

Wave Energy and Underwater Noise

Wave Energy Acoustic Monitoring - WEAM Project

Sofia Patrício

Background

OCEAN

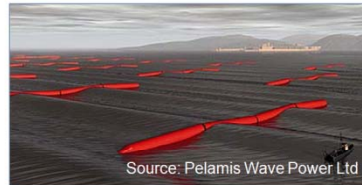


Increase of anthropogenic activities

Increase of underwater noise

Background

Wave Energy
Devices/Farms



Large scale implementation of Wave
Energy Devices/Farms

OCEAN

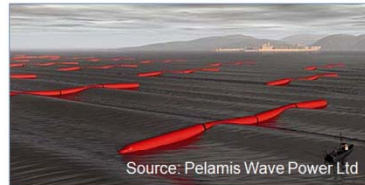


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OCEAN



Increase of anthropogenic activities

Increase of underwater noise

Marine Fauna



Habitat of several marine animals

Some of them sensitive to sound

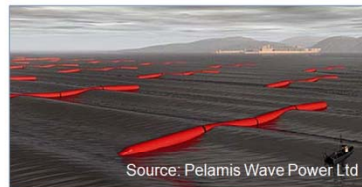
Low to high frequencies

4th February

Background

Acoustic:

Source



Channel



Receptor



Development of a Monitoring Plan

Wave Energy Devices / Farms

- Acoustic Characterization of Wave Energy Devices / Farms
- Comparison with other sources
- Measurement / Monitoring

Ocean

- Background Noise
- Oceanographic conditions (Salinity, Temperature, Depth)
- Transmission Loss
- Propagation Models

Marine Fauna
(Fish and Marine Mammals)

- Characterization of Fauna
- Study of Influence Areas
- Effects on species
- Mitigation measures

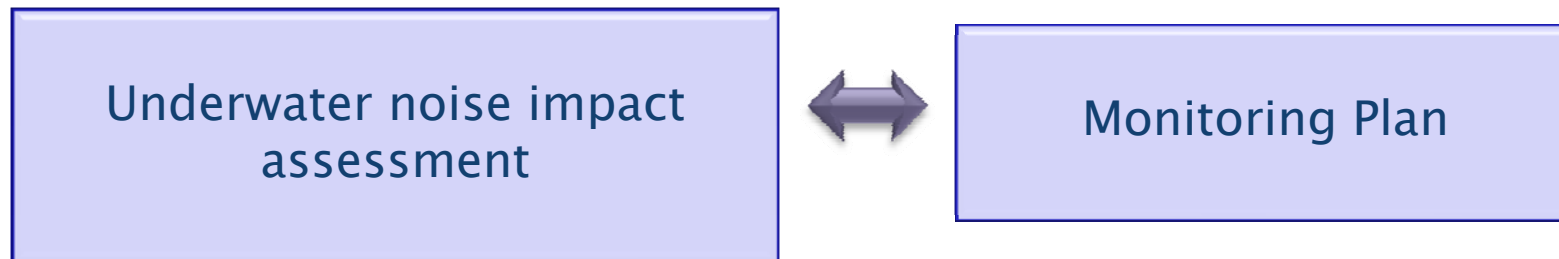
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Objectives

Underwater noise emitted from WEC's is unknown

No acoustic data

However, it is mentioned in several EIA's



Wave Energy Acoustic Monitoring - WEAM



Objectives:

- To characterize noise generation by wave energy prototypes and farms
- To develop a plan or guideline to perform acoustic monitoring
- To develop a fixed hydrophone calibrated system for long time series measurements

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Wave Energy Acoustic Monitoring - WEAM



Partner:



CINTAL

(Technological Research Centre of Algarve University)

Funding:

Science and Technology Foundation of Portugal (FCT)

FCT Fundação para a Ciência e a Tecnologia

MINISTÉRIO DA CIÊNCIA, TECNOLOGIA E ENSINO SUPERIOR

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WEAM - Tasks



1. Development of the monitoring equipment

- 1.1 - Measurement strategy and system specifications
- 1.2 - System development
- 1.3 - Laboratory/pool calibration test
- 1.4 - Sea tests

2. Acoustic monitoring of up to three wave energy farms

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3. Setting up an acoustic monitoring plan for wave energy

3.1 - Expected influence of underwater noise on marine mammals.

3.2 - Guidelines for underwater monitoring of wave energy farms

4. Project management

Progress



- Development of acoustic model (Kraken)
- Development of instrumentation
- Organization of the first campaign (March/April)
- Review of effects on Marine Fauna
- New proposals

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