

Marine Energy as a driver of the rural regional economy

Highlands and Islands Enterprise

Calum Davidson

Director – Energy and Low Carbon



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Ambitious for growth

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



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- 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



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The Highlands and Islands as an Energy Region?

Energy Producer
Or
Centre of Excellence?



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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



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In the Energy Sector

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

But

Energy resource is geographic



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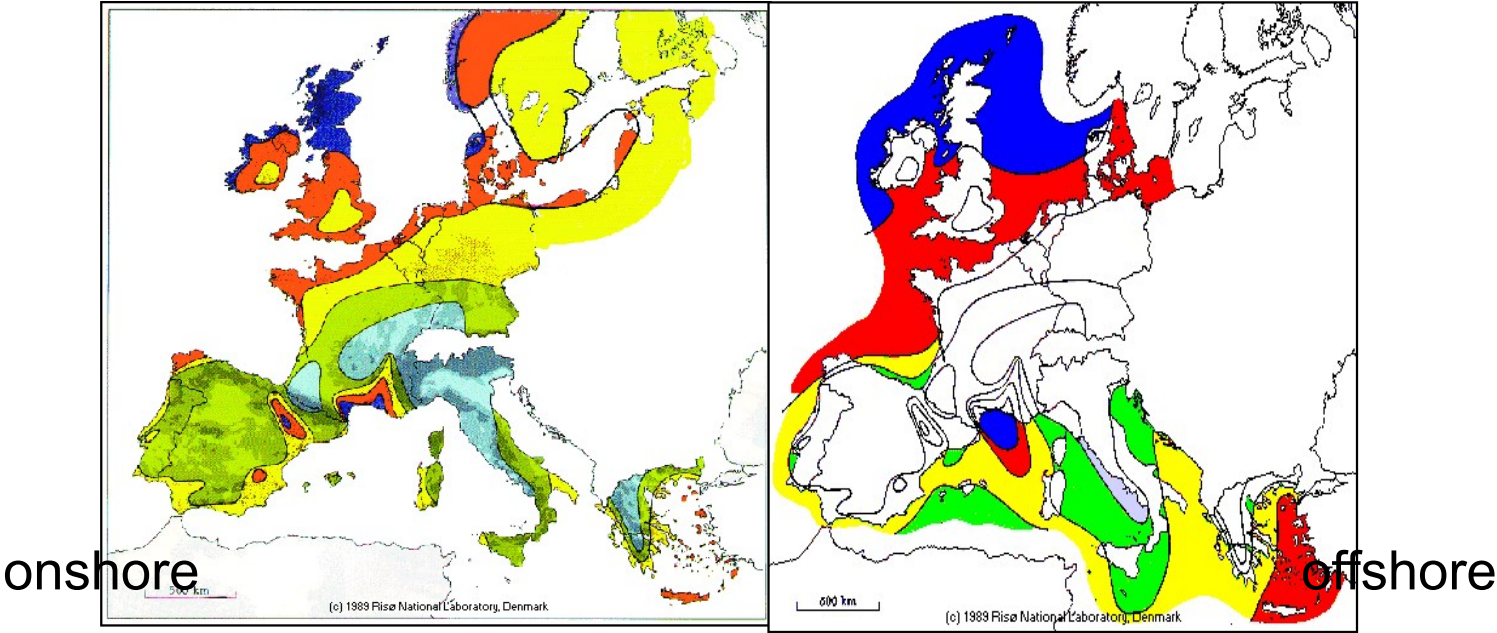


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Scotland has 25% of European wind energy potential

■ Highest wind resource

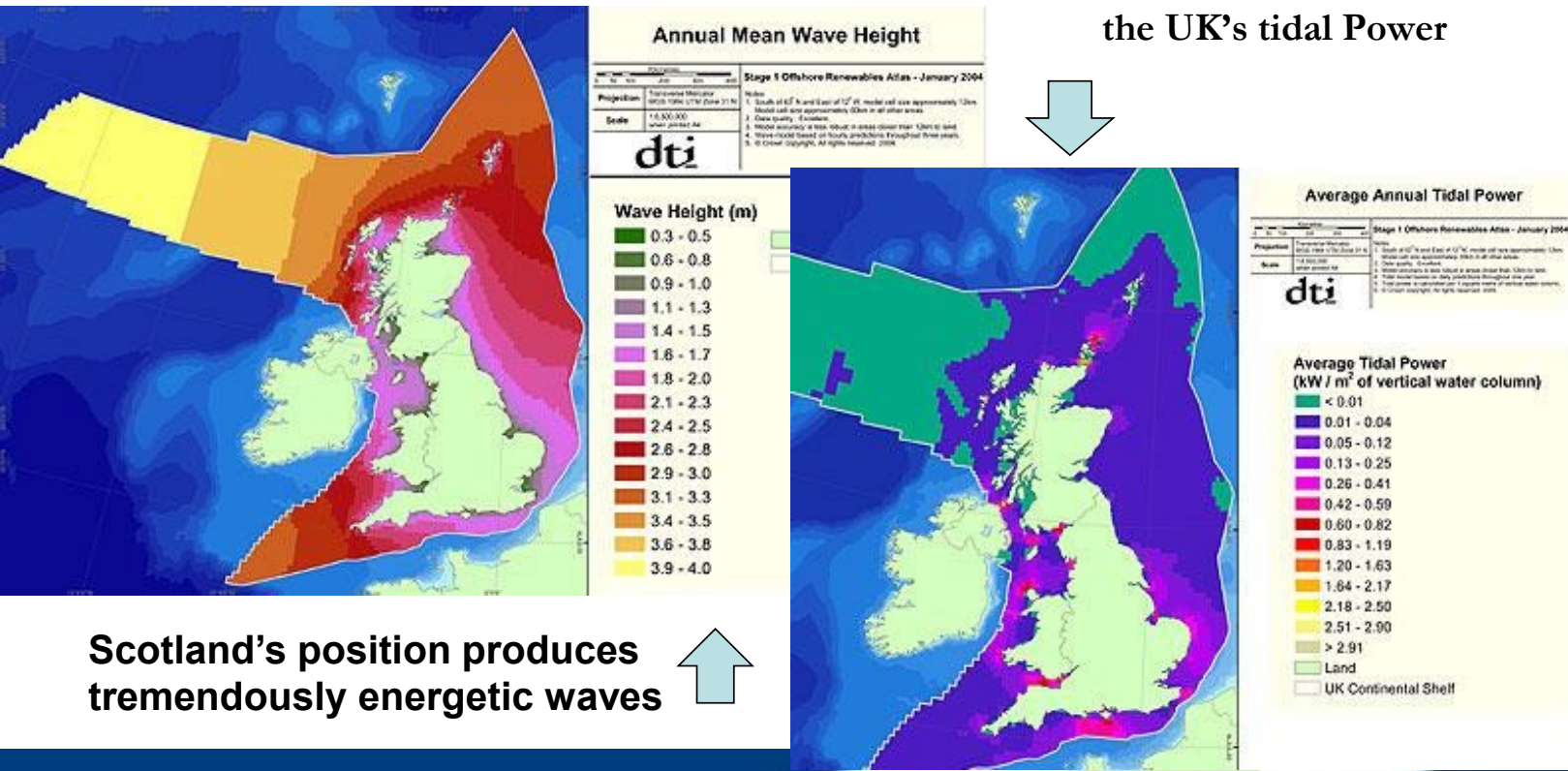


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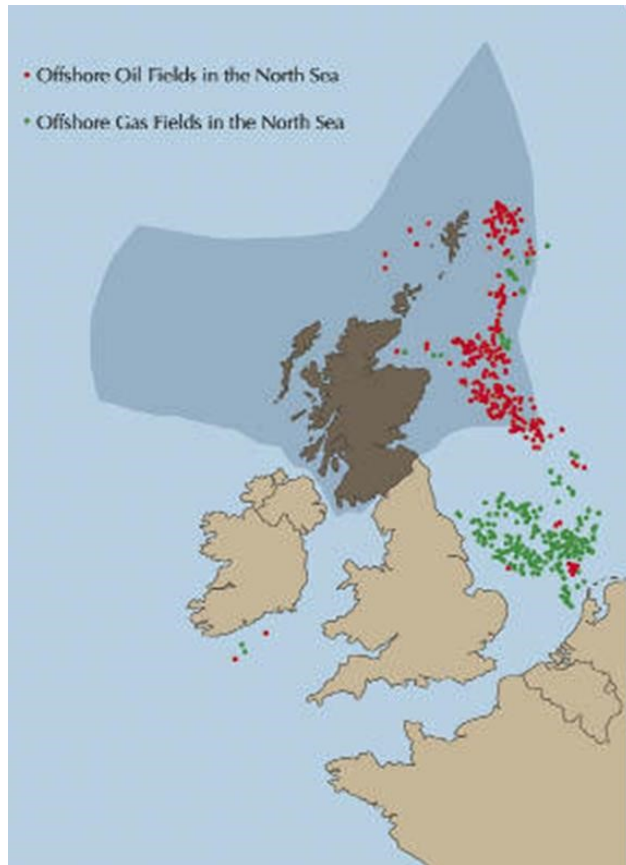
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Scotland's Wave and Tidal Resource

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



Scotland's position produces tremendously energetic waves



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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.

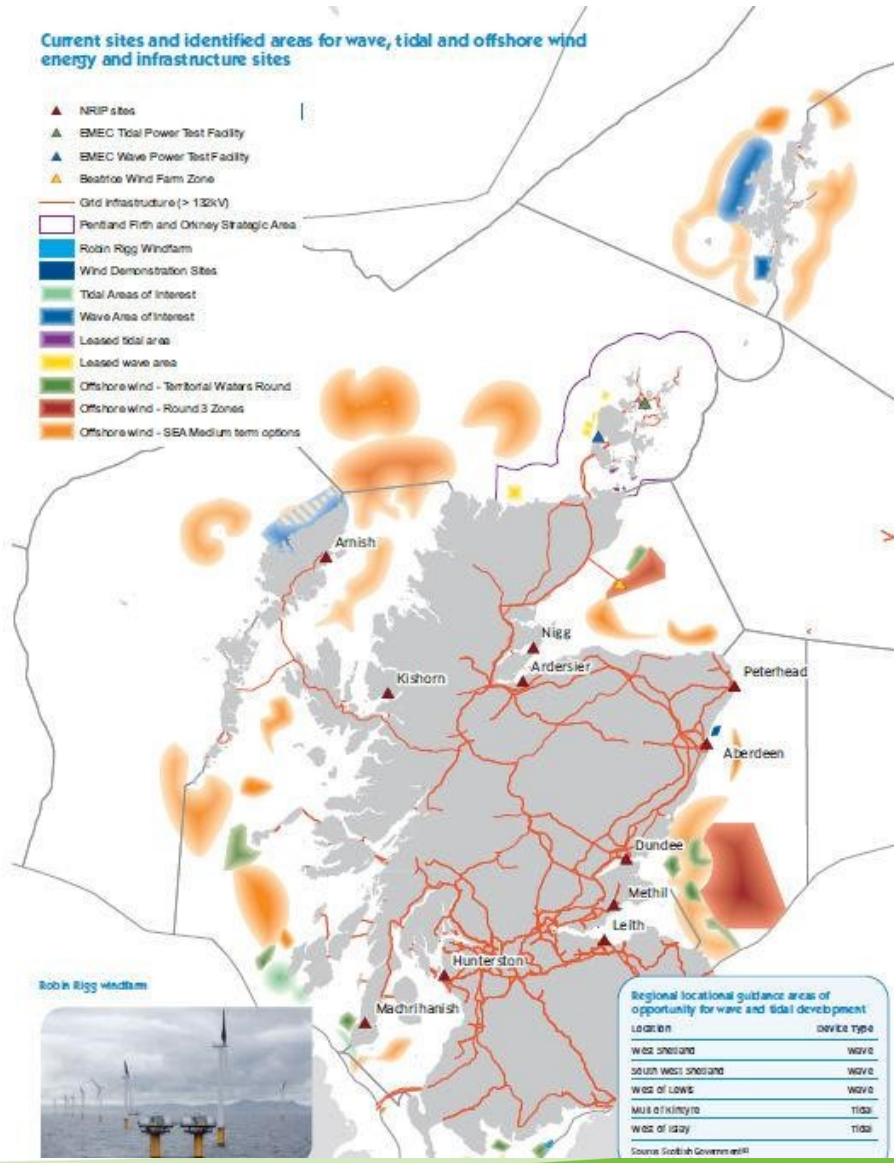


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Current sites and identified areas for wave, tidal and offshore wind energy and infrastructure sites

- ▲ NRIP sites
- ▲ BMEC Tidal Power Test Facility
- ▲ BMEC Wave Power Test Facility
- ▲ Beatrice Wind Farm Zone
- Grid infrastructure (> 132kV)
- Pentland Firth and Orkney Strategic Area
- Robin Rigg Windfarm
- Wind Demonstration Sites
- Tidal Areas of Interest
- Wave Area of Interest
- Leased tidal area
- Leased wave area
- Offshore wind - Territorial Waters Round
- Offshore wind - Round 3 Zones
- Offshore wind - SEA Medium term options



Regional locational guidance areas of opportunity for wave and tidal development

Location	Device type
West Shetland	Wave
South West Shetland	Wave
West of Lewis	Wave
Mull of Kintyre	Tidal
West of Islay	Tidal

Source: Scottish Government (1)

Cluster development

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



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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



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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



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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



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Questions

Calum.davidson@hient.co.uk



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