Ministerial Policy Statement on Marine Energy in Wales

Foreword

The importance of energy from the environmental, economic and social perspective means that all governments must look to energy-related policies to maximise the opportunities for a rapid transition to a low carbon energy economy and minimise the risks of energy supplies either being insecure or unaffordable, both actions being vital to economic welfare.

The Welsh Assembly Government intends later this year to publish an Energy Strategy for Wales based on sustainable development principles and covering all aspects of energy policy. In the meantime, following our consultation on a Renewable Energy Route Map for Wales[1] published in February 2008, and our consultation on a Wales bioenergy action plan[2], this Ministerial Policy Statement proposes how we can maximise the very significant marine energy resource from around our coasts as soon as possible with the minimum of local environmental impact.

Plans for major Wales offshore wind-energy developments are proceeding apace but given the significant energy resources in our seas themselves, whether from wave action or from tides, the Assembly Government would be failing in its duty in climate change mitigation if we did not examine the scope for maximising this low carbon energy resource within a sustainable development framework. As was highlighted in the Sustainable Development Commission study in 2007[3], capturing the tidal-range energy in the Severn Estuary alone could contribute more than 5% of the UK's current electricity needs, with similar amounts of electricity available either from capturing the

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[1] http://wales.gov.uk/consultations/closedconsultations/environment/renewenergymap/?lang=en

[2] 'Bioenergy Action Plan for Wales' http://wales.gov.uk/consultations/closedconsultations/environment/bioenergyactionplan/?lang=en

[3] 'Turning the Tide, Tidal Power in the UK' http://www.sd-commission.org.uk/publications.php?id=607

energy from waves or tidal streams around the coasts of Wales and other parts of the United Kingdom.

In respect of the tidal-range power in the upper Severn estuary, extensive feasibility studies are currently underway jointly overseen by the UK Government, the Welsh Assembly Government and the South West region of England. For wave and tidal stream technologies there have been more than 30 years of substantial research across the UK and they are now at the stage of early commercialisation. However, developing any of these latter technologies on a large commercial scale will still take considerable time.

This Marine Energy Ministerial Policy Statement suggests a range of initial actions for key stakeholders which will put us on the path to 2025 when significant amounts of low carbon electricity might practically be produced from our seas which current estimates indicate has a total potential of some 50 GW.

In addition, this marine energy statement suggests that the exploitation of marine energy resources generally presents a very significant investment opportunity and could lead to the creation of many well paid sustainable jobs over the next 20 years in a new marine-energy sector in Wales – ranging from R&D to device manufacture, environmental assessment, device deployment and maintenance: a sector which would not only serve the needs of Wales, and projects in the rest of the UK, but also could seize the growing international opportunities which we hope this work will help stimulate.

I look forward to working with all the organisations involved in the delivery of marine renewable energy in Wales to progress this policy agenda.

Jane Davidson
Minister for Environment Sustainability and Housing, Welsh Assembly Government
July 2009

Marine Resource and Sector Development

1.1 Flowing water is potentially an inexhaustible clean source of energy on land that has been tapped for centuries through, for instance, water mills providing motor-power for corn-grinding. More recently, turbines in hydro-electric dams, pumped electricity-storage systems and small run-of-river hydro systems have become significant sources, or potential sources, of renewable electricity.

1.2 However, the power of moving sea water has yet to be tapped in any large scale way but offers the potential for perpetual secure electricity supplies of considerable magnitude. This can be through wave-energy devices, tidal-stream turbines or turbines fitted within barrages, lagoons or other impoundment structures in the sea, to capture tidal range movements.

1.3 Wales is fortunate to have over 1,200 kilometres of coastline with significant marine-energy, extensive port facilities, a strong manufacturing and energy sector tradition and a Government which is determined, against the ever more important climate change mitigation imperative, to enable the maximum amount of renewable energy production within a sustainable development context. This makes Wales exceptionally well placed to strongly participate in the creation of a new marine energy sector.

1.4 To improve our understanding of the marine resource in Wales, and its potential for exploitation within a sustainable development framework, Wales continue to invest in the Marine Renewable Energy Strategic Framework (MRESF). The first stage of the project; the data collection exercise and identification of data gaps was completed in 2008. We have recently commissioned six new research projects under Stage 2 to fill the critical data gaps identified during Stage 1 and inform the development of the Framework. The final stage of the project will be the

proposal of optimum locations of marine renewable energy technologies in Welsh waters.

1.5 The Wales marine energy report produced by Project Management Support Services (PMSS) in 2006 looked at the practicable marine (non tidal range) energy resource around the coast of Wales. It concluded that potentially more than 40 GW of wave and tidal stream energy exists in waters off Wales. However, taking into account likely environmental constraints and the relative immaturity of the device technologies, further analysis in conjunction with RPS Group indicates that the initial practical targets for 2025 should be to capture around 10% of these energies - but these targets might well be revised upwards following the progression of the MRESF and as the results from demonstration projects become available.

1.6 Then, as well as the massive tidal range energy in the Severn Estuary, which studies indicate might produce up to 9GW of electricity, there is also the potential for electricity producing lagoons and barrages elsewhere in Wales.

1.7 While the physical process of extracting energy from moving sea water and converting it to electricity will vary with the particular marine technology and circumstances, there are a set of key common elements which normally have to be addressed. In particular these include:

- Marine device/system research and development
- Device manufacture/installation
- Project demonstration; maintenance and funding
- Skills acquisition and training facilities

- Ports infrastructure and components availability

- Site selection including energy-resource and environmental impact assessments, alongside an overarching Wales level strategic environmental assessment (SEA)

- Site licensing / consents processes

- Electrical grid connections, both off-shore and on-shore elements

- Consistent legislation, especially in the context of energy, planning, environmental and marine regulation

- Associated regulatory issues

- Ensuring a good level of public understanding of marine energy technologies and associated environmental aspects and positive effects

1.8 Of primary importance is the recognition that the way forward requires the strong marriage of private-sector enterprise and innovation and public-sector development support / enabling regulation. In respect of the latter, as with all renewable energy technologies, marine-energy systems as well as providing low carbon electricity, will have local or regional environmental impacts, often proportional to the amount of energy being produced for economic consumption, which clearly need to be fully assessed and minimised.

1.9 It is also important to recognise that there will be significant long term international opportunities in the marine energy sector. Therefore any public-sector enabling regime should have elements which range from community and local authority support, Welsh Assembly Government

actions, through to the delivery of UK and European Government policies and associated support programmes. In relation to any major Severn tidal power or Bristol Channel projects, there also must be close working with the relevant bodies in the south west of England. And more generally, there are opportunities for strong working relationships with the members of the British Irish Council - all of which have strong marine interests.

The Way Ahead

2.1 To exploit Wales' extensive marine renewable energy resource to the full, within a sustainable development framework, the Welsh Assembly Government proposes to take the following actions in conjunction with a wide range of stakeholders, unless compelling alternative arguments are forthcoming. Further, we will continue to work closely with the Welsh European Funding Office to ensure, where appropriate, opportunities for European Structural Fund Support are maximised.

2.2 For tidal range projects we will:

- **work closely with DECC, DEFRA and the South West England RDA, bring the current main Severn tidal power feasibility study to a conclusion in 2010**

- **allocate £125,000 to the Severn tidal power innovative technologies initiative and ensure the results are fully taken into account before concluding the main Severn tidal power feasibility study in 2010**

- **utilising the outputs of the above studies, explore with interested parties, the potential for tidal range projects in other parts of Wales outside of the Severn**

- **continue to explore the possibility of supporting a new large-scale Wales hydro-dynamic physical modelling facility with the capability of analysing the impact on coastal regions of barrages, lagoons and flood-defence systems**

2.3 For wave and tidal stream projects we will:

- **complete the current marine data collection exercise by RPS and, working with DECC and other stakeholders, complete an initial wave and tidal stream strategic environmental assessment for energetic waters off Wales by 2011/12**

- **with developers and other stakeholders identify with more confidence the electrical energy which could be extracted from the most energetic tidal stream and wave energy areas of Wales, namely: the seas around Anglesey; the seas off Pembrokeshire and, working jointly with the South West England RDA, the Bristol Channel.**

- **work with Crown Estates, DECC and the South West England RDA on the potential zoning and licensing of the most promising energy areas on a strategic options model**

- **continue to work with developers, Crown Estates, CCW and other stakeholders on enabling the licensing sites for demonstration scale devices, supported where appropriate by the use of public sector funds.**

2.4 For marine energy projects generally:

- **in line with our Wales science policy which has already identified low carbon energy as one of the three main priority areas for Wales, we will encourage the Wales low carbon**

research institute, the Carbon Trust, The Crown Estate and others to expand significantly Wales' marine-energy related research and development capabilities – working in collaboration with business wherever possible, at both a local and international level

- **as part of the Assembly Government's determined drive for the creation of many more sustainable and well paid green jobs[4], we will work with the private sector, DECC[5], BIS[6], Carbon Trust and other stakeholders to lay the foundations in Wales for a strong marine-energy industrial sector, including manufacturing, test/demonstration, installation, grid connection, maintenance and other supply chain aspects – including relevant port developments. With key developments being accelerated through the use of relevant financial support mechanisms**

- **we will liaise closely with potential developers, The Crown Estate, Countryside Council for Wales (CCW) and the Environment Agency Wales to ensure that potential environmental impacts are fully considered as individual projects are developed, with background data from environmental bodies and previous studies where possible, being readily available to developers**

- **as powers in the new UK Marine and Coastal Access Bill are enacted, we will ensure that the new marine planning process takes full account of the climate change mitigation potential of large and small scale marine energy developments off the coasts of Wales**

[4]'Capturing the Potential - A Green Jobs Strategy for Wales' http://wales.gov.uk/news/latest/090709greenjobs/?lang=en
[5] UK Renewable Energy Strategy: DECC July 2009
[6] UK Low Carbon Industrial Strategy: BIS, July 2009

- **we will encourage developers to consider the possibility of consenting projects in Wales territorial waters using the powers under the Transport and General Works Act**

- **under the auspices of the British Irish Council (BIC) and other UK wide bodies, we will work with the UK Governments[7] and Crown dependencies to accelerate the delivery of this whole agenda**

- **we will continue to press the UK Government for the executive devolution of power station consents under Section 36 of the Electricity Act 1989**

- **internationally, we will continue strongly to promote to interested parties and countries the considerable climate change mitigation potential of marine energy developments world-wide**

Welsh Assembly Government
July 2009

[7] UK Low Carbon Transformation Plan: DECC Climate Change and Energy White Paper, July 2009