

MRE Regulator Survey: *SWEDEN*



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Introduction

As marine renewable energy (MRE) is still a new industry, there are many unknowns about the potential environmental effects of MRE deployments. These concerns are largely based in the uncertainty of how wave and tidal devices interact with the environment, or how marine animals behave around devices. This uncertainty makes consenting processes for MRE projects difficult, often requiring extensive monitoring and data collection. This cautious approach may limit the implementation of MRE technologies or create financial barriers to development.

To better understand the viewpoint of regulators involved in consenting MRE devices, a survey was conducted among multiple OES Environmental countries. The survey was intended to understand the familiarity of regulators with MRE technologies, their perceptions of environmental risk, and their recommendations on best approaches to MRE development, including consenting and the potential for data transferability. The survey also included some questions to gather *Tethys* user data. This report summarizes the results from the survey of regulators in Sweden.

Participants

Email invitations to complete the 2018 Survey on Regulatory Needs for Environmental Effects of Consenting Marine Energy in Sweden were sent to 10 individuals known to be involved in consenting MRE. Two follow-up reminder messages were sent in addition to the original invitation after one month and after 4 months. Of those invitations, 5 were opened, 2 individuals clicked through the survey, and one complete response was received. The results from the survey responses are summarized in this brief report.

The participant who completed the survey indicated that they represent a federal agency in which the top focus is energy production. The individual indicated that their role in consenting MRE developments includes advising regulators, advising policy level decisions in their agency, and being subject matter expert.

Survey participants were also asked to rate their familiarity with tidal and wave energy technologies on a scale of 1 (not familiar) to 5 (very familiar). The technologies listed included horizontal axis turbines, vertical axis turbines, cross flow turbines, point absorber, attenuator, oscillating wave surge converter, overtopping device, oscillating water column, and submerged pressure differential. The survey provided explanations of all of the terms presented from <http://www.emec.org.uk/marine-energy/tidal-devices/> for tidal devices and <http://www.emec.org.uk/marine-energy/wave-devices/> for wave devices. The participant rated all technologies as 1 (not familiar). The participant has not participated in the environmental consenting on an MRE device.

Top Challenges and Perceptions

Regulators were asked to rank the following challenges from 1 (most important) to 7 (least important) for consenting projects with single marine energy devices and for arrays.

- Chemical releases and water quality degradation

- Electromagnetic field (EMF) effect on animals
- Benthic/habitat disturbance
- Risk of animals colliding with underwater devices
- Effects of underwater sound emissions from devices on animals
- Avoidance, attraction, and/or displacement of animals
- Energy removal and effects of changes in flow on the ecosystem
- Entanglement of animals with lines and cables

The participant did not respond to this question for single devices or for arrays.

The survey also asked participants to respond to several statements about consenting for single devices and arrays with respect to their top ranked challenge.

1. Sufficient field data are needed to determine risks and reduce uncertainty of MRE development.
2. Numerical models play an important role in environmental consenting.
3. Agency/policy guidance is needed to interpret risk and uncertainty
4. Staff need to be knowledgeable and trained on technologies, projects, interactions, etc.

The participant did not respond to this question for single devices or for arrays.

Data Transferability

Regulators were asked to respond to the question: “Can data be collected from other locations be applied towards consenting and licensing marine energy projects within your jurisdiction?” Participants were given the option of ‘Never’, ‘Maybe’, and ‘Absolutely’.

The participant responded ‘Maybe’. No additional comments were left in response to this question.

Best Approach to MRE Development

Regulators were asked, “Which of the following approaches best describes your vision of how the MRE industry should develop? (Choose one)”. The options as provided to regulators in the survey are as listed below:

- *Precautionary Principle*: There is a high degree of uncertainty and potentially negative outcomes associated with marine energy project deployment and operation. Measures should be taken to avoid the negative outcome by proceeding very cautiously or not pursuing projects at all.
- *Mitigation Hierarchy*: Impacts or risks should be systematically limited by taking actions to avoid, minimize, mitigate and/or compensate for risks through siting and/or mitigation measures.
- *Phased Approach*: A small number of devices should be deployed first, followed by slowly ramping up to larger array scale after potential risks are better understood and managed.

- *Adaptive Management*: A learning-based management approach should be applied that includes adapting monitoring and mitigation over time to understand risks, decrease uncertainty, and mitigate for impacts.
- *Survey, Deploy, Monitor*: Enables a strategic adaptive management approach through demonstration that decision making regarding pre-consent survey effort/design is risk-based and proportionate.
- *Just do it*: Risks to the marine environment are almost certainly low, so projects should be able to move forward.

The participant did not respond to this question.

Use of *Tethys*

In addition to questions about consenting of MRE devices, regulators were asked about their awareness and use of the *Tethys* database.

The participant did not respond to any of the questions related to *Tethys*.

Conclusion

The regulator that participated in this survey had no experience consenting MRE and is not familiar with MRE devices. The federal agency they represent focuses on energy production. The lack of responses to questions makes it difficult to identify concerns in consenting MRE developments for single devices or arrays.

Since the participant did not respond to any of the questions regarding *Tethys*, no information is available on regulator awareness, uses, or perceived usefulness of *Tethys* as a platform for communicating the environmental effects of MRE. Increased promotion of *Tethys* as a tool may be helpful in increasing regulator awareness and engagement.

The low response rate on this survey for Sweden indicates that a more strategic approach is needed to increase participation. It appears that this survey is not the best option at this time to engage regulators. Despite two reminder emails in addition to the initial email invitation, only one response was received, and it was quite incomplete. Without sufficient responses from regulators it is difficult to know how to move forward. As interest in the MRE industry in Sweden grows over time, repeating this survey in a few years either online or in a different format is recommended to gauge perceptions.