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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

New PRIMRE Videos

The [Portal and Repository for Information on Marine Renewable Energy \(PRIMRE\)](#) is a free, online system that provides access to a variety of U.S. marine energy resources and information. Watch the new [PRIMRE Overview video](#) and [Contributing to PRIMRE video](#) to learn more.

ORISE Applications

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.

SULI & CCI Applications

The U.S. DOE's Office of Science is now accepting applications for the [Science Undergraduate Laboratory Internships \(SULI\)](#) program and the [Community College Internships \(CCI\)](#) program. Interns will work directly with national laboratory scientists and engineers that support the DOE mission. The application deadline is 10 January 2023.

OWEER Request for Information

The Crown Estate is currently collecting information for the new version of the [Offshore Wind Environmental Evidence Register \(OWEER\)](#), a register of environmental evidence gaps and research projects relating to fixed and floating offshore wind in the UK. The [most recent version](#) is freely available on Marine Data Exchange. Contributions are due 11 November 2022.

BOEM & NOAA Draft Strategy

The U.S. Bureau of Ocean Energy Management (BOEM) and the National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NOAA Fisheries) recently [announced](#) the release of the [Draft North Atlantic Right Whale and Offshore Wind Strategy](#) that identifies the agencies' goals and objectives to better understand the effects of offshore wind development on the whales and their habitat. Public comments are due 4 December 2022.

BOEM Seeks Public Comment

BOEM is [seeking public comment](#) on two proposed guidelines that clarify the requirements that offshore wind lessees must include in Construction and Operation Plans before the agency will begin its formal environmental and technical reviews. Comments are due 12 December 2022.

Calls for Abstracts

The Western Section of The Wildlife Society has opened the [Call for Abstracts](#) for its [70th Annual Meeting](#) through 28 October 2022. The event will take place on 7-10 February 2023 online and in Riverside, U.S.

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.

The [Call for Abstracts](#) for the [International Ocean Data Conference - II \(IODC-II\)](#) is now open through 15 November 2022. IODC-II will take place on 20-21 March 2023 in Paris, France.

The [Call for Abstracts](#) for [OCEANS 2023 Limerick Conference & Exhibition](#) is now open through 20 December 2022. The event will take place on 5-8 June 2023 in Limerick, Ireland.

The [Call for Abstracts](#) for the [15th European Wave and Tidal Energy Conference Series \(EWTEC 2023\)](#) is now open through 28 January 2023. Full papers will be due 27 May 2023. EWTEC will take place on 3-7 September 2023 in Bilbao, Spain.

Funding & Testing Opportunities

The U.S. DOE's WPTO has issued a notice of intent to release a \$35 million funding opportunity, "[Bipartisan Infrastructure Law \(BIL\), Section 41006\(a\)\(2\): U.S. Tidal Energy](#)

[Advancement](#)”, in early 2023 to develop a tidal or river current research, development, and demonstration site and to support in-water demonstration of at least one tidal energy system.

The U.S. DOE’s Wind Energy Technologies Office has issued a notice of intent to release a \$28 million funding opportunity, “[Bipartisan Infrastructure Law FOA to Address Key Deployment Challenges for Offshore, Land-Based, and Distributed Wind](#)”, in November 2022 to support social science research and community engagement for offshore wind development, as well as bat behavioral research, technology development, and field testing to advance deterrents.

The French Office for Biodiversity is launching a [Call for Expressions of Interest](#) for projects aimed at testing innovative technologies for the assessment and monitoring of benthic marine habitats between 0 and 50 meters depth. Applications are due 31 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. Visit the [TEAMER site](#) for the complete RFTS schedule.

The U.S. DOE’S WPTO has also 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 2 December 2022.

The European Commission has launched two new [Calls for Proposals](#) under the European Maritime, Fisheries and Aquaculture Fund aimed at supporting careers and regional projects for a sustainable blue economy in EU sea basins. Proposals are due 31 January 2023.

Student & Employment Opportunities

Aquatera is hiring [Expert and Senior Environmental Consultants](#) to help support the development of the global offshore renewable energy sector, while promoting economic growth, social inclusion, and sustainable development. Applications are due 31 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.

Pacific Northwest National Laboratory is recruiting a [Post Doc Research Associate – Biological Modeler](#) to conduct research in two topic areas: 1) plankton transport modeling to investigate the effects of offshore renewables development and 2) larval transport modeling to assess the migration patterns of a marine invasive species. Applications are due 11 November 2022.

The National Offshore Wind Research and Development Consortium is hiring an [Offshore Innovation Hub Associate](#) to support the development and operation of the Equinor Offshore Wind Innovation Hub. Applications are due 18 November 2022.

European Marine Energy Centre (EMEC) is seeking a [Project Development Coordinator](#) to identify, develop, and contract opportunities for the Islands Centre for Net Zero (ICNZ) to grow its research and development activities. Applications are due 23 November 2022.

Oregon State University is also seeking a [Marine Energy Testing Manager](#) to manage internal and external outreach and engagement with stakeholders including faculty, national and international testing facilities, and marine industries. Applications are due 30 November 2022.

The Institute for Cyber-Physical Infrastructure and Energy at Lehigh University is inviting applications for a tenure-track [Assistant Professor in Coastal Infrastructure and Energy](#) to begin August 2023. Applications are due 31 December 2022.

Upcoming Events

Upcoming Webinars

Pacific Northwest National Laboratory and Scripps Institution of Oceanography are [launching a series of lunch-and-learn seminars](#) to highlight ocean, energy, and climate technology research and development. The first webinar, “Hybrid and Hydrogen Research Vessels”, will take place on 3 November 2022 from 12:00-1:00pm PDT (7:00-8:00pm UTC). Register [here](#).

The New York State Energy Research and Development Authority’s Offshore Wind team is hosting a webinar, “[Learning from the Experts: Movement Models & Offshore Wind](#)”, on 9 November 2022 from 11:00am-12:00pm EST (4:00-5:00pm UTC). Register [here](#).

The U.S. DOE WPTO is hosting its [Semiannual Stakeholder Webinar](#) on 9 November from 1:30-3:00pm EST (6:30-8:00pm UTC). The webinar will feature the results of the 2022 Peer Review process and provide updates on major accomplishments and current funding opportunities. Register [here](#).

Upcoming Conferences

WavEC Offshore Renewables, in collaboration with the Embassy of Spain in Portugal, is organizing the [WavEC Annual Seminar 2022 & TWIND Final Event](#) on 10 November 2022 in Lisbon, Portugal. Register for free [here](#).

The Renewable Energy Wildlife Institute is hosting the [14th Wind Wildlife Research Meeting](#) on 15-17 November 2022 in Kansas City, U.S. The event will feature a Projects for Wind Power Workshop and a Wildlife Monitoring Workshop. View the full schedule [here](#). Register [here](#).

New Documents on *Tethys*

Marine Energy

[Development of a model for the identification of suitable areas for the development of wave energy projects in the European Atlantic region in the context of maritime spatial planning and its implementation into a Decision Support Tool](#) – Galparsoro et al. 2022

The present report describes the process undertaken during the development of a model for the identification of suitable areas for the development of wave energy projects in the European Atlantic in the context of maritime spatial planning and its implementation into a web-based Decision Support Tool. The approach implemented is based on the previous work developed by Galparsoro et al. (2020) in the framework of WESE project (Wave Energy in Southern Europe). The scope of such project was the development of a model and a decision support tool for the identification of the most suitable areas for the development and deploying of wave energy projects in the Portuguese and Spanish Atlantic area.

[Socio-economic, legal, and political context of offshore renewable energies](#) – Salvador and Ribeiro 2022

Offshore renewable energies have been identified as important clean sources of energy in line with sustainable development goals. However, their use can generate conflicts with other maritime activities, as well as the protection of biodiversity and the marine environment. This article analyses the influence of regulatory frameworks and ocean governance in the implementation of such devices, from a legal-political point of view. In this sense, it studies how the law of the sea addresses potential international conflicts between ocean energy installations and other activities (e.g., navigation) developed by other states. It also studies the importance of preventive legal tools such as marine spatial planning, strategic environmental assessment, and environmental impact assessment.

[Seabed morphology and bed shear stress predict temperate reef habitats in a high energy marine region](#) – Jackson-Bué et al. 2022

High resolution environmental data used for predictive mapping are often limited to bathymetry, acoustic backscatter and their derivatives. However, hydrodynamic energy at the seabed is a critical habitat structuring factor and likely an important, yet rarely incorporated, predictor of habitat composition and spatial patterning. Here, we used a machine learning classification approach to map temperate reef substrate and biogenic reef habitat in a tidal energy development area, incorporating bathymetric derivatives at multiple scales and simulated tidally induced seabed shear stress. We mapped reef substrate (four classes: sediment (not reef), stony reef (low resemblance), stony reef (medium-high resemblance) and bedrock reef) with overall balanced accuracy of 71.7%.

Wind Energy

[Public dialogue as a collaborative planning process for offshore wind energy projects: Implications from a text analysis of a South Korean case](#) – Park et al. 2022

Local opposition to renewable energy projects reflects the competition among various ideas and values in the energy transition process. Offshore wind farms (OWFs), which are one of the most promising renewable energy generation facilities, are still not free from conflict. This study aimed to enrich the knowledge of the use of public dialogue for collaborative planning in OWF conflict situations. The spatial context on the case was Tongyeong-si, South Korea, where we hosted public dialogue programs. The main purpose of the program was to gather local opinion leaders and enable them to participate in a voluntary discussion on the most important issues related to the OWF project. The post-text and factor analyses could allow the identification of the three most important factors for residents regarding the siting of an OWF: resident participation in the siting process, consideration of damage to fisheries, and sufficient information for judgment.

[Considerations on environmental, economic, and energy impacts of wind energy generation: Projections towards sustainability initiatives](#) – Msigwa et al. 2022

Wind energy is one of the promising cleaner energy sources as it is feasible and cost-effective. However, the development of wind farms causes impacts on sustainability aspects. This article aims to review the impacts of wind energy generation on environmental, economic, and social aspects of sustainability and their mitigation strategies. The aim was achieved by reviewing recent research papers on different aspects of wind energy sustainability. The environmental impacts reviewed include the effects on avian life, noise pollution, visual impacts, microclimate and vegetation. Apart from environmental impacts, wind energy generation faces issues in energy and financial sustainability, such as the wind power fluctuation, technology lagging and use of fixed feed-in tariff contracts that do not consider wind energy advancement and end-of-life management.

[Reef effect of offshore structures on the occurrence and foraging activity of harbour porpoises](#) – Fernandez-Betelu et al. 2022

With increasing numbers of offshore structures being installed and decommissioned, a better understanding of their effect on marine predators is timely. There is some evidence that oil and gas platforms may attract marine mammals, acting as artificial reefs. However, it is unclear whether different man-made structure designs have similar effects or whether artificial structures modify the diel patterns of occurrence and foraging of marine mammals. Here, we used passive acoustics to investigate the occurrence and foraging activity of harbour porpoises (*Phocoena phocoena*) around four artificial structures of different age and complexity.

News & Press Releases

Marine Energy

[ORPC Canada deploys its first hydrokinetic power system in Canada](#) – Ocean Renewable Power Company (ORPC)

ORPC Canada recently announced it is launching its first hydrokinetic power system in Canada, called the RivGen Power System, which generates proven, emission-free electricity from free-flowing rivers and tidal currents. Installed in partnership with the Canadian Hydrokinetic Turbine Test Centre (CHTTC) located at Seven Sisters Falls, Manitoba, the RivGen Power System can provide baseload renewable energy to remote communities and will play a key role in supporting Canada's goal for Net Zero Emissions by 2050. The RivGen device was fabricated by Stace in Quebec, then shipped to Manitoba where the device was re-assembled near the CHTTC with the help of Canadian partners and local contractors.

[Ambitious Project Will Create Step Change for Wave Energy Industry](#) – OceanEnergy

A €19.6 million partnership project aiming to be the stepping stone towards large scale wave energy commercialisation, was launched last week at the International Conference on Ocean Energy in San Sebastián, Spain. WEDUSEA (Wave Energy Demonstration at Utility Scale to Enable Arrays) is a pioneering collaboration between 14 partners, spanning industry and academia from across the UK, Ireland, France, Germany and Spain. It is co-ordinated by the Irish company OceanEnergy. The project is co-funded by the EU Horizon Europe Programme and by Innovate UK, the UK's innovation agency. The WEDUSEA project will demonstrate a grid connected 1MW OE35 floating wave energy converter at the European Marine Energy Centre Test Site in Orkney, Scotland.

[SIMEC Atlantis management buyout creates Proteus Marine Renewables tidal outfit](#) – Offshore Energy

SIMEC Atlantis Energy has agreed the sale of a majority stake in its Advanced Tidal Engineering and Services division, which resulted in the creation of a new tidal energy outfit Proteus Marine Renewables. The sale is a management buyout and will allow the newly named Proteus Marine Renewables to grow its product and services offering across a broader scope of marine renewables whilst keeping its immediate focus on tidal energy, SIMEC Atlantis informed. The company restated its commitment to delivering the maximum return for its shareholders and, following the recent UK contracts for difference announcement, is continuing to focus its efforts on tidal energy through the development of the MeyGen site.

[Wales Has Created the Perfect 'Ecosystem' for Tidal Energy](#) – Marine Energy Wales

Magallanes Renovables is a family-owned business from Galicia, founded by Alejandro Marques de Magallanes' father in 2010. It's a name fast gaining traction on the

international ocean energy scene after landing a sensational coup this July. In the first allocation round of its kind, Magallanes successfully secured a UK Government subsidy award through the Contracts for Difference scheme to support tidal energy. The award was for Morlais, a tidal demonstration zone off the North West coast of Anglesey, and it means they will now become the first tidal turbine developer to deploy commercially in Welsh waters, powering up to 6,500 homes. Morlais is a pioneering test facility, and the only one of its kind in the world. A pre-consented commercial scale testing facility where developers will be able to turn up and almost directly hook-up to the grid.

The World Needs More Gigantic Sci-Fi Sea Dams – Wired

Imagine this. A structure, 24 times longer than the Hoover Dam, stretching out into the sea. Its 9-kilometer wall curves towards the horizon before returning to rejoin the coast, creating a giant artificial lagoon. Under the water line, a channel fitted with 16 turbines connects the lagoon to the ocean. As the tide goes in and out, the lagoon fills and drains, spinning the turbines to generate more than 530 gigawatt-hours of clean electricity each year—enough to power 155,000 homes. If this sounds like an engineering challenge too far, it's not. The Swansea Bay tidal lagoon in South Wales might have taken as little as three years to start generating power if approved. Yet it was never built.

Wind Energy

Biden-Harris Administration Announces First-Ever Offshore Wind Lease Sale in the Pacific – U.S. Department of Interior

In a new development in the pursuit of a clean energy future, the Department of the Interior recently announced that the Bureau of Ocean Energy Management (BOEM) will hold an offshore wind energy lease sale on Dec. 6, 2022, for areas on the Outer Continental Shelf (OCS) off central and northern California. This will be the first-ever offshore wind lease sale on America's west coast and the first-ever U.S. sale to support potential commercial-scale floating offshore wind energy development. This sale will be critical to achieving the Biden-Harris administration's deployment goals of 30 gigawatts (GW) of offshore wind energy by 2030 and 15 GW of floating offshore wind energy by 2035. BOEM will offer five California OCS lease areas that total approximately 373,268 acres with the potential to produce over 4.5 GW of offshore wind energy, power more than 1.5 million homes, and support thousands of new jobs.

WWF and Ørsted in new global partnership to unite action on climate and ocean biodiversity – Ørsted

World Wildlife Fund (WWF), the world leader in nature conservation, and Ørsted, the world's most sustainable energy company, recently announced a five-year global partnership to drive a fundamental change in the approach to integrating action on climate and biodiversity by advancing offshore wind that strives to achieve a net-positive biodiversity impact. Ørsted and WWF will jointly identify, develop, and advocate for offshore wind deployment initiatives and approaches that not only are in balance with

nature but also enhance biodiversity. To help make that happen, the partnership will innovate and test tangible initiatives that improve ocean biodiversity in general and can be used as additional measures to achieve a net-positive impact on biodiversity.

Chinese City Plans 43.3 GW Offshore Wind Development, Green Hydrogen Production – OffshoreWind

The municipal government of China's city of Chaozhou, Guangdong Province, has issued a new five-year plan for energy development which, among other things, kick-starts preliminary work on the potential development of two offshore wind projects with a total capacity of 43.3 GW. The energy development plan, the city's fourteenth, covers the period until 2025 and has been issued to the county, district and other relevant governments that will work on its implementation from the local level. According to the plan, the authorities responsible for the implementation will take advantage of the "unique" conditions of the area offshore Chaozhou identified for offshore wind development, as well as of the capabilities of the Chaozhou Port, to build a 10 GW "offshore wind power base" in Guangdong Province.

Ørsted and Copenhagen Infrastructure partners join forces to develop approx. 5.2 gigawatts of offshore wind in Denmark – Ørsted

Ørsted and Copenhagen Infrastructure Partners (CIP) have entered into a partnership to develop approx. 5.2 gigawatts of offshore wind in Denmark across four projects. The partnership can accelerate the green transformation greatly, create value in the offshore wind industry, strengthen value- and job creation, and create a Danish business and export stronghold within Power-to-X. The projects are 'Vikinge Banke' (1.1 GW) and 'Jyske Banke Nord' (1.1 GW) in the North Sea, and 'Bornholm Bassin Syd' (1.5 GW) and 'Bornholm Basin Øst' (1.5 GW) in the Baltic Sea. Together, the projects correspond to more than double Denmark's current installed offshore wind capacity, and they represent a key contribution to the green transformation of Denmark and Europe.

Launch of the European project Aquawind for offshore wind energy and aquaculture coordinated by the ACIISI – PLOCAN

A prototype of a multi-use platform that combines wind energy production and aquaculture will be tested at the Oceanic Platform of the Canary Islands (PLOCAN) test site. The European project AquaWind, a multi-use platform that combines wind energy production and aquaculture, is coordinated by the Canarian Agency for Research, Innovation and Society of the Information (ACIISI), of the Government of the Canary Islands. The project responds to the objectives of supporting the development and assimilation of the multi-use solution between marine renewable energies and other activities of the blue economy (aquaculture) and of contributing to the priority of the Atlantic Maritime Strategy of developing marine renewable energies and, more generally, the sustainable expansion of the Blue Economy in the Atlantic Basin.