

# The Portuguese Pilot Zone - An Environmental Opportunity

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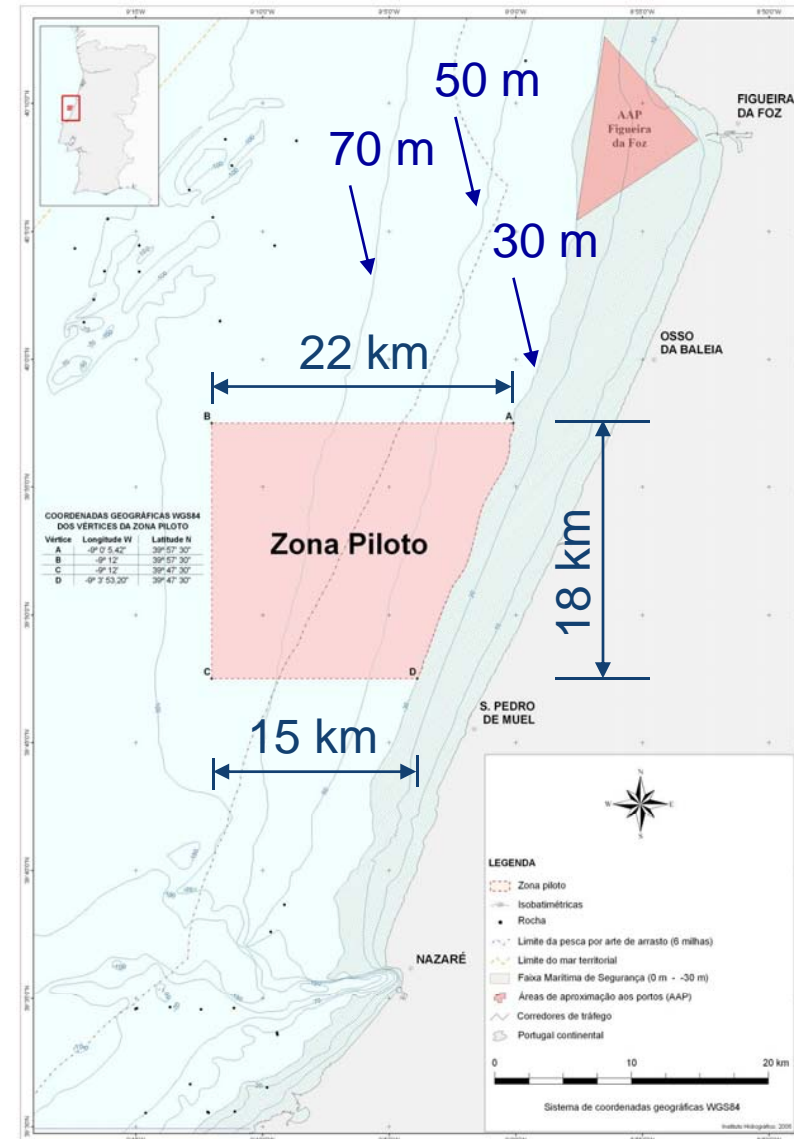
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# The Pilot Zone I

- Area: Over 320 km<sup>2</sup>
- Depth 30 - 90 m
- 5 - 8 km offshore
- Connection Power in 3 phases
  - Demonstration 80 MW
  - Pre-commercial
  - Commercial 250 MW
- Access conditions established by Decree Law n°5/2008
- Managing Body - 
  - Park management - One-Stop-Shop
  - Some Environmental responsibilities



# The Pilot Zone II



- Goals
  - Attract demonstration and industrial development to Portugal
  - To create a competitive national cluster focused in exportation supported by Research and Innovation activities
  - To increase renewable energy production

Demonstrate sustainability of the Technology...

# Environment – Our Vision



## Opportunities/challenges:

- First park of these dimensions - COMMERCIAL
  - Create/develop appropriate methodologies
  - Identify + address/mitigate key issues
  - **ADAPTIVE MANAGEMENT**
- National Know-How - parallel to the technology
- Gather information of an understudied area (more ahead)
- Baseline assessment Undermine future studies - BACI approach
- Avoid Environmental Issues/Misconceptions
- Identify/Enhance positive aspects
  - NTZ/Artificial Reef/FAD

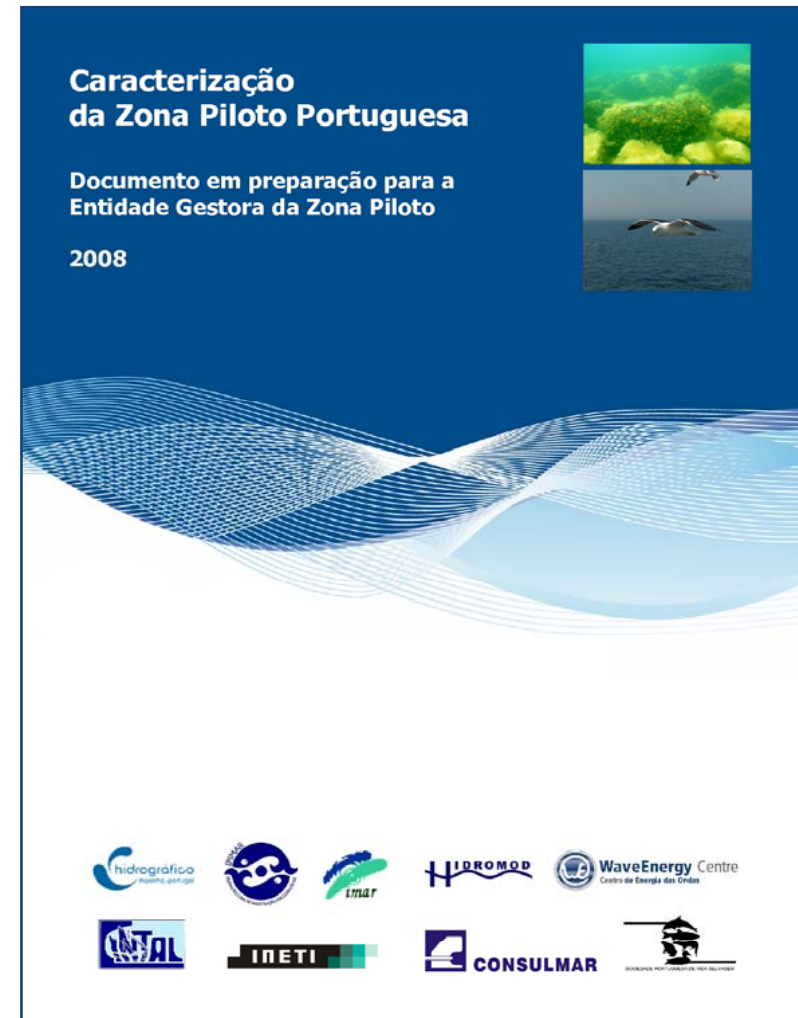
# WavEC PZ Initiative



- Workshop April 2008
  - Identified Key National organizations
  - Create a multi-disciplined workgroup
    - Physical and Biological Aspects








## Outcome document

- Available environmental data
- Evaluation of that same data
- Proposal for a Baseline/Monitoring program for the Pilot Zone



# Organizations involved



	<b>WAVE ENERGY CENTRE CENTRO DE ENERGIA DAS ONDAS</b>	<b>Technology</b>
	<b>INSTITUTO HIDROGRÁFIO</b>	
	<b>HIDROMOD, Modelação em Engenharia, Lda.</b>	<b>Physical Environment</b>
	<b>INETI/LNEG – Laboratório Nacional de Energia e Geologia</b>	
	<b>IPIMAR - Instituto de Investigação das Pescas e do Mar</b>	
	<b>IMAR - Instituto do Mar, Universidade de Coimbra</b>	<b>Biology</b>
	<b>SPVS - SOCIEDADE PORTUGUESA DE VIDA SELVAGEM</b>	



**CINTAL- Centro de Investigação  
Tecnológica do Algarve**

# Environmental Issues - Physical



- Some Meteorological data available - not site specific
  - Oceanographic data buoys Figueira da Foz (1981-1996)  
Leixões (1996-2007)
  - Effects of Energy Absorption - Izan
- Sediments
  - Superficial (top 20cm) data collected - 20 years old
    - Indicates sand/gravel substrate
    - Dynamic nature of area = low relevance to current situation
  - Other data - Sub-bottom profiles (outdated) NO sediment cores



- Acoustic baseline and monitoring
  - Identified as a potential issue

# Environmental Issues – Biology I



- Marine Mammals
  - Harbor porpoise (*Phocoena phocoena*)
    - Resident population of **conservational importance**
  - Common dolphin (*Delphinus delphis*) abundant but high mortality - fishing
  - Migratory route for larger cetaceans: Minke/Fin/Pilot whale
- Birds
  - Area is currently being considered for IBA status
    - Opportunity to demonstrate compatibility
- Benthos
  - No site data
  - Area heavily trawled by 'ganchorra' fishing
  - Colonization of anchoring structures - Artificial Reef Effect



# Environmental Issues – Biology II



**IPIMAR**

- Pelagic Environment

- Commercial species - Sardine and Jack Mackerel
- No Take Zone - Fishing stocks enhancement
- Socio-economic overlap
  - Trade off with fishing industry
  - Long term gain / Navigation channel

# Conclusions



- The Pilot Zone offers an immense opportunity
  - Know-how, methodologies, public acceptance etc...
- There are relevant Environmental Issues in the Pilot Zone
- Qualified national entities
- However - Time is of the essence...

Thank you