



**11 December 2020**

[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](mailto:tethys@pnnl.gov) for consideration.

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## **Announcements**

### [New EERE Portal for Funding Opportunities](#)

The U.S. Department of Energy (DOE) Office of Energy Efficiency & Renewable Energy (EERE) recently launched the [EERE Program Information Center](#)—a new portal for funding opportunities. Organizations interested in working with EERE can use the Center to identify and respond to open opportunities, including Funding Opportunity Announcements, Requests for Information, Notices of Intent, Notices of Technical Assistance, and Lab Calls.

### [Calls for Abstracts](#)

Abstract submissions for the [International Conference on Ocean Energy \(ICOE 2021\)](#) are being accepted until 18 December 2020. ICOE 2021 will be held online from 28-30 April 2021.

Abstract submissions for the [OCEANS 2021 Porto Conference & Exhibition](#) are being accepted until 18 December 2020. OCEANS 2021 Porto will be held as a hybrid conference in Porto, Portugal from 17-21 May 2021, enabling in-person as well as remote participation.

### [Calls for Papers](#)

The *Journal of Marine Science and Engineering* is accepting manuscript submissions for several upcoming Special Issues. Submissions for “[Understanding Impacts of Marine Renewable Energy Structures on Nearshore Dynamics and/or the Environment](#)” are due 15 January 2021.

Submissions for "[Offshore and Onshore Wave Energy Converters: Engineering and Environmental Features](#)" are due 31 January 2021.

### Funding/Testing Opportunities

The U.S. Testing Expertise and Access for Marine Energy Research ([TEAMER](#)) Program is now accepting applications for the second round of Requests for Technical Support (RFTS). Applications are due by 18 December 2020.

As part of the ADMIRALTY Marine Innovation Programme, the UK Hydrographic Office and Centre for Environment, Fisheries and Aquaculture Science (Cefas) have launched the [Offshore Renewable Energy Challenge](#). The Challenge invites participants to use marine geospatial data to identify suitable sites for wind, wave, and tidal energy development while minimizing impact on the environment. Applications are due by 31 December 2020.

The Supergen Offshore Renewable Energy (ORE) Hub has released its [Third Flexible Funding Call](#) and are seeking research proposals from universities or other institutions eligible to hold UK Research and Innovation awards to facilitate a programme of coordinated ORE research projects. Expressions of Interest are due by 5:00pm UTC on 11 January 2021.

Innovate UK has announced an upcoming [Smart Grants funding competition](#) for UK registered organizations to apply for a share of up to £25 million to deliver disruptive research and development innovations. The competition closes at 11:00am UTC on 20 January 2021.

The European Commission recently announced a [Blue Economy Call for Proposals](#) to help advance market-readiness of new products, services, or processes, including MRE projects. Proposals are due by 5:00pm CEST (3:00pm UTC) on 16 February 2021.

The Interreg Atlantic Area’s Blue-GIFT recently announced 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 close at 5:00pm UTC on 2 April 2021.

### Student/Employment Opportunities

The U.S. DOE Water Power Technologies Office (WPTO) is currently looking for a new member to join its team as a General Engineer with WPTO’s Marine and Hydrokinetics (MHK) Program. As an MHK Technology Manager and Technical Project Officer, the position will manage research, development, and demonstration activities related to marine energy technologies. Learn more [here](#). Applications are due by 31 December 2020.

Australia's Blue Economy Cooperative Research Centre has launched a [PhD Scholars Program](#) with PhD topics available across its five research programs, including offshore renewable energy systems and sustainable development. Applications are due by 10 January 2021.

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## Upcoming Events

### Upcoming Webinars

The European Technology and Innovation Platform for Ocean Energy (ETIP Ocean) will be hosting a webinar, "Best Consenting Practices for Ocean Energy", at 11:00am CET (10:00am UTC) on 15 December 2020. The webinar will feature a presentation of the [new ETIP Ocean report](#) on ocean energy and the environment. Register [here](#).

The International Energy Agency's Ocean Energy Systems (OES) will be hosting a webinar, "Ocean Energy in Islands and Remote Coastal Areas", at 2:00pm UTC on 17 December 2020. Following the release of the [Ocean Energy Projects in Remote Locations report](#), the webinar will discuss practical challenges faced by developers dealing with ocean energy projects in remote locations. Register [here](#).

### Upcoming Meeting

The National Academies of Sciences, Engineering, and Medicine will be hosting the [Committee on Offshore Science and Assessment](#) (COSA) meeting focused on the Bureau of Ocean Energy Management's (BOEM) renewable energy program from 12:00-5:00pm EST (5:00-10:00pm UTC) on 17 and 18 December 2020. The meeting will conduct focus groups with BOEM staff to share their perspectives on the development and application of science for the program. This online event is open to the public. Meeting details will be made available [here](#).

### Upcoming Conferences

The [Supergen Offshore Renewable Energy \(ORE\) Hub Third Annual Assembly](#) will be held online from 18-22 January 2021. The conference will give those working in the offshore wind, wave, and tidal energy sectors the chance to explore cutting edge research, find out about the latest opportunities and challenges, and network with the community. Register for free [here](#).

The organizers of the Coastal Futures and Restoring Estuarine and Coastal Habitats (REACH) conferences have joined with the World Wildlife Fund UK and Sky Ocean Rescue to host a new online conference, [Ocean Recovery](#), from 19-21 January 2021.

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## New Documents on *Tethys*

### Marine Renewable Energy

## **Ocean energy and the environment: Research and strategic actions – ETIP Ocean 2020**

This report identifies the key environmental research needs and consenting challenges that require action at a European Union (EU) and national level, to facilitate the roll out of ocean energy. It analyses the latest environmental research and the current EU and national level policies and regulations regarding ocean energy. It makes environmental research, policy and regulatory recommendations and proposes a concrete Strategic Action Plan. It calls for more real-world, long-term data and greater knowledge-sharing across projects, to strengthen the science behind consenting decisions.

## **Environmental Impact Assessment of the Operation of an Open Cycle OTEC 1MWe Power Plant in the Cozumel Island, Mexico – Chan et al. 2020**

An environmental impact assessment (EIA) was made for the operation of a 1MWe open-cycle ocean thermal energy conversion (OTEC) plant on Cozumel Island, Quintana Roo. An environmental inventory was developed in which the susceptible factors to be impacted were described (air, soil, water, landscape, geology and flora). The essential components of the OTEC PLANT operation process were studied. Once the most significant impacts were assessed through a Leopold matrix, corrective and preventive measures were established on those actions, in order to minimize their negative impact on the environment.

## **Wave, Tidal and Ocean Thermal Energy – Adimazoya & Doelle**

In this Chapter, we provide a brief background on the current state of technology and development of wave, tidal and ocean thermal energy and consider their potential as forms of renewable energy as well as the potential negative environmental footprints of ocean renewable energy installation and development. Secondly, we examine the relevant international legal and policy framework governing ocean energy, highlighting in particular, the absence of a global legal instrument that specifically regulates ocean renewable energy installations at the high seas.

## **Wind Energy**

### **Vulnerability of northern gannets to offshore wind farms; seasonal and sex-specific collision risk and demographic consequences – Lane et al. 2020**

We tracked northern gannets foraging from the world's largest colony (Bass Rock, Scotland) across five consecutive breeding seasons. We examine how seasonal and sex differences in behaviour affect the collision risk from planned and operational wind farms within their foraging range and assess the likely consequences for long-term population viability. Both sexes made shorter trips during chick-rearing than prior to chick-hatching, spent a greater proportion of time within wind farm sites and had an eight times greater potential collision risk during chick-rearing.

**[Roe deer stress response to a wind farms: Methodological and practical implications](#) – Klich et al. 2020**

We examined the impact of wind farms on the stress levels in roe deer based on seven wind farms of various sizes (of 12–27 turbines) in eastern Poland. Fecal cortisol concentration was assessed with the ELISA method in droppings collected during the winter period. We found that the roe deer exhibited an elevated stress level in the area of larger farms, but such response was not found in the case of smaller wind farms. We estimated 824 ha or 18 turbines as a threshold level of the impact of wind farms on the cortisol concentration in the roe deer. We conclude, that turbines should be concentrated in the smallest possible area.

**[How loud is the underwater noise from operating offshore wind turbines?](#) – Tougaard et al. 2020**

Offshore wind turbines are increasingly abundant sources of underwater low frequency noise. This increase raises concern for the cumulative contribution of wind farms to the underwater soundscape and possible impact on marine ecosystems. Here, available measurements of underwater noise from different wind turbines during operation are reviewed to show that source levels are at least 10–20 dB lower than ship noise in the same frequency range. A simple multi-turbine model demonstrates that cumulative noise levels could be elevated up to a few kilometres from a wind farm under very low ambient noise conditions.

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## **News & Press Releases**

### **Marine Renewable Energy**

**[Basque Country and Scotland team up to boost wave energy with EuropeWave project](#) – Wave Energy Scotland**

The Basque Country and Scotland used the final day of the annual Ocean Energy Europe Conference & Exhibition to announce EuropeWave, a new five-year collaborative programme that will channel €20m to the most promising wave energy concepts. The initiative is match-funded by the European Commission via its Horizon 2020 programme, and Ocean Energy Europe are on board as project partners. EuropeWave will use an innovative ‘pre-commercial procurement’ approach to identify and fund the most promising wave energy devices from developers across Europe. Concepts will be assessed according to strict technical and economic performance metrics, and the best performers will be demonstrated in Basque and Scottish open waters at the end of the programme.

**[ABPmer undertakes suite of ecological surveys to support Welsh tidal energy project](#) – ABPmer**

Mostyn SeaPower, a subsidiary of The Port of Mostyn, has developed proposals for a tidal lagoon in the outer Dee Estuary, North Wales. ABPmer has been commissioned to lead a range of ecological surveys in the Estuary to inform the associated impact assessment supported by Hull Marine Laboratory and Sea Watch Foundation. A two-year programme of fish surveys will be undertaken to understand population stock in the outer estuary, and migratory patterns of salmon and eel which could be affected by the proposed lagoon turbines. Marine mammal surveys will take place over a similar timeline. Bird population surveys will take place over two winters, to place the populations at Mostyn in the context of the whole estuary and designated area.

### **Celtic Ocean Energy Innovation Hubs Connect – Marine Energy Test Area**

Following a signed agreement between Marine Energy Wales and the European Marine Energy Centre (EMEC), based in Orkney, Scotland, EMEC has provided on the ground operational support to the Marine Energy Test Area (META) in Pembrokeshire, Wales. META consists of eight pre-consented test sites located in and around the Milford Haven Waterway, de-risking the development of marine energy projects by providing the opportunity to test scale and full-scale devices, sub-assemblies and components in sites that are accessible yet still representative of real sea environments, offering a range of conditions and exposure. Marine Energy Wales' META team have collaborated with EMEC to obtain support on test centre best practices and operational procedures.

### **AZTI and Basque province team up for faster marine renewables uptake – Offshore Energy**

The AZTI technology center has teamed up with Basque's Provincial Council of Gipuzkoa to create a guide that could facilitate the implementation of marine renewable energy initiatives. The guide will be based on the adaptive management approach based on risk, meaning it will continuously incorporate the new knowledge learned, in a way that allows renewable energy projects to adapt monitoring and mitigation practices over time, according to AZTI. "This adaptive approach leads to improved decision-making by reducing the uncertainty associated with the environmental impacts of these technologies", said Juan Bald, an AZTI expert who's coordinating the development of the guide.

### **Eco Wave Power signs Collaboration Agreement with Meridian Energy Australia – Eco Wave Power**

Eco Wave Power recently announced the signing of a collaboration agreement with Meridian Energy Australia (MEA), a wholly owned subsidiary of Australasia's largest renewable energy generator Meridian Energy Limited. The purpose of the collaboration is for the parties to jointly investigate the development of commercial wave energy power projects in the Australian National Electricity Market. Eco Wave Power will recognize MEA as a supporting partner, lead the investigation into the application of wave energy in Australia, and identify opportunities for the application of the Eco Wave Power Background IP.

## Wind Energy

### [GE Renewable Energy Announces US Blade Recycling Contract with Veolia](#) – GE

GE Renewable Energy has signed a multi-year agreement with Veolia North America (VNA) to recycle blades removed from its US-based onshore turbines during upgrades and repowering efforts. Through this agreement, GE plans to recycle the majority of blades that are replaced during repowering efforts. Veolia will process the blades for use as a raw material for cement, utilizing a cement kiln co-processing technology. VNA has a successful history of supplying repurposed engineered materials to the cement industry. Similar recycling processes in Europe have been proven to be effective at a commercial scale. On average, nearly 90% of the blade material, by weight, will be reused as a repurposed engineered material for cement production.

### [Amphibious iFROG robot leaps ahead in ability to inspect and maintain offshore assets](#) – Offshore Renewable Energy (ORE) Catapult

iFROG, an amphibious robot capable of working in teams to clean and inspect monopiles above water level and up to 60 metres below, has successfully completed trials at the ORE Catapult's National Renewable Energy Centre in Blyth. The multi-robot solution was developed under a three-year project that was funded by Innovate UK and brought together iFROG developer InnoTecUK, ORE Catapult, TWI, and Brunel University London. Teams of iFROG robots will be able to clean corrosion and biofouling from monopiles, before inspecting the surfaces and conducting pre-emptive checks of weld integrity. By upping the frequency and quality of subsea inspections, iFROG can save up to £150,000 per offshore wind turbine per annum.

### [New partnership to unlock offshore energy ambitions and protect the nation's marine environment](#) – The Crown Estate

The Crown Estate and UK Government recently launched a new partnership to protect and restore the UK's precious marine environment, as the nation seeks to chart a course towards net zero emissions by unlocking the green energy potential of the UK seabed. The Offshore Wind Evidence and Change Programme will gather and harness data and evidence, to drive forward the growth of UK offshore wind, crucial for the sector as it gears up to meet Government's 2030 ambitions for 40GW of offshore wind. Over a five-year period, the Programme's strategic research and data projects will provide essential insights to help the sector better understand and address environmental considerations and interactions with other industries and activities, both around the coast and offshore.

### [Vineyard Wind Puts 800-MW Offshore Project on Hold](#) – Power Magazine

Officials with Vineyard Wind said they are temporarily withdrawing the group's application for federal approval to build the first large U.S. offshore wind farm, saying more time is needed to conduct a final technical review after announcing a change in the

turbines expected to be used in the project. Vineyard Wind, a joint venture between Avangrid Renewables and Copenhagen Infrastructure Partners, on Dec. 1 said it had chosen GE Renewable Energy's Haliade-X turbines, which have a generating capacity of 12 to 13 MW, to supply the wind farm. Use of the Haliade-X turbine will enable Vineyard Wind to reduce the number of towers in the development's first phase from 84 to 62.

### **Powerhouses Join 10 GW Offshore Wind to Hydrogen Project – Offshore Wind**

The newly established AquaVentus association has presented a project to install 10 GW of offshore wind capacity in the German North Sea for the production of green hydrogen. 27 companies, research institutions, and organizations are part of the AquaVentus association, including RWE, Shell, Siemens Gamesa, MHI Vestas, Parkwind, Vattenfall, and Northland Power. The wind farms would be built between the Heligoland island and the Dogger Bank sandbank by 2035. The electricity generated at the wind farms would be used to produce hydrogen at electrolysis plants installed at sea. The association estimates that the project could yield up to one million tonnes of green hydrogen annually.