OES-Environmental Webinar: Planning Ahead to Address Environmental Effects of Marine Renewable Energy

January 19, 2023

Summary of Live Q&A Session

General Topics

Q: Is there information on the economics of marine renewable energy (MRE) systems without government grants?
A: There is some information on the economic aspects of MRE on Tethys Engineering, mostly around levelized cost of energy. At present, public funds are necessary worldwide to make these systems viable compared to other renewable energy or conventional fuel sources. As the industry develops, the cost is likely to become more competitive.

Q: Do regulators consider the outputs of these tools to be "definitive and final", or as a guide to be applied with additional considerations?
A: Through engagement with the regulatory community, we have seen that these tools are just that – tools, to better inform decisions, but are by no means considered “final”.

Q: How are you identifying/including baseline electromagnetic fields (EMF) and keeping track of it during installations and after during operation to understand added EMF above natural levels?
A: This is a really difficult topic, in particular surveying for EMF, and many groups are still working on these topics. AZTI has done some surveys in France. Baseline surveys are difficult and somewhat suspect as current instrumentation may not accurately measure the background EMF or could be influenced from other nearby cables from other industries. There likely is a need for additional technical solutions.

Q: Has there been any thought or plan for adding fisheries present in the marine energy project areas?
A: The Marine Energy Toolkit hasn’t discussed the idea of including what fisheries are present within project areas yet, though there is an opportunity in showing that as part of the spatial data visualization functionality that is being explored. The VAPEM tool, while mainly for offshore wind now, includes a little bit of impacts to fisheries, though primarily thinking about changes to habitat. The best tools to consider for assessing fisheries impacts would likely be marine spatial planning tools.

Management Measures Tool (MMT)

Q: Do you have examples where people have been using the MMT to give an indication of the uptake?
A: We are really just getting started on this, since the recent update and don’t have any examples at present. We do an annual user survey of Tethys and will include the MMT moving forwards to try to get a sense of how the tool is being used and how we can improve on engaging developers and regulators.

Q: Is this database going to be expanded to include offshore wind? And if so, is there a timeline for this to be implemented?
A: The MMT presented will not be expanded to include offshore wind. However, there is a similar tool from the WREN initiative (also supported on Tethys) though it focuses on technologies for monitoring

and mitigation, available here: https://tethys.pnnl.gov/wind-energy-monitoring-mitigation-technologies-tool. WREN has a survey out now asking for updates to the information in the tool. They will also be adding metadata forms for offshore wind.

Q: How was stakeholder feedback gathered for the MMT?
A: We conducted a workshop in 2017, led by OES-Environmental and ORJIP Ocean Energy that included researchers, regulators, and developers who reviewed and added to an initial list of management measures that became the tool. The management measures listed in the tool are those that have been documented in consenting processes, and as such it includes many that may or may not be effective. We have not received much feedback on the implementation of the measures as described in the tool yet, but this is an area of future work and engagement for OES-Environmental.

Wave Energy Converter - Environmental Risk Assessment (WEC-ERA)

Q: WEC-ERA is based on expert judgement, but are you planning to add empirical information?
A: Yes, the idea is that we will integrate empirical information. We are currently running the SafeWAVE project at various test sites to collect additional information on seafloor impacts, EMF, etc. and will include it in the tool to help further reduce uncertainty.

Marine Energy Environmental Toolkit

Q: Are there any plans to add additional functionality to the Toolkit?
A: We are currently adding a repository for biological assessments, as well as exploring other improvements to the tool through various workshops and feedback mechanisms.

Q: Is this tool only a USA based tool?
A: Yes - we believe a similar tool could be developed for other jurisdictions but what was demonstrated is just for the US.

Resources and Links Shared

General MRE Resources:

- Tethys - https://tethys.pnnl.gov/
- PRIMRE - https://openei.org/wiki/PRIMRE

Empirical Data Collection:

- SafeWAVE - https://www.safewave-project.eu/
- WESE - https://wese-project.weebly.com/
- Biscay Marine Energy Platform - https://www.bimep.com/

Spatial Tools:

- MarineCadastre - https://marinecadastre.gov/
- AZTI VAPEM - https://aztidata.es/vapem/
- Example of spatial tool that includes fisheries - https://osw.eemsonline.org/

Fisheries:

- Impacts from commercial fishing - https://rstudio.bangor.ac.uk/shiny/benthic/

Economics:

- See Tethys Engineering - https://tethys-engineering.pnnl.gov/

Student or Professional Development Resources:

- Join the Tethys and PRIMRE Communities
    - Tethys - https://tethys.pnnl.gov/user/register
    - PRIMRE - https://auth.openei.org/cas/register
- National Hydropower Association Marine Energy Council (United States) - https://www.hydro.org/waterpower/marine-energy/
- INORE - https://inorean.org/
- Connect on LinkedIn

Offshore Wind Resources:

- AZTI Wind ERA - https://aztidata.es/wind-era/
- WREN Wind Energy Monitoring and Mitigation Technologies Tool - https://tethys.pnnl.gov/wind-energy-monitoring-mitigation-technologies-tool
- Galparsoro et al. (2022) Reviewing the ecological impacts of offshore wind farms - https://doi.org/10.1038/s44183-022-00003-5