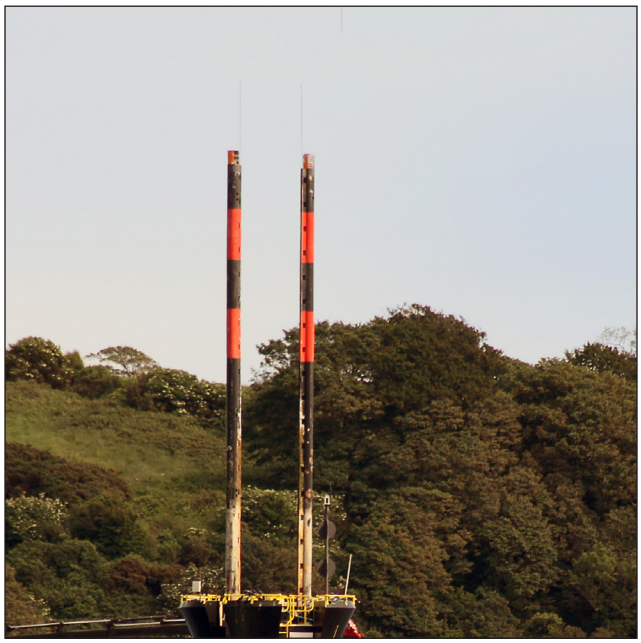
Case Studies

POTENTIAL CONCERNS

The process of permitting/consenting marine renewable energy (MRE) projects, which includes environmental impact assessments, is still regarded as a challenge to MRE scale up and attempts to create a cost-competitive viable MRE industry. Uncertainty about the appropriate application of environmental legislation can prolong the process, delaying progress and adding costs.

The environmental effects of MRE devices on the marine environment and vice versa are significant areas of uncertainty. The scarcity of data on environmental interactions of new technologies leads regulators and stakeholders to view these interactions as risks or threats that require extensive supporting environmental information, which is often costly and time-consuming to collect.

Leveraging experiences from previously implemented MRE studies can help identify potential project barriers. We have taken a case study approach, summarizing environmental consenting processes that have been carried out at four sites:



- WaveRoller wave technology, installed in Portugal;
- TidGen® Power System tidal technology, installed in the United States;
- SeaGen tidal technology installed in Northern Ireland; and
- BIMEP (Biscay Marine Energy Platform), a designated wave test site in the Basque country, Spain.

COMMONALITIES AMONG CASE STUDIES

MRE proponents identify lengthy consenting procedures, the lack of definitive knowledge about environmental impacts, and scientific uncertainty about project impacts as key obstacles to project development. The need to consult with numerous statutory stakeholders before agreeing upon a final decision further slows the process. Clear dedicated legislation for MRE development is not common in many nations; when it does exist, the administrative path for and jurisdiction over a project or marine space are not always clear.

Only in some cases have regulators/administrative staff demonstrated a willingness to facilitate collaborative efforts to assist developers in consulting with government agencies. In addition to process-oriented roadblocks, the consenting process is noted to be costly, as are the post-installation environmental monitoring requirements.

LESSONS LEARNED FROM CASE STUDIES

The following section highlights key lessons learned from four sites across the globe.

WaveRoller: From an administrative perspective, consultation prior to the delivery of official documents by the developer for approval (e.g., before submitting monitoring plans) was very important in speeding up the consenting process. Project success also was strengthened when stakeholder awareness and consideration of community concerns were incorporated into project planning.

TidGen: This project established a successful roadmap and process for future projects by conducting collaborative efforts to develop methods and technologies for data collection, and by developing an effective adaptive management process. The practices developed for, and experiences gained from, the Cobscook Bay Tidal Energy Project have helped streamline development of other projects by reducing project permitting time and cost.

SeaGen: Marine Current Turbine's license for project development was granted contingent upon establishment of a comprehensive Environmental Monitoring Plan (EMP) for all phases of the project—pre-installation, installation, operation, and decommissioning. The integration of the EMP and adaptive management strategies supported changes and reductions in monitoring and mitigation measures. Adoption of a Science Group—experts that provide guidance to monitoring and mitigation—was considered key to the success of the SeaGen project.

BIMEP: Important factors in streamlining the pre-consent process included solid communication with environmental permitting stakeholders and development of a robust pre-consent monitoring program. These factors, in combination with the development of a sound Environmental Impact Statement, were credited for reducing the authorization time for the BIMEP project by more than one year.

FUTURE RECOMMENDATIONS

Outreach efforts with statutory consultees are perceived as essential for overcoming barriers during the consenting process, as is engagement with local stakeholder groups and the general public. Outreach promotes public awareness and understanding about MRE technologies and also provides opportunities to consider community concerns. Great value is gained from demonstrating the installation of MRE devices and acquiring knowledge from doing so. Such value may promote public understanding of the technologies and their informed acceptance of this type of project. Improvement and/or adaptation of the existing legislation together with guidance on their application to MRE project licensing are needed. Already initiated in some countries, these efforts are expected to evolve in the near future.

So far, the installation of MRE devices at sea has had no negative effects on the marine environment, but these results are based on the demonstration of single devices. Appropriate monitoring plans are needed to accompany these pre-commercial projects in order to detect the potential impacts of larger scale installations on the marine environment. Regardless, the use of good practices during all project operations and the implementation of adaptive management approaches are essential to reducing impacts, optimizing knowledge acquisition, and reducing costs.

FOR MORE INFORMATION

Annex IV State of the Science full report and executive summary available at: *http://tethys.pnnl.gov/publications/state-of-the-science-2016*

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Go to *http://tethys.pnnl.gov* for a robust collection of papers, reports, archived presentations, and other media about MRE development.

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