

blue energy : taking the plunge

15 March 2007

Icon Room
Te Papa Tongarewa
Wellington



Review of European Wave Energy Policies

Catherine Mitchell

Warwick Business School

Overview

- Energy Policy at the European Commission level
- EC Wave Energy Policy
- Overview of European wave *power plants* not demonstration projects
- Discussion

Energy Policy Framework in the EC

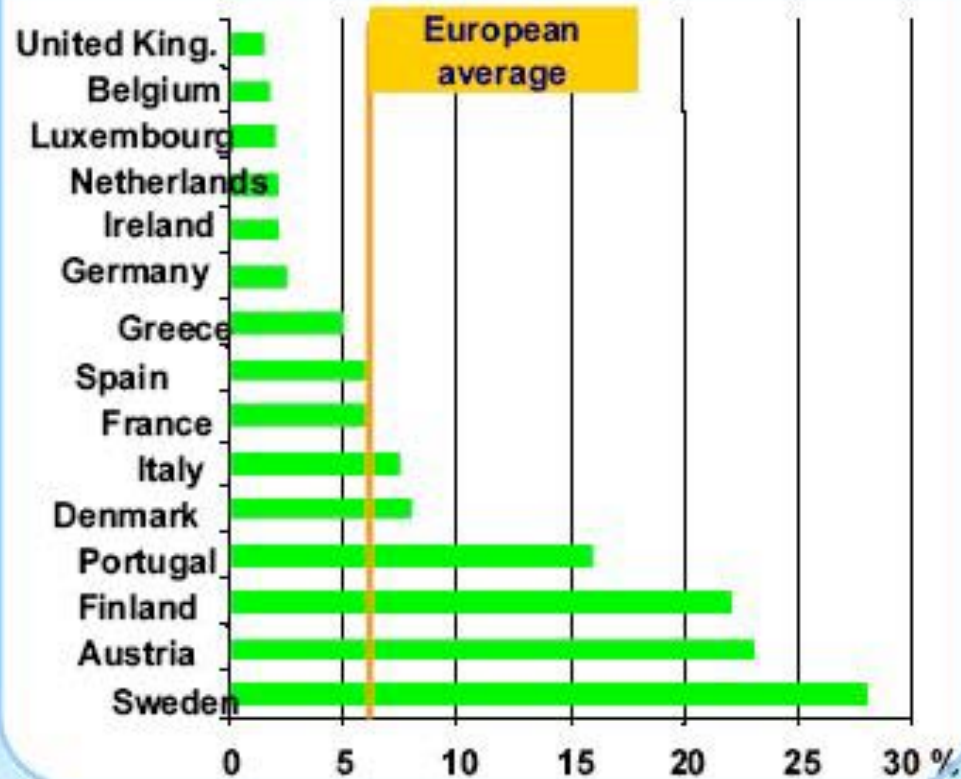
- **Legislation: COM(2007) 1 final: Energy for a Changing World - An Energy Policy for Europe**
 - http://ec.europa.eu/energy/energy_policy/index_en.htm
- **Legislation: COM 2001/77/EC: Directive on Electricity Production from Renewable Energy Sources**
 - <http://www.managenergy.net/products/R80.htm>
- The support of electricity from renewable energy sources
 - http://ec.europa.eu/energy/res/biomass_action_plan/doc/2005_12_07_comm_biomass_electricity_en.pdf
- Framework programmes
 - Latest FP7 67.8 billion Euro's over 6-7 years
 - 2.6bnE for energy
 - Access to another 20bnE thematic

European Commission Level Policies – the RE Directive Targets

- **To establish** a framework to **increase the share of green electricity from 14% to 22%** of gross electricity consumption **by 2010**
- **To help to double** the share of renewable energy **from 6% to 12%** of gross energy consumption in Europe **by 2010**
- **To further** compliance with the commitments made by the EU under the 1997 Kyoto Protocol on **reducing greenhouse gas emissions**

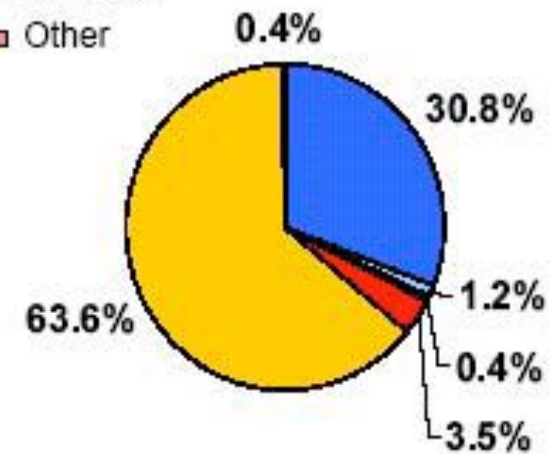
European RE Figures

Share of renewable energy in total consumption: 1998



Per type

- hydroelectric
- Wind
- Solar
- Geothermal
- Biomass
- Other



Principles of the RE Directive

Promotion of electricity from renewable energy sources through:



- Quantified national targets for consumption of electricity from renewable sources of energy
- National support schemes plus, if necessary, a harmonised support system
- Simplification of national administrative procedures for authorisation
- Guaranteed access to transmission and distribution of electricity from renewable energy sources

European Wave Energy Policy

- Co-ordinated Action on Ocean Energy
 - To disseminate knowledge and promote sharing of information on ocean energy conversion www.ca-oe.org
 - October 2004-October 2007

UK Wave Energy Policy

- Long R&D History in UK but ended acrimoniously at end 1980's
- £5m in 2002
 - European Marine Energy Centre in Orkney, Scotland
- £50m Marine Renewables Development Fund (from January 2005)
 - 25% capital grant + £100/MWh and total cap of £9m per project
 - Wave Hub with 30 MW capacity
 - Early development work undertaken by the South West Regional Development Agency (regional)
 - Eligible for European Objective One Funds for next stage development work
- Renewables Obligation
 - wave energy band (amount yet to be agreed – discussion of 3 X's buyout ie around 10p/kWh or 30cNZ)

Scottish Wave Energy Policy

- 40% of electricity to come from renewable resources by 2020
 - 18% by 2010 (already met)
- Grants of £13m for marine energy projects
 - Supporting 9 demonstration projects of different technologies around EMEC
- European Marine Energy Centre (EMEC)
- Strategic Environmental Assessment of West Coast
- £0.5m for expanded testing berth at EMEC
- £10m for Arnish Yard, Lewis by Western Isles Enterprise (regional)
- Marine Supplier Obligation proposing a 17.5p/kWh and 10.5p/kWh buyout for wave and tidal (instead of 3.3p/kWh for other ROCs), capped at 75 MW
- Scottish Power's 3 MW wave power plant using OPD's pelamis

Portuguese Wave Energy Policy

- Fixed feed-in tariff (23 Euro c/kWh) for wave energy, capped to 50 MW
- Investment subsidies up to 40% of capital costs
- 2.25 MW began generating 2006 at Agucadoura from Ocean Power Delivery Pelamis, developed by Energias de Portugal
- 28 more units (22.5 MW)
 - Subject to success of Agucadoura
- Wave Energy Centre <http://www.wave-energy-centre.org/>

Other European Wave Energy Projects

- The Wave Dragon, which has been demonstrated in Denmark since 2004, has EU and Welsh Assembly funding for the construction of a 4-7 MW project and planning application underway for 2008 deployment.
- Ocean Power Technologies PowerBuoy has finance and contract for 1.25 MW in N. Spain with Iberadrola, the electricity company

Discussion

- Its all relative....
 - European industry not necessarily happy with policies
- The EC, and most European countries, see industrial policy value of supporting renewable energy
 - German and Danish success stories for wind energy
 - Ocean energy seen as open for national champion and different European countries competing for that
- EC has strong innovation policy which
 - values non-least cost mechanisms
 - recognises importance of supportive 'framework' so multi-level
 - Targets
 - R&D for demonstration
 - Additional national and regional support
 - Still differences in polices ie Feed-in Versus Obligations
- NZ has best resource in world; national champion still undecided; it could be New Zealand....

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