

# **Marine Renewable Energy**

## **Effectively Balancing the Needs of Developers and Potential Environmental Impacts**

**An Australasian Perspective**

**Glen Wright**

College of Law, Australian National University

The Environmental Interactions of Marine Renewable Energy Technologies  
Orkney, May 2012

# My Research

- What are the key elements of a suitable regulatory framework for facilitating the sustainable deployment of marine renewable energy systems?
  - **Environmental Impact Assessment**
  - **Managing competing uses**
  - Permitting/licensing/exploitation
  - Consenting processes
  - Grid connection
  - Feed-in tariffs and incentive mechanisms

# Overview

- Context
- The importance of good regulation
- General schema of approaches to EIA
- Resource and projects in Australasia
- **New Zealand: Crest Energy's tidal project**
- **Australia: toward a framework for marine energy in Victoria**
- Concluding thoughts

# Marine Renewable Energy

- Least developed of the renewable energy technologies
- Uncertainty regarding environmental impacts
- No 'winners' yet: technology and regulatory methods varied
- Need to:
  - facilitate the deployment of small-scale prototypes
  - look to the future: plan for potential environmental impacts, human use conflicts and likely competition over sites
  - ensure balance between sustainability and exploitation
- Marine renewables enter an already congested marine environment:



# The Importance of Regulation

- Good regulation can help facilitate the development and deployment of marine renewable energy:
  - Certainty
  - Sustainability
  - Investor confidence
  - Development of knowledge
  - Equitable use
  - Timescales
- The regulatory process is the mechanism by which research into impacts is put into practice
- Success of marine renewables “*dependent upon government policies to support the development and deployment of these emerging technologies... the sector requires a comprehensive policy framework*”

# Approaches to Impact Assessment

- Requires high scientific certainty
- Preferred by conservation groups
- But:
  - disregards the environmental benefits of renewable energy
  - we can never be 100% certain

**Precautionary**

- Elements of precautionary and deploy and monitor approaches
- SEA and MSP
- Adaptive management
- Factors in broader policy considerations
- Allows for some 'paradoxical harm'
- Attempts to strike a balance

**The Middle Way**

- Deploy devices and conduct ongoing monitoring
- Assumes minimal environmental impact
- Allows for fast deployment
- Perhaps preferred by developers
- Suitable for small-scale and prototypes

**Deploy and monitor**

Precautionary

Developer friendly

# Marine Renewable Energy in Australasia

- New Zealand
  - Strong wave resource potential at most South- and West- facing coasts
  - A number of significant tidal energy sites
  - Wave energy prototype deployed, a number of tidal projects proposed
- Australia
  - Excellent wave resource along Western and Southern coastline
  - Sufficient tidal resources for local electricity production in many areas
  - Four deployed wave pilot projects, totalling around 1MW capacity, range of tidal proposals



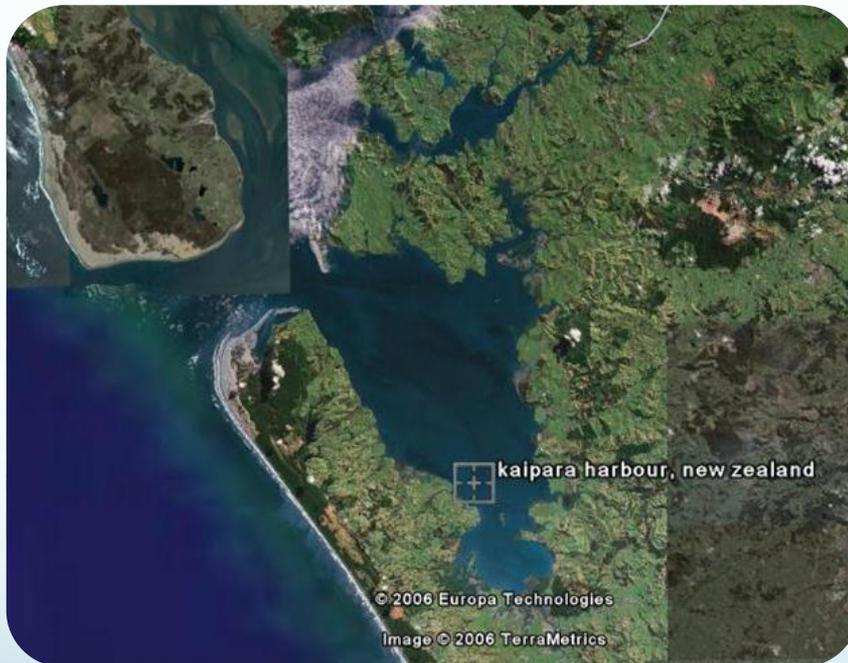
# Impact Assessment in New Zealand Crest Energy's Tidal Power Project

- Crest proposes to establish an array of 200 turbines in the seabed of the Kaipara Harbour; ultimate nameplate capacity of 200 MW
- No specific marine renewable energy legislation/processes as yet – approvals made under range of existing legislation
- Applied to local council for consents under the Resource Management Act 1991

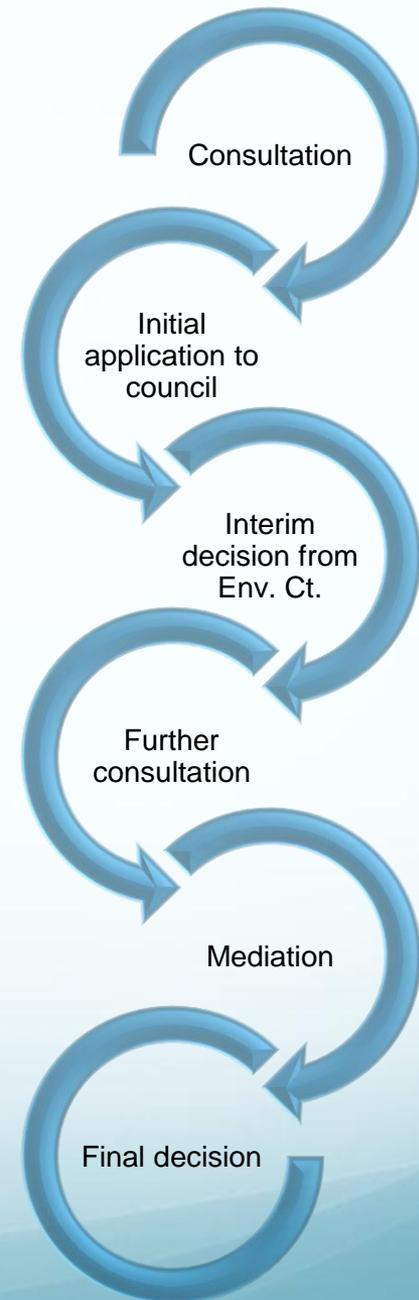


Openhydro turbine  
Courtesy of Crest Energy

# Crest's Tidal Power Project Process Outline



Kaipara Harbour  
Courtesy of Crest Energy



# Crest Energy's Tidal Power Project Environment Court

- Main parties: Crest; Council; Maori group
- Key issues:
  - marine life
  - fish and fisheries
  - sustainable management
  - navigation
  - coastal planning processes
  - Maori cultural issues
- Court acknowledge from the outset that the project:
  - is an “efficient use and development of natural and physical resources”; and
  - will reduce carbon emissions
- Crest was very proactive in engaging stakeholders



Maui's Dolphin  
Courtesy of Kaitiaki

# Crest Energy's Tidal Power Project

## Interim Decision

- Effect of the project on marine fauna and fisheries particularly important
- Crest's research regarding fisheries considered insufficient
- Noise monitoring must take place: determine baseline/monitor
- Crest discharged duties to Maori group through extensive consultation
- Court very much in favour, but Crest's position precarious

## Mediation

- Time consuming, but did solve some outstanding issues



Image courtesy of Crest Energy

# Crest Energy's Tidal Power Project Final Decision

- Staged deployment: 3, 20, 40, 80 and 200 turbines; three year gap between each addition
- Adaptive management:
  - collect baseline data
  - setting objectives
  - monitoring results
  - changing environmental management plan to reflect new knowledge
- Effects should be “no more than minor”
- Financial viability of project is not incompatible with sustainability considerations

# Impact Assessment in New Zealand

- Insight for industry into best approach to consent process:
  - Strong, early and continued consultation
  - Baseline monitoring
  - Comprehensive effects statements
  - Plan for long process
- A number of points in favour of marine renewables:
  - Some consideration of financial viability
  - Acknowledgement of climate benefits
  - Willingness of Court/cooperative process
- Does it strike the balance?
  - Slow process
  - Onus heavily on developer to prove sustainability of technology
  - Costly
  - Quite precautionary approach to deployment = long time until project is profitable/commercially sustainable
  - Strong opposition to project – process inept at managing this; again, developer shoulders burden

# Impact Assessment in Australia

- Perhaps the least proactive of all marine renewable energy countries – less impetus to develop
- Ad hoc approach: local government authorities assessing projects on a one-off basis as and when companies approach
- Simply applying existing laws to new technology
- *“The absence of an existing framework for regulating marine energy... means companies working in the sector are required to ‘forge a process’ for approval of their projects.”*

Victorian Government

- 2-3 years for basic consents for test devices

BioWave device  
Courtesy of BioPower Systems



# Impact Assessment in Australia

## Victoria

- Victoria keen on developing renewables (but, note change of state government)
- Inquiry on approval processes for renewables generally and discussion paper on marine renewables specifically
- Current process involves the following approvals:
  - *Environment Effects Act 1978*: fully integrated assessment of social, economic and environment outcomes
  - *Planning and Environment Act 1987*: planning schemes and development controls
  - *Coastal Management Act 1995*: use of coastal Crown land
  - *Heritage Act 1995*: permits and consents where heritage sites are to be disturbed.
  - *Aboriginal Heritage Act 2006*: Cultural Heritage Management Plan
    - ...and more for tenure!

# Victoria's Marine Energy Discussion Paper

- Current framework not apt to facilitate development
- Key principles moving forward:
  - Maximise public benefit
  - Facilitate development of resource
  - Minimise negative impact
  - Attract investment
  - Minimise speculation
  - Shorten timescale for approvals
  - Ensure transparency
- Committed to a whole-of government approach
- Three proposed options for reform within existing laws: focus on tenure allocation, not environmental impact
  - Assumes that existing frameworks for EIA will remain
  - Onus remains on developer: reform actually increase burden
  - Third option suggests Strategic Environmental Assessment – a step toward better balance

Port Fairy, site of BioWave prototype deployment, courtesy of David Kleinhart



# Concluding Thoughts

- Australasia is an interesting case study: using existing regulation to attempt a 'middle way': will it work?
- Neither jurisdiction has tailored requirements for initial pilot phase
- Need to consider specific options for marine renewables
- Adaptive management and modular deployment can be used to balance competing interests, but must not place too much onus on developer
- Strategic Environmental Assessments and Marine Spatial Planning could take some pressure of developers - more work needs to be done to determine best practice approach
- Feed-in tariffs and other incentives should be considered to ensure greater impetus for development
- No easy answers for regulation – will likely be some time before approach is standardised
- Much more research into suitable regulation needed

# Thank You

**Glen Wright**

[glen.w.wright@gmail.com](mailto:glen.w.wright@gmail.com)



**Australian  
National  
University**