



Pacific Northwest
NATIONAL LABORATORY

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Annex IV Meeting of Country Analysts

online meetings

May 25th 2017

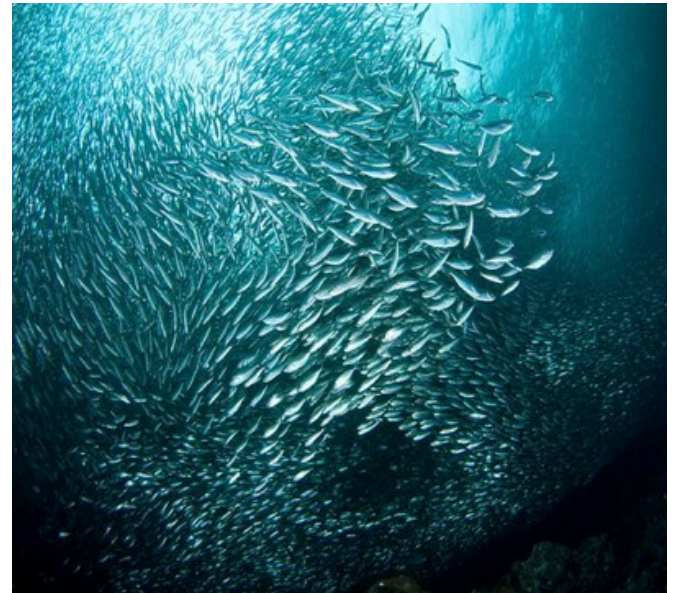


ANNEX IV



Today...

- ▶ Management measures workshop
- ▶ Workshop at EWTEC
- ▶ OES position paper on environmental effects status
- ▶ Updates on: metadata forms, regulatory info
- ▶ Webinars
- ▶ *Tethys* Stories
- ▶ Round table



Management Measures Workshop

- ▶ Held May 9th in Glasgow, UK
- ▶ ~26 attendees, 4 nations
- ▶ Worked on spreadsheet of potential management measures at design stage, installation, operation and maintenance, and decommissioning (worksheets attached to this message)

- ▶ Particularly examined:
 - Collision risk (tidal)
 - EMF, benthic disturbances
 - Acoustics, other interactions (entanglement, barrier effect, etc.)

- ▶ Outcomes will be in the form of a tool, likely web-based
 - Point of departure for developer, regulator to discuss what management measures are available for use, for certain potential impacts (not mandated).
 - To be mounted on Tethys

- ▶ Other note: Scotland has a tool called Impacts that helps a developer and regulator help determine what impacts might occur. Worth looking at for your country: <http://marine-impact.co.uk/>



Example Table: Management Measures for Acoustic Outputs

Interaction	Technology	Receptor	Phase of Project	Environmental management measures	Management measure category	Relevant to tidal basin	Effect of Management Measure - Pros	Effect of Management Measure - Cons	Monitoring to determine efficacy of measure
The potential effects from underwater noise generated during installation/ construction (excluding piling)	Wave & Tidal	Marine mammals and seabirds	Installation/construction	Avoid/limit 'noisy works' within close proximity to sensitive sites i.e. known seal haul outs and important cliff nesting sites, defining appropriate clearance distances where necessary.	Mitigation	Yes	This could reduce potential effects on sensitive species	This could increase project construction timescales e.g. if continuous drilling time is restricted or specific periods need to be avoided	
The potential effects from underwater noise generated by wave and tidal energy converters	Wave & Tidal	Marine mammals	Operation & maintenance	Measure noise generated by device(s) during operation to better understand the potential effects on sensitive species	Monitoring	Yes	Measured noise levels can be correlated with threshold values of relevant species to determine impact and need for adaptive management measures.	Can be complex and costly to undertake this type of monitoring in high energy environments	

Example Table: Management Measures for Loss of Seabed Habitat

Pressure/mechanism	Interaction	Technology	Receptor	Phase of Project	Environmental management measures	Management measure category	Relevant to tidal basin	Effect of Management Measure - Pros	Effect of Management Measure - Cons	Monitoring to determine efficacy of measure
Loss of seabed habitat	Direct loss of protected or sensitive sub-littoral seabed communities due to the presence of devices associated moorings or support structures on the seabed	Wave & Tidal	Benthic invertebrates and demersal fish	Installation/construction	Micrositing of offshore infrastructure to avoid sensitive habitats.	Design feature	Yes	This could reduce/remove effects on sensitive habitats. Low cost measure.	None	
Loss of seabed habitat	Direct loss of protected or sensitive sub-littoral seabed communities due to the presence of devices associated moorings or support structures on the seabed	Wave & Tidal	Benthic invertebrates and demersal fish	Installation/construction	Minimise footprint of anchors / foundations	Design feature	Yes	This could reduce effects on sensitive habitats	May impact technical considerations.	
Loss of seabed habitat	Direct loss of protected or sensitive sub-littoral seabed communities due to the presence of devices and associated moorings or support structures on the seabed	Wave & Tidal	Benthic invertebrates and demersal fish	Installation/construction	Cable protection management measures to ensure that any rock placement that is required will be kept to a minimum to reduce seabed disturbance	Design feature	Yes	This could reduce effects on sensitive habitats	None	

- ▶ We had planned on transferability as topic
 - We do not have adequate input from regulators – what data are they confident in transferring, what are they not comfortable with..
 - Not sure we can do this workshop now => but question is still very important
 - Suggest we plan for this for next year

- ▶ So: we need another workshop topic for EWTEC, or no workshop

- ▶ Suggestion:
 - Workshop on social/economic issues
 - We held a discussion with subset of Annex IV analysts 3 weeks ago
 - Suggested survey to Annex IV nations about what S/E topics are important
 - We could pick one or two topics for workshop
 - Explore topic, push towards practical aspects of getting MRE in the water
 - Examples could include:
 - Fisheries interactions with MRE
 - Interactions and costs on local communities from MRE development
 - Ensuring supply chain is adequate for MRE

- ▶ OES has asked Annex IV to prepare a “positive position paper”
- ▶ Based on the scientific evidence to date and past experience with existing ocean equipment like platforms and buoys, there is no reason to believe that ocean energy devices present any more risk to the ocean environment than these existing structures and buoys.
- ▶ If that is the case, there would be no need for extensive pre-permitting data collection, or post deployment monitoring.

BUT, we cannot really say that. My proposal:

- ▶ I have prepared an outline (next slide) that focuses on what we know from the State of the Science report.
- ▶ OES has responded that they are fine with the outline

Draft Outline of OES Position Paper

1. Lay out the challenge – why are there still requests for considerable baseline and post-installation data for permitting/consenting?
2. Perceptions of higher risk that may arise from:
 - a. Lack of awareness of the state of understanding, as well as the newness of the MRE technologies;
 - b. Pressure from stakeholders (like fishers).
3. Data collection: which is required for permitting/consenting versus opportunities for research data collection
4. What other industries and installations in the ocean can tell us.
 - a. Buoys and platforms can provide insight into surface-placed WEC risks, some insight into entanglement risk;
 - b. Oil and gas rigs and at-sea operations can inform benthic habitat, entanglement risks;
 - c. Ship propellers do not equate to collision risk of tidal turbines, same for hydro turbines (but these are closer);
 - d. Undersea telecom and power cables inform EMF risk; and
 - e. Underwater sound from shipping, pile driving, and other sources of anthropogenic noise must be set in the context of noise from turbines and WECs.
5. Differences between wave and tidal risks:
 - a. Tidal = moving blades, collision risk.
 - b. Wave = multiple point mooring lines, entanglement (also applies to floating tidal)
6. Single devices versus arrays
 - a. Interactions for which risks are known or minimal for single devices.
 - b. Interactions where risks are not well known or may be higher for arrays.
 - c. Data collection that may be needed to understand risks of arrays versus those for single devices.
7. Specific risks that can be eliminated or downplayed (indicated as applicable for wave, tidal, or both)
 - a. EMF, entanglement, and flow changes, decrease in wave energy, removal of energy can likely be eliminated soon.
 - b. Underwater noise being measured and likely below (existing) thresholds
8. Remaining risks and what is needed to advance understanding of each one:
 - a. Sharing information about what is known
 - b. Better numerical models of interactions as well as data for validation
 - c. Some new research needed
9. Strategies for lowering additional risks and/or developing mitigation measures for others.
10. Conclusion: based on our knowledge to date, risks are very low for deployment and operation for single devices. Deployment and operation of arrays may require some limited additional data collection.

- ▶ The timeline is short:
 - Full draft to OES by end of August
 - Final by October
- ▶ I envision this as short (concise 2 page summary, 8-10 pages of backup information)
- ▶ I am looking for input on the outline, also if anyone is interested in preparing portions
- ▶ Draft will come to Annex IV analysts before it goes to OES.

- ▶ April 25th 2017 – Artificial Reefs and Benthic Changes in Relation to MRE, Olivia Langhamer of Sweden, Sharon Kramer of US

- ▶ June 19th 2017 Interactions of Fisheries with MRE
 - Kieran Reilly of Univ College Cork (Ireland)
 - Mike Bell of Herriott-Watt Univ (UK)

- ▶ September 2017 –March 2018: looking for topics and presenters.



Call for Annex IV country input



- ▶ Short stories are featured on the front page of *Tethys* and continue on another page
- ▶ Communicate new and interesting happenings in this field.
- ▶ Could be about a program, a set of new findings, a new paper that is particularly thought-provoking, or other topics.
- ▶ Suggestions...??

The screenshot shows the Tethys website interface. At the top, there's a navigation bar with 'ABOUT', 'TETHYS CONTENT', 'CONNECTIONS', 'BROADCASTS', and 'HELP'. Below this, a banner features the Tethys logo and a news item: 'The next Annex IV Environmental Webinar will be on 10 Jan 2017 about Recent Research of Interest to the MRE Industry. More info here.' The main content area is divided into four tiles: 'Marine Energy' (with a blue icon of a turbine), 'Wind Energy' (with a green icon of a turbine), 'Annex IV' (with a red lightning bolt icon), and 'WREN' (with a yellow icon of a bird). A 'Tethys Story' box on the right highlights a story about making wind turbines safer for birds. The page also includes a calendar for January 2017, a 'NEW USER' button, and a 'KNOWLEDGE BASE' button. At the bottom, there is a contact form and social media links.



Call for Annex IV country input

- ▶ Just a reminder:
- ▶ You received email from Mikaela Freeman about updates/new projects for Annex IV metadata forms
- ▶ Also request to look at and update information on regulatory aspects of your country for MRE development



Call for Annex IV country input

Future Meetings

- ▶ Third Thursday, every other month:
 - July 20th 2017 = **Cancelled**
 - September 21st 2017
 - November 16th 2017(one week early)
 - January 18th 2018

Instead of a meeting this summer, I will ask for help planning the EWTEC workshop

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