Marine Energy as a driver of the rural regional economy

Highlands and Islands Enterprise

Calum Davidson

Director – Energy and Low Carbon

The Highlands and Islands of Scotland

- A rural region on the North and West of Scotland, with a population of 450,000
- Larger than Belgium, more coast than France, with 90 inhabited islands, with a Scandinavian style of rurality
- 25% of Europe's tidal, wave and wind resource, 40 years of Oil and Gas reserves

Highlands and Islands Enterprise

- Scottish Government economic and community development agency
  - Business
  - Infrastructure
  - Policy
  - Internationalisation
  - Inward Investment
  - 250 staff and a budget of £75m+ pa
- Energy – one of 6 key sectors
- Major focus on Energy – particularly offshore Renewables and Oil and Gas

The Highlands and Islands as an Energy Region?

Energy Producer

Or

Centre of Excellence?

Highlands and Islands Enterprise
Iomairt na Gàidhealtachd 's nan Eilean

Ambitious for *growth*

Policy- Government Renewable Energy and Climate Change Targets

UK Targets –

- 30% power from Renewables by 2020 - Currently at 10%
- 15% of Primary Energy from Renewables by 2020
- Kyoto target 80% emission reduction by 2050

Scottish Targets -

- 100% of electricity demand from Renewables by 2020
- 50% by 2015 - Currently at 46.6% (2013)
- 30% of Primary Energy from Renewables by 2020
- Emission reduction target of 42% by 2020 - 80% by 2050

In the Energy Sector

Market Opportunity is defined by public policy, legislation and political will

But

Energy resource is geographic


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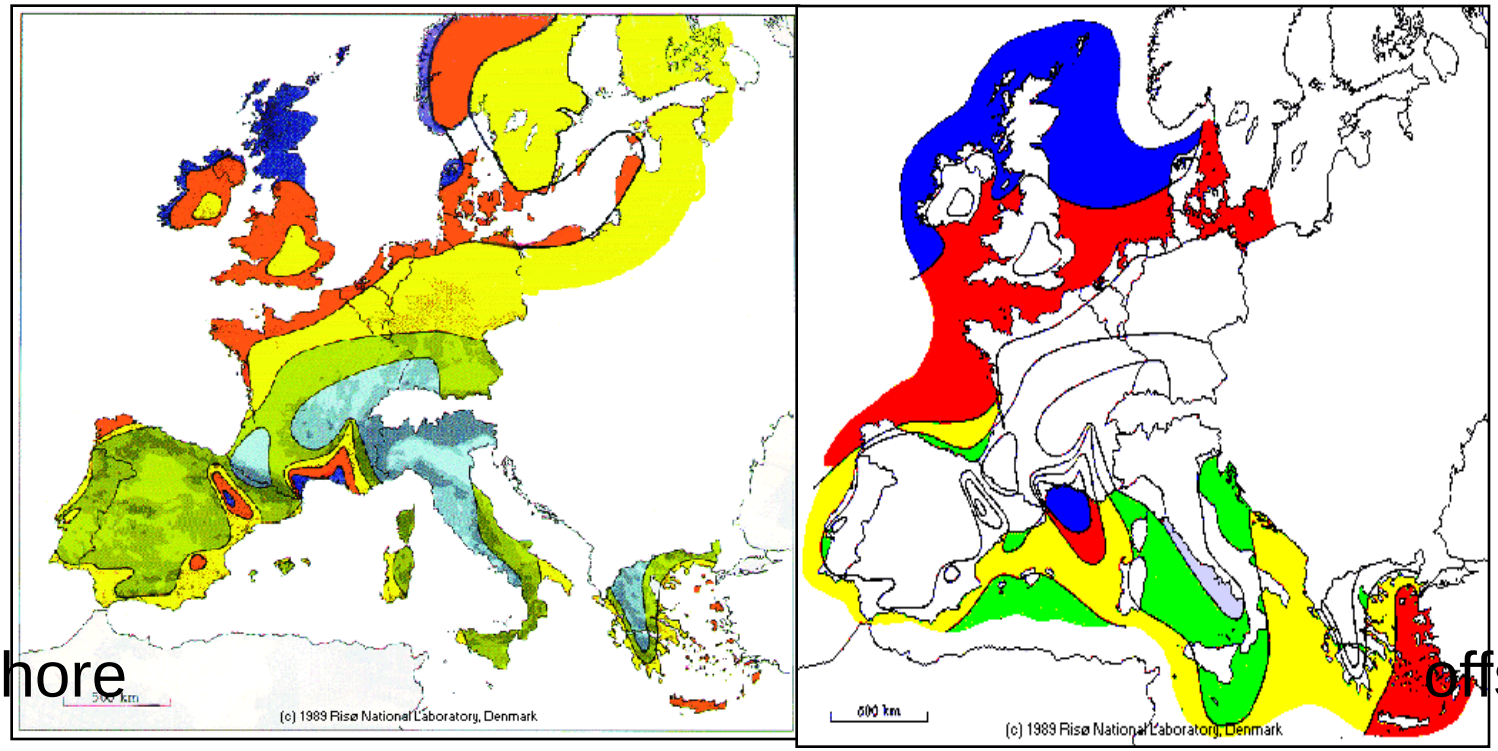
Scotland has 25% of European wind energy potential

Highest wind resource

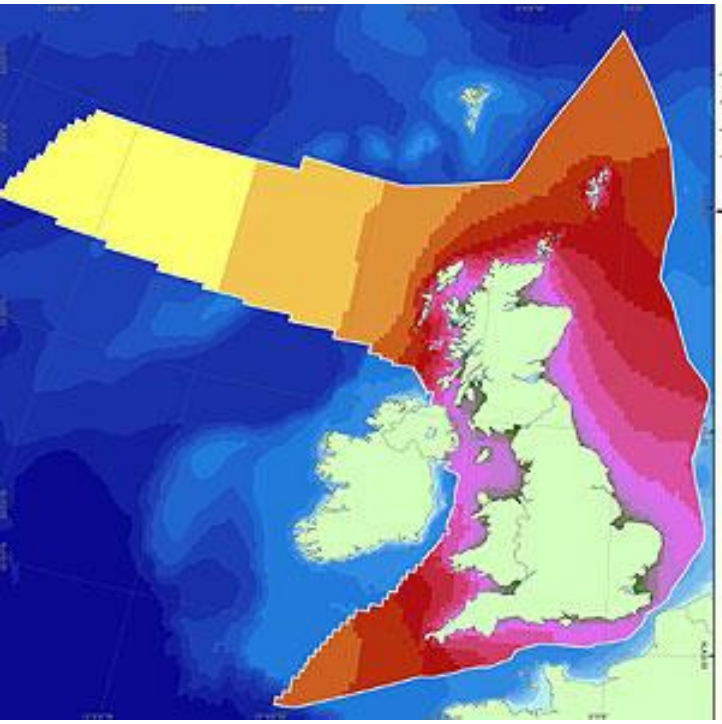


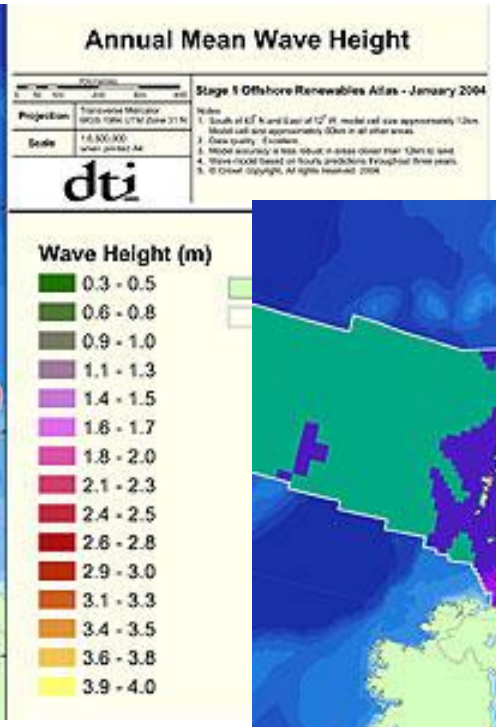
onshore

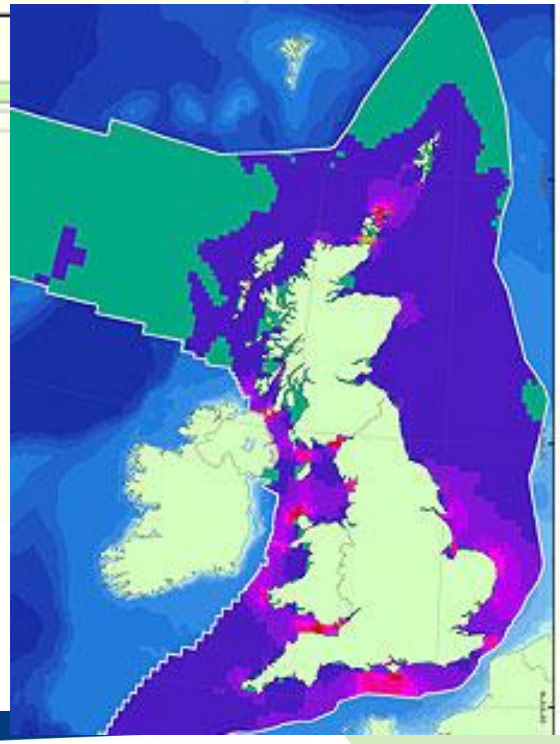
offshore

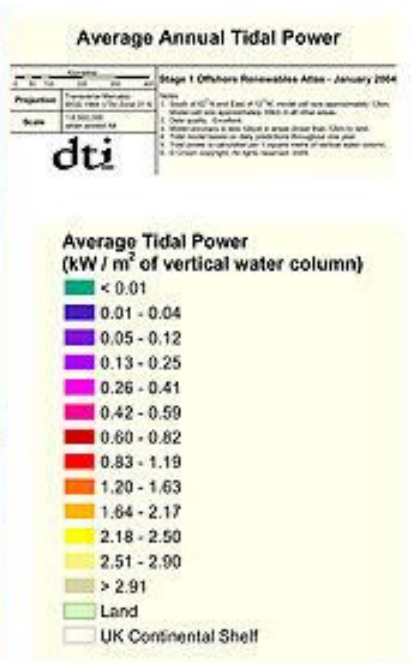
Scotland's Wave and Tidal Resource

- Scotland has over 70% of the UK's tidal Power

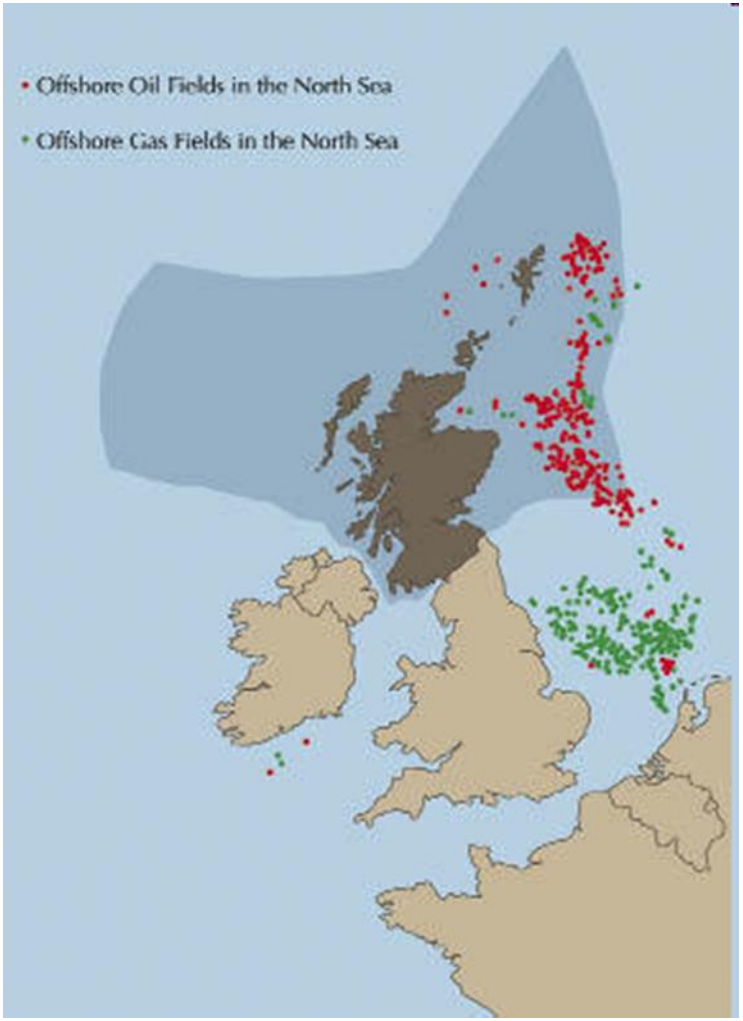








Scotland's position produces tremendously energetic waves


Offshore Oil Fields in the North Sea
Offshore Gas Fields in the North Sea

HIE
Highlands and Islands Enterprise
Iomairt na Gàidhealtachd 's nan Eilean

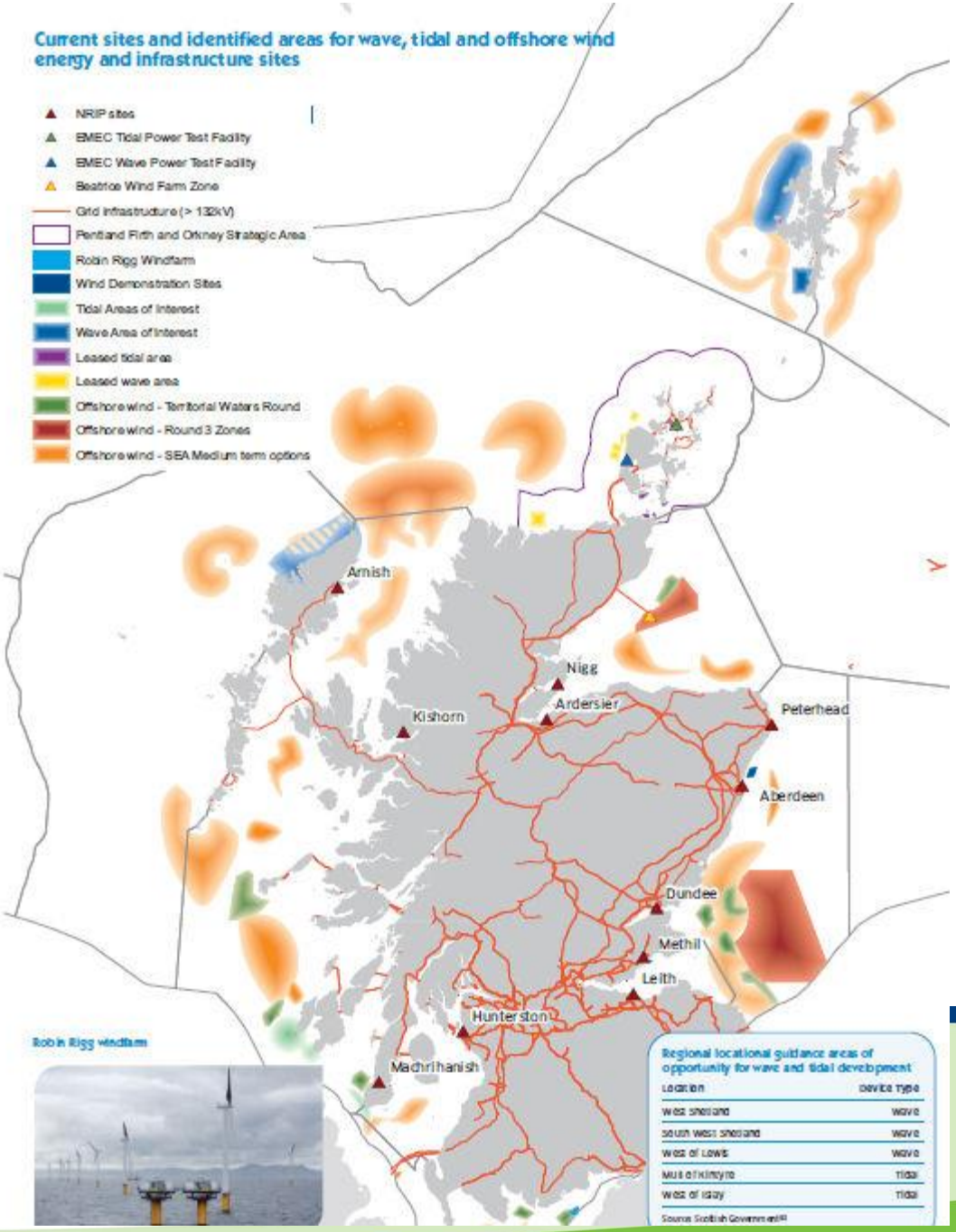
Ambitious for *growth*

Clear opportunity to make the Highlands and Islands a global leader in a key emerging industry

And it turns the rural/urban economic development paradox on it's head….

The periphery becomes the centre.

Current sites and identified areas for wave, tidal and offshore wind energy and infrastructure sites



Cluster development

- Consenting process
- Design and engineering
- Construction and manufacture
- Deployment and installation
- Operation and maintenance
- Decommissioning


SITE RULES

Principles of success

- Public/private/Academic co-operation
  - FM's Energy Advisory Board
- Generous financial rewards
  - ROC's, FiT, CfD
- Cluster building through testing
  - EMEC

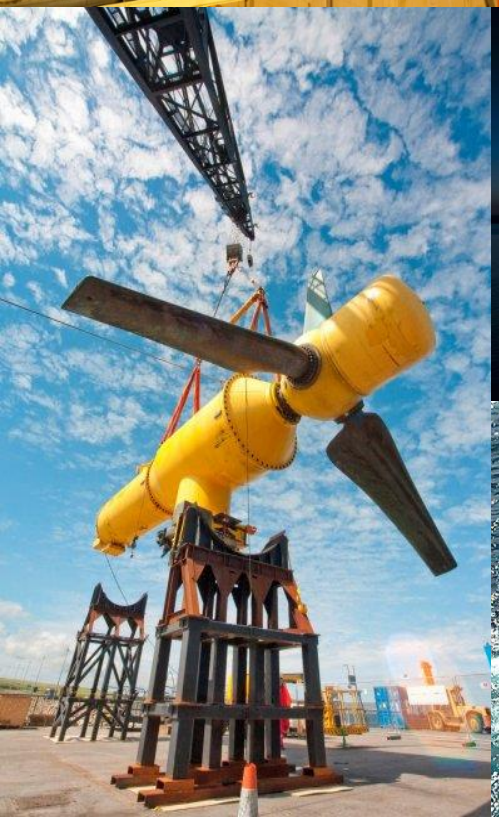
The Wave and tidal sector - 2014

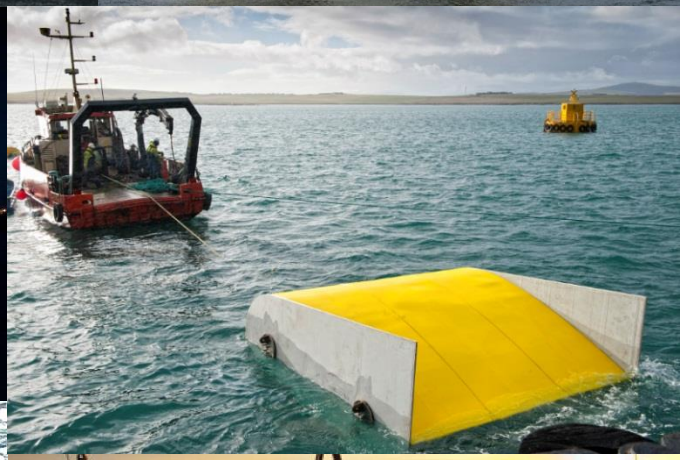
- 25 Years of conceptual research and development
- 20 Years of technology start ups
- 15 Years of wave and tidal prototyping
- 10 Years of testing and demo at EMEC
- 5 Years of project development and consenting

- Now with Commercial projects at financial closure
- Still major technological and financial challenges

Wave Prototypes

Tidal Prototypes





Orkney – the home of Marine Energy

- Island Group of 20,000 people
- Fishing, Farming, Tourism based
- Home of EMEC – since 2003
  - Largest concentration of marine devices
- Two University Departments
- 300 people employed in the Sector

Questions

Calum.davidson@hient.co.uk