seven of RWE’s wind turbines in Eemshaven are each getting one black blade and two white ones. One of the aims of this study is to find out whether painting a wind turbine blade black helps birds to fly more safely between the turbines. The study is based on the assumption that the black rotor blade provides increased contrast and thus increased visibility of the rotors. This would make it easier for the birds to detect the wind turbines and avoid them. The effect on the birds will be monitored for two years. The Dutch Black Blade Study goes beyond the results of the previous study in Norway: In addition to the effect on local birds, the study examines flight safety, the effect of the black painted blades on the landscape, and the painted blades themselves.

Commanding circularity: Siemens Gamesa announces RecyclableBlade for onshore wind power projects – Siemens Gamesa

Siemens Gamesa again takes strong command of circularity within wind turbine blades, launching its RecyclableBlade for onshore wind power projects. This milestone is set to propel the activities that make wind energy even more sustainable, creating a fully circular sector. The Siemens Gamesa RecyclableBlade for offshore was brought to

market in only 10 months: launched in September 2021 and installed at RWE's Kaskasi project in Germany in July 2022. The corresponding onshore solution is now ready for customers to employ at their onshore wind sites. Further development by Siemens Gamesa and partners ensure full compatibility with the product and process requirements for onshore blades.

Province Sets Offshore Wind Target – Nova Scotia

The Province has set a target to offer leases for five gigawatts of offshore wind energy by 2030 to support its budding green hydrogen industry. Leases for offshore wind development will be granted through a competitive bid process jointly managed by the provincial and federal governments, and the first call for bids will be in 2025. After reaching the five-gigawatt target, calls for bids will be based on market opportunities. The Province also announced that it is developing a green hydrogen action plan to be released in 2023. The plan will outline the role green hydrogen can play in the transition to clean energy and the steps the government will take to build this industry, which will help Nova Scotia reach net-zero emissions by 2050.

Aquaterra Energy and Seawind Ocean Technology sign agreement for the development of world's largest offshore floating wind and green hydrogen production project – Aquaterra Energy

Aquaterra Energy, a leader in global offshore engineering solutions, recently announced an agreement with Seawind Ocean Technology, a leading turnkey supplier of floating and bottom fixed offshore wind assets, to co-develop the world's largest offshore floating wind and green hydrogen production project, named HyMed, with 3.2GW of production expected by 2027 in Italian ultra-deep waters. The project is currently in its first phase of permitting, with the grid connection and the environmental impact assessments well under way. The collaboration will provide a unique offering and act as a template for future offshore renewable energy projects between the companies including a highly impactful 300MW exclusively hydrogen production project in southwest Greece named "Icarus."

Hamburg 2022: Vestas unveils 'record-breaking' tower – Renew

Vestas is partnering with Max Bögl to offer a tower solution with a "record-breaking" hub height for its 7MW onshore wind turbines. The solution is for the Vestas V172-7.2MW flagship turbine with a hub height of 199 metres, making it "the world's tallest onshore tower for wind turbines", Vestas has claimed. The height of the tower makes it possible to harvest stronger and more constant wind and thus increase both the capacity factor and the annual electricity production of each turbine. The turbine and tower are earmarked for projects in Central Europe that are generally constrained in available planning space. The newly designed tower for the V172-7.2MW, developed according to DiBT guidelines, will be offered for the German and Austrian markets and will be available for installations from 2025.