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Energy Policy Review
Submission by the British Wind Energy Association

Preface

The British Wind Energy Association (BWEA) welcomes the opportunity to contribute to the review of energy policy and provides this submission on behalf of the UK wind energy industry.

BWEA was established in 1978 and is the representative body for companies active in the UK wind energy market. Its membership has grown rapidly over recent years and now represents 216 companies (see Appendix). By way of illustration of the rate of growth in the sector, at the time of our submission into the PIU study (exactly one year ago), BWEA represented 164 companies.

Most commentators accept that wind is likely to represent at least half of the Government's '10% by 2010' target because of the maturity and low cost of wind energy. Beyond this baseline, continued growth is equally probable. In representing the industry, BWEA is therefore, in a unique position to comment on the circumstances under which this probability would become a certainty.

Wind energy is widely recognised as an abundant energy resource indigenous to the UK. Wind turbine technology is readily available and has been successfully deployed world-wide, with 25,824MW installed by July 2002. The technical resource is sufficient to meet total UK demand several times over. The economic resource is lower, but by any calculation, it is clearly enormous and it is perfectly possible for 'tens of percent' of UK electricity demand to be met by wind energy.

Elsewhere in Europe, wind turbines have been successfully installed into diverse transmission and distribution systems. By way of illustration, in Germany and Denmark, the contributions from wind energy to electricity supply are (at present) 3.5% and 18% respectively and will have increased further by the end of the year. To the end of July, Germany had installed 1135MW in 2002, a 36% increase on the same period in 2001.

BWEA is working towards a 'high-renewables' scenario, wherein the UK replaces ageing conventional plant with a mix of renewable energy sources, in particular onshore and offshore wind.

In this submission, although we have focussed primarily on the key issues related to the integration of greater volumes of wind-generated electricity, much of what we discuss is relevant to other renewable technologies and in particular, in the marine renewables sector at large. The growth rate of other marine renewables may be directly related to the growth of wind (both onshore and offshore) as the installation of wind is likely to assist in the facilitation of deployment, manufacturing and process (i.e. consents, etc) as well as grid connection capacity and availability.

This submission does not re-state the environmental benefits of wind energy as these are extensively documented elsewhere, other than to remind ourselves that wind energy is both 'zero carbon' and sustainable.

All of the issues contained in this submission are widely addressed in more detailed documents issued both by BWEA and other organisations, including recent reports by the PIU and the Environmental Audit Committee. This note, therefore, does not attempt an exhaustive analysis. In most cases, the findings of external reports concur with our analysis of the threats and opportunities.

Section One

Current status of wind energy in the UK

At the end of August this year, 499.29MW of grid-connected wind was operating in the UK. This is expected to grow to 552.27MW by the end of 2002 and will be equivalent to meeting approximately 0.4% of UK supply.

BWEA predictions to 2010 and beyond

The considerable growth in Association membership, particularly over the past five years, suggests that greater potential exists than simple historical development trends would suggest.

For example, owners of 'brown-field' sites have begun to develop these assets. One such example is that of Corus, who with AMEC, have recently won permission to develop a 45MW scheme on a disused site on Teesside.

To help us assess the probable contribution of wind energy to the UK target of '10% by 2010', we maintain the UK's definitive database of wind projects. From this, we have calculated the probable build and planning consent rates to 2006.

These calculations are, in our view, the best available prediction of the probable numbers of installed wind megawatts per year.

2002 552 (cum.)
2003 400
2004 970
2005 1100
2006 200 (offshore)

Total 3222MW

This total includes the currently estimated total of 1350MW of offshore wind in the so-called 'first round' and assumes that all projects achieve necessary planning consent and finance and are built by the end of 2006.

Beyond 2006, we do not make firm projections. However, an additional 1700MW is known to be intended to be submitted for planning consent by the end of 2003. Given the location of proposals and assuming present rates of attrition, it is likely therefore, that a total of up to 4200MW could be built by the end of 2006.

It should be noted that further onshore projects are highly likely to be proposed and that onshore is considerably easier to model than additional offshore. By 2006, the prospects for 'future offshore' are entirely contingent on the satisfactory conclusion of negotiations towards both licensing and consenting. If successfully completed, the 'Future Offshore' process may yield up to an estimated additional 3000-4000MW (based on indications of

developer interest) of offshore wind. If the process is swiftly implemented, these projects could be installed by around the end of the decade.

To take a longer view, we invited six of the largest (by activity) developers to provide 'in confidence' projections of their intended development activity to 2010, based on their analyses of current and future market conditions. The total number (rounded to nearest 100MW) of onshore MW envisaged to be submitted for planning (in favourable conditions) up to 2010 by these six companies alone is 7600MW. It should be noted that BWEA represents around three dozen development companies.

Therefore, we predict that by 2010, it is likely that between 4200MW and 11000+MW of wind energy may have been consented (and largely installed). The upper end figure is clearly less certain than the lower and assumes an nominal present-day attrition rate of 35% and does not make allowance for other developers (known and otherwise).

However, this does potentially represent between 3-8% of real consumption (based on projections of the actual rate of demand increase) met by wind power by the end of 2010.

Section Two

Lessons from NFFO and the Renewables Obligation

The single greatest shortcoming of the Non-Fossil Fuel Obligation was its irregular, episodic nature. This was directly responsible for the absence of a domestic manufacturing industry and, because of the 'done deal' nature of site announcement (with a knock-on effect on planning), the poor rate of deployment for wind projects in particular.

Both of these flaws have been largely overcome by the introduction of the Renewables Obligation and its Scottish equivalent.

Significantly, the predictability of the market that the Obligation provides directly explains the large increase in the number of applicants on those that were anticipated in the so-called 'first round' of offshore sites. This is encouraging proof that, given certain and predictable conditions, the market is most likely to respond positively.

Current obstacles to development

"It is not major technical obstacles that stand to restrict the deployment of wind. The barriers that remain are institutional and directly within Government influence".

Adapted from our submission into the preliminary REAB sub-committee.

- *Aggressive policing of the obligation (i.e. lifting the profile of the Obligation if the market does not respond as expected) may be required.*
- *Further support for 'deeper water' offshore wind in the form of capital grants may be needed.*
- *Intervention on grid issues may become necessary.*
- *The predicted 200+MW growth in installed wind capacity in 2002 has been revised down to 95MW, almost entirely because of problems encountered in securing grid connections.*
- *Overcoming planning issues will require clear implementation of cross-departmental information programmes for authorities, both for officials and for elected representatives.*
- *Skills shortages are likely to increase.*
- *Closer links with universities, etc in providing graduates with applied skills for development and related engineering and other support skills will help to reduce any short-fall.*
- *Technology transfer from the existing oil and gas sector will be necessary and more influence needs to be exerted in these sectors, through for example, the PILOT programme.*
- *Despite the ongoing investigations, we assert that unfounded concerns about the impact of wind farms on both civil and military aviation interests must be overcome at the highest level if we are not to discourage investment in site investigation.*

The following subject headings are not ranked and many are inter-linked. However, the more of these issues that are resolved, the greater the level of development likely to be achieved.

Planning

Scotland is widely held to be an example of successful renewable energy policy implementation. This is, in our view, a direct consequence of a clear vision, reinforced with strong central Government guidance and recognition of how economic opportunity converts into direct community benefit.

The opposite appears to be the case in Wales.

In England, the role of the regions is not yet clear and performance is accordingly patchy. We support the approach of regional targets which could give greater flexibility in (and therefore support to) sub-regional location of projects. We commend the approach taken in our extensively researched Wind Energy – a guide for planners (www.bwea.com/planning)

To illustrate this, the numbers of onshore MW of wind *consented* (excluding section 36 applications) *in* 2002 are

Scotland	32
Wales	9.35 (a further 32.45 won after lengthy appeals)
England	80.85 (a further 10 won on appeal)

We believe that there is, therefore, a distinct primary role for central Government to play in the provision of information to both regional and local politicians and to officials at all levels of Government.

This would include revision of PPG22, along similar lines to NPPG6 as this is likely to prove helpful in providing contemporary information and emphasis to planning officers and others.

There is even arguably a need for 'energy planning' and this is an opportunity for ODPM and DTI to work closely together in achieving distributed generation.

Aviation

Guidance such as that being produced by the Aviation Working Group is helpful. However, clear and unambiguous leadership (and intervention) on the need to reconcile aviation and energy interests is critical to prevent a significant underperformance in development.

Promotion

There is without doubt a role for Government in explaining to the public why the basis of generation needs to change and why encouraging the understanding and appreciation of the role of renewables is necessary. Whatever the industry publishes (no matter how legitimate) it is at risk of being dismissed as propaganda. Similar activities to the "*Are you doing your bit?*" campaign will be of enormous value in helping people understand.

Grid

Issues related to access to the grid have caused a significant shortfall in construction this year. Evidence is emerging that not all DNOs behave similarly and that pricing is inconsistent and in many cases excessive.

We believe that connection should be on a nationally-managed 'shallow' basis.

There is a legitimate question to be begged of the role of Government in both influencing the direction of, and financial support for, grid provision. Entirely privately funded connection activity may not be in the best interests of either the consumer or in making growing not just wind, but other technologies, too. We recommend that the Distributed Generation Working Group's recommendations are promptly introduced.

The transmission system was designed for centralized generation and a culture shift needs to occur to ensure that the need to adapt as it is renewed suits more distributed generation.

Intermittency

This risk is popularly over-stated, typically in the form that "intermittency must be compensated by output from other generating plant". This is incorrect. It is only the *additional* uncertainty that needs to be compensated and this is a fraction of the values expressed. Numerous studies of the UK and Irish electricity networks (including those issued by the National Grid Company) have demonstrated that significant amounts of wind energy could be absorbed without excessive cost. Information from the grid operator in western Denmark (which has to pay market rates for balancing services) suggests that their current wind capacity costs less than 0.2p/kWh to balance.

It is interesting to note that the grid operator for eastern Denmark, in their latest Annual Report, anticipates that Danish offshore wind might contribute "firm capacity", i.e. *replace* conventional plant.

Moreover, no power source is 100% reliable. For example, the current problems at Dungeness and Torness highlight the vulnerability of even so-called 'base-load' plant. It is highly improbable that the equivalent loss of generation would occur in any configuration of wind, especially over such a sustained period.

Finance

An abiding concern remains about the financial security of investing in projects – the Obligation is seen as a good market instrument, NETA not so. Generally, longer-term predictability leads to generating plant of whatever type being built. Predictability and certainty are key.

Insurance remains an ill-defined and hence, expensive issue for offshore wind.

Enabling business rates to be of direct local benefit would considerably improve planning success rates as direct local benefit would be seen by consenting authorities. This is common practice in many countries.

Regulation

Further reassurance about the threat of non-UK green benefits diluting ROC value would be welcomed.

Impact of NETA

NETA causes additional costs on generators, most significantly on smaller independent projects. Continuing progress towards reducing this exposure is necessary to ensure that a range of projects and owners is maintained.

The inherent disadvantage in the balancing and settlement code, essentially 'punishing' intermittent generators, is at odds with the policy of increasing renewable capacity.

The impact is greater on smaller generators, especially those operating at community scale or, for example, farmers diversifying with a wind turbine.

Further adjustments are required to remove the additional cost on generators that the trading environment causes. NETA artificially increases the cost of renewable energy, a perception unhelpful in educating public attitudes to the necessary change in the generation mix.

R&D

UK state support for R&D in onshore wind has largely ceased. This is a mis-judged decision. Ongoing R&D is recognised as good business practice in order to both optimise technology and to drive costs down. In Denmark, where the majority of wind technology has (so far) originated from continues to have a thriving research community which continuously improves the performance of turbines and related technologies. Furthermore, an active research presence in Universities and research institutes ensures that there is a steady stream of students equipped with up-to-date knowledge - these graduates will be a vital input into a rapidly growing industry. Indeed, without a supply of skilled personnel there is a real risk that the ability of industry to expand in the future will be hampered. Following on from this (and linked to

'Promotion'), 'joined up thinking' and promotion of wind energy opportunities to UK companies that can be a part of a greater wind energy supply chain also needs to occur. Without such an integrated approach, jobs through industrial advancement and R & D are going to be more difficult.

A high-level R&D-sharing initiative to enable UK companies to exploit the market could usefully be initiated by Government.

Without wishing to attempt an exhaustive list of areas that might usefully be further explored, there are opportunities for research in monitoring both onshore and offshore wind farms; technical enhancements to enable optimal integration with supply/demand mechanisms including NETA amelioration and the trading of green certificates; radar; electro-magnetic interference; technologies to optimize low wind speed areas; weather-related studies; the transfer of synergistic technologies and developments from existing UK industries such as shipping, oil & gas, cabling, aggregates and of course, onshore wind; as well as investment in novel deployment technologies such as new classes of ships and dirigibles.

A wide-reaching industry forum (which BWEA would be pleased to assist in organising) to take soundings from the wind and related technologies would be a helpful activity.

Offshore

The prospects for offshore are zero without a swiftly implemented 'future offshore' process and consenting regime. Until such time as these are in place, there will be no further offshore development.

We believe that it will be possible to announce these next sites as early as March 2003, if a promptly executed timetable is announced in October 2002. The industry is actively committed to working with Government to achieve a productive process that enables offshore renewables development and recognises the needs of strategic environmental assessment.

It is too early to be certain that existing capital grant monies will be sufficient to ensure that the 'first round' projects are constructed, but it is highly likely that additional capital grants will be necessary in order to build in deeper water (e.g. >20m). Enhanced capital allowances will improve project economics and should lead to incremental falls in costs. This effect will be further accelerated by the announcement of the 20% Obligation.

The Renewables Obligation

At the heart of continuing growth in wind energy will be both a) the rigorous monitoring and active policing of the operation of the Obligation, to ensure that it remains a "seller's market" and b) that the Obligation is extended to provide the primary support for a simultaneous announcement of a 20% target for 2020.

A 20% Obligation would send an unambiguous signal to suppliers, market-makers, investors, planners and developers that a sea-change in the electricity supply mix is required. A higher target will also improve certainty in ROC values and allow for longer PPAs. Longer-term contracts are especially valuable for very small independent generators. If such security is not available, there will be a natural gravitation to fewer, larger entities if not projects *per se*.

At around this level of penetration (i.e. 20%), wind (and possibly other renewables) will have become 'normalised' and achievable at lowest possible prices. Renewables will become the 'generating plants of choice' for utilities.

We are deeply concerned by proposals to move towards an emissions trading scheme as the preferred route to support renewables. Replacing a clearly understood obligation with such a tool will cause the early growth in renewables to founder.

We are advised by our members that these factors will make the UK a less attractive location in which to establish manufacturing as, compared to those of near neighbours, the market will be less predictable. Projects will, for similar reasons, be less bankable.

Post-Johannesburg, the need to 'lead from home' in the deployment of affordable and scaleable renewable technology is all the more important. If we succeed in developing smaller, distributed networks, we are in a strong position to offer such technological solutions in markets that will remain both unable to afford large-scale systems, but in which an appetite for electricity remains.

Economic benefits

It is a myth that growth in wind energy in the UK leads only to imports. Predictable growth and a reasonably certain market has seen the first of several expected manufacturing facilities to be established in the UK. This is entirely consistent with experience in other countries, including Spain, for example.

The global demand for turbines and their components is a clear opportunity for UK companies. The skills of UK developers are already being deployed in other territories, notably the United States.

In this, and other policy-related areas, the role of *Renewables UK* is potentially significant. A strong Government-backed resource to facilitate domestic manufacturing and supply chain before export markets are pursued is needed. In the course of its operation, it will unavoidably identify institutional and policy issues which will need to be addressed for satisfactory progress to be made. The ability to bring influence to bear on both the general and on specific projects will be a welcome boost to the industry, especially where it is working in partnership with trade associations.

Other technologies

In particular, the prospects for wave and tidal energy are linked with the success of offshore wind. Many of the licensing, consenting and grid-related issues are identical. Several companies are increasingly involved in exploring co-existing technology projects.

Onshore, the resolution of planning, grid, NETA and other issues will also enable other technologies to mature as far as is possible under the Obligation.

The sustainable, 'zero carbon' wind resource is available in enormous quantities to the UK at demonstrably low costs. Wind energy can be rapidly deployed and decommissioning is swift, inexpensive and permanent.

Demand for electricity is increasing faster than originally factored. This has caused renewables to appear to be making a declining contribution to UK supply. Manifestly, this is nonsense as capacity has increased significantly. Energy efficiency is therefore of critical importance in both moderating demand and enabling the achievement of the 2010 target and to ensure the lowest cost to the consumer of renewable energy.

Summary

20% of UK electricity demand can be met by renewable energy if attention is applied in three key areas.

1 Extending the Obligation to 20%
2 Realistic pricing at all levels
3 Clarity on planning objectives

However, a 20% target should not be seen as the maximum contribution achievable from renewables. The contribution from wind energy alone could be considerably greater. However, a 20% target will take wind energy, in particular, to a point where in considering new build generating capacity, renewables and wind energy will become the first choice of private investors.

Further information and clarification on any wind-related matter is available from the Association. We also commend to the review team the submission made by the Scottish Renewables Forum.

Yours sincerely

Nick Goodall
Chief Executive

Appendix: Membership of BWEA at 13th September 2002

Sponsoring
Amec Wind
Bonus Energy A/S
GE Wind Energy
National Wind Power Ltd
Powergen Renewables
Renewable Energy Systems Ltd
ScottishPower
Shell International Renewables Ltd
TXU Europe

Company
ABB New Ventures GmbH
AEA Technology Environment
Aegis Rubber Engineering
Airtricity Development Ltd
Alstom T & D Ltd
ATCO Power Generation Ltd
B9 Energy (O&M) Ltd
Babtie Group Limited
Bond Pearce Solicitors
Bouygues Offshore
British Energy plc
Brodies W.S., Solicitors
Clarke Energy Ltd
Clean Energy Company Limited
Conoco Global Power U.K. Ltd
Corus
CTC Marine Projects
D.N.V.Consulting
Dowding & Mills Engineering Services
Econnect Ltd
Ecowind
Edison Mission Energy Limited
Edmund Nuttall Limited
ELSAM A/S
Energia Hidroelectrica de Navarra SA
Energiekontor (AG)
ENERTRAG UK Ltd
Entec UK Ltd
Entergy Wholesale Operations
Ernst & Young
Force 9 energy Ltd
Fortis Bank
Fugro Limited
Garrad Hassan & Partners Ltd
Global Marine Systems Ltd - Energy Services
GREP A/S
Halliburton KBR
Hyder Consulting Limited
Hydro Soil Services
Ingenco Ltd
Investec Bank (UK) Limited
J P Kenny
John Brown Hydrocarbons Ltd
John Mowlem & Company plc
Keliston Engineering Ltd
Kier Construction Limited
London Power Company
MacRoberts Solicitors
Masons
Mayflower Corporation plc
McCarthy Tetrault
Met Office
Miller Insurance Group
Morgan Cole
Nabarro Nathanson
NaREC
National Grid Company
Natural Power Consultants Ltd
NEG Micon UK Ltd
Nordex UK Ltd
Norton Rose
Nsure Renewables
Offshore Energy Resources Limited
Pirelli Cables Ltd
QinetiQ Ltd
R.D.C. Ltd
Renewable Solutions Ltd
REpower Systems AG
RJ McLeod (Contractors) Ltd
Royal & SunAlliance
Schneider Electric
Scottish & Southern Energy plc
Seacore Ltd
SLP Energy Ltd
Sonsub Limited
SP Dataserve Ltd
Tomen Power Corporation UK Ltd
Total Energie Developpement S.A.
Tractebel Energy Engineering
Trinity House
Triodos Bank
United Utilities Green Energy
Vattenfall
Vestas - Danish Wind Technology A/S
Warwick Energy Limited
Wind Prospect Ltd
Windelectric Ltd
Windforce Energy Development Ltd
Windjen Power Limited
Wragge & Co
Yorkshire Windpower Ltd
Your Energy Ltd

Correspondent
A2Sea A/S
ABP mer
AEI Cables Ltd
Aeon Wind Power Limited
Agrilek Limited
Allen & Overy
All-Energy Opportunities
Ambient Energy Ltd
Andaray Engineering Ltd

Anglesey Wind & Energy Ltd
Baywind Energy Co-operative Ltd
Bendalls Engineering
Bosch Rexroth Ltd
Brooks Ltd, Compact Orbital Gears
Brown McFarlane Ltd
Cable Installation Management Ltd
Cambrian Engineering (Cymru) Ltd
Casella Stanger Ltd
Charles W. Taylor & Sons Ltd
Chris Blandford Associates
CNS Subsea Ltd
Collett Transport Ltd
Cornwall Light and Power Co Ltd
Coupe Foundry Ltd
Cumbria Windfarms Ltd
Cwmni Gwynt Teg Cyf
Dansteel Ltd
DM Energy
DP Energy Ltd
DSB Offshore Limited
Dulas Ltd
E4environment Limited
EA Gibson Shipbrokers Ltd
Eclipse Energy
Eco Energy UK PVT Ltd
EcoGen Ltd
eeegr, East of England Energy Group
Elequip Projects Limited
EMU Ltd
Energy for Sustainable Development
Energy Workshop tbc
Enskilda Securities
Enviros Aspinwall
ESB Power Generation, Renewables
Fairfield Mabey Ltd
Farm Energy Ltd
GPA Partnership
GreenPower
Halcrow Group Ltd
Hammond Suddards Edge
Heath Lambert Group
Hedley Purvis
HR Wallingford
Hydrosearch
Impax Capital Corporation
Inframan Ltd
IPA Energy Consulting
IPSA Power Ltd
IT Power Ltd
Landscape Design Associates
Marlec Engineering Co Ltd
Martineau Johnson
McGrigor Donald
Mersey Docks & Harbour Company
Metoc plc
North British Wind Power Limited
North Energy Associates Ltd
Oceantecs Limited
Orga Suisse S.a.r.l
Osborne Clarke
PMSS Ltd
Posford Haskoning Ltd
Proven Engineering Products Ltd
Qufab Construction
Renew North
Renewables North West
ReSoft Ltd
RMB Engineering Services
RSK Environment Limited
Ruston Wheb
Scott Wilson Oceans
Seabed Scour Control Systems Ltd
Stephenson Halliday
Stewart Group Limited
Strategic Alliance Services
Tetro Energy Limited
Thales Geosolutions
Theodore Goddard
Titan Environmental Surveys Ltd
Titan Maritime (UK) Ltd
TLT Solicitors
TMEnvironmental Power
Toby Manning Limited
Underwater Security Consultants Ltd
unit[e]
Vector Instruments
Wavegen
West Coast Energy Ltd
Western Windpower
Wichita Co. Ltd
Wind Hydrogen Limited
WindGeneration Ltd
WKN Offshore Tech. GmbH
Wrigleys Solicitors

Academic

Centre for Economic Renewable Power Delivery
Centre for Sustainable Energy
CLRC, Rutherford Appleton Laboratory
CREST
EcoTech Charitable Trust
Heriot-Watt University
National Energy Foundation
Open University
UMIST
University of Durham
University of the West of England