Environment and Sustainability Committee

Inquiry into Energy Policy and Planning in Wales
EPP 99 – Jill Kibble

To the Environment and Sustainability Committee of the Welsh Government

May I respectfully draw your attention to a number of issues appertaining to on-shore wind energy. Although referring to the specifics of the Mid Wales situation as that with which I am most familiar, the points made are relevant to all on-shore wind development and apply equally to areas such as Brechfa, Cloggaenog and the South Wales valleys faced with a continuous array of turbines from Swansea to Pontypridd.

The facts are unequivocal: on-shore wind is massively subsidised by the consumer, has limited capacity to deliver renewable targets and environmental and economic disadvantages far outweigh any minor benefit.[1] Furthermore, any major increase in wind in the energy mix will destabilise the Grid and raise energy costs to an unsupportable level for domestic consumers and industry. Making UK manufacturing globally uncompetitive will have serious and enduring socio-economic consequences

These points are echoed repeatedly by those with relevant professional expertise:

'*The pretence that our electricity can in future be supplied from renewables, mainly wind and marine, has gone on too long. These matters are not a question of opinion; they are answerable to the laws of physics and are readily analysed using normal engineering methods. All of these energy sources are of very low concentrations and intermittent; they are and will remain inherently expensive and no amount of development will have more than a marginal effect on this conclusion*.' ***C.Gibson (former Network Director, National Grid), Sir Donald Miller (former Chairman SPEN) et al***[2]

'*EIUG accepts there is a need for more renewables within the UK's energy mix, but strongly rejects DECC's less than credible assertion that around 30% of electricity generation will be from renewable sources by 2020, primarily from unreliable and heavily subsidy-dependent wind, both on grounds of gross impracticality and cost.' **Energy Intensive Users' Group***[3]

To briefly consider some impacts on Wales from pursuing industrial scale on-shore wind:

1. **Actual output** Wind speeds and consistency are modest in Wales and the load factor for wind turbines in Wales is around 20% (19% in Mid Wales last year)[4]. Thus, for example, **800 MW installed capacity will actually produce a paltry 160MW** (9% of the output of the new Pembroke gas fired station).
Can we seriously be considering 1 500 additional turbines sprawled over spectacular upland Wales, transmission infrastructure and the previously unseen levels of economic disruption for this amount of energy [5] ?

2. **Consumer subsidy** Only the wind industry secures subsidies 2-3 times the cost of the energy produced. The industry claims production costs are now equivalent to other sources but continue to claim ROCs (Renewable Obligation Certificates) and, although via a loophole, CCL (Climate Change Levy) making wind the most expensive energy source. If it is indeed cost effective then all subsidies should be removed. Of course, no one would invest in something producing so little energy if the only return came from payments for energy; these are subsidy, not wind, farms.

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[1] *Many scientific and economic studies support this statement. For example see Renewable Energy Foundation website and publications (John Constable) as well as Select Committee proceedings (UK House of Commons and Lords) and technical journals*
[2] *Open letter to The Scotsman April 27th 2011 Gibson and Millar and Profs. K. Ledingham, C. McInnes, A. Trewavas & J. Ponton*
[3] *EIUG response to NPPS consultation Feb 2010*
[4] *Digest of UK Energy Statistics 2010. Across the whole UK wind provided 2.7% of all electricity*
[5] *WAG Energy Policy Statement – Low Carbon Futures 2010*

When wind speeds are good, more energy may be produced across all power plant than is required and wind farms are being given large Constraint Payments, worth more than the value of the energy, to switch turbines off.

3. **Energy requirements.** The Grid requires 'base load' and 'load following' energy sources. Wind cannot provide base load as it is intermittent . Wind cannot provide load following as it is unpredictable and unable to respond to demand. Wind is incapable of becoming a major Grid component because it cannot supply the type of load required.

4. **Intermittency**: Energy is only produced when wind speeds exceed 9mph. Lengthy periods below this level are common and wind speeds in Wales are modest in UK terms.[6] Turbines work optimally at around 23mph but in high winds have to be switched off.
Weather systems are transcontinental. Periods of high pressure occur right across the UK and mainland Europe when wind energy can be virtually zero.[7] Wind is not going to provide any degree of energy security.
Higher proportions of wind in the energy mix will increase our dependence on imports such as nuclear from France. 'Distress purchase' will, obviously, be at the highest price. Denmark is in this very dilemma, forced to buy Norwegian HEP due to an over investment in wind. Norway then has to be paid to take excess Danish wind energy in times of surplus. Large scale energy storage is, as yet, technologically remote.

5. Back up. More wind farms = more back up power stations to compensate for intermittency. This spinning reserve (usually Open Cycle Gas) is expensive, inefficient and more polluting than conventional power stations. [8]

6. **Employment:** Wind farms do not create local jobs. Recent European research has shown a temporary increase in employment during large windfarm construction which, having destabilised the local economy, rapidly falls away to at best 1 or 2 jobs per 70 turbines[9] On balance no benefit accrued and some countries, such as the UK and Spain, are experiencing a net loss of jobs. Every new job created required £48K in subsidy.[10]
Ten years of predicted transport chaos in Mid Wales with windfarm and infrastructure construction and clear felling would result in relocation of businesses from the area as well as a significant decline in the important tourism sector (11%). The longer term effect will be to destroy the tranquillity, history and beauty that visitors flock to enjoy. Another dimension is recruitment of senior personnel to a degraded area where quality of life and environment were major draws, compensating for lower pay.

7. **Fuel Poverty**. A rapidly increasing issue with some 5 million households (21%)[11] already in fuel poverty in the UK. Rural households in Wales are disproportionately represented and there are major problems for South Wales valley communities. Further wind development inexorably means increased subsidy costs passed to the consumer.[12]
This is exacerbated by constraint payments amounting to some £300 000 per day[13], around 20 times the actual price paid for the electricity, and by subsidies for expensive but essential back up power. The cost of investing in renewable energy in Britain is now seen as £105 billion pounds higher than building the same capacity using gas-fired power plants[14]

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[6] *Renewable Energy Foundation. John Constable presentation to BMC 2011*
[7] *Daily monitoring figures are available from the NG website e.g. winter 2010/11 in the 3 coldest weeks wind contributes 0.6% of UK energy requirements,*
[8] Prof M Lawton (Government Scientist) conference presentation Cheshire 2011
[9] *The developers of Tow Law, the largest windfarm in England, were asked now many permanent jobs had been created. Their honest and unequivocal answer: 'None' personal communication*
National Grid were similarly asked how many permanent jobs the Transformer hub in Mid Wales (Abermule or Cefn Coch) would provide. Answer: 2 remote monitoring jobs based in Shrewsbury
[10] *European Commission report into jobs and the wind industry 2010*
REF (2010) John Constable
[11] *UK Poverty 2011*
[12] *Professor David King (former Chief Scientific Officer to UK government 2008*
[13] *Prof M Lawton (Government Scientist) op cit*
[14] *Professor Gordon Hughes University of Edinburgh 2011 'The Myth of Green Jobs'*

(equivalent to nearly 10 % of overall UK business investment in the next 10 years). Highly priced energy will damage manufacturing industry leading to job losses further impacting on fuel poverty.[15] Where is the Walsh Government's socio-economic cost benefit analysis of pursuing this strategy ?

8. **Cumulative Impacts**. To meet the current targets Wales will require some 1 000 more turbines. The cumulative visual impact of turbines, access tracks scaring the hillsides, a spider's web of transmission lines strung on steel pylons and a massive transformer station (or two) will devastate Mid Wales and impact on everyday life to an unimaginable level .[16] Powys CC warned of the dangers of excluding cumulative impact from TAN8[17]

9. **Carbon reduction targets**. Harvesting wind energy has a high carbon footprint due to:

- distant manufacture and transportation of parts and materials to isolated areas. On-going maintenance, such as replacement of gear boxes every 2-3 years[18];
- the requirement for less efficient and more polluting spinning reserve fossil fuel back up;
- peat and dark soil rich upland areas. Access tracks, kms of cable trench, substations, concrete turbine and crane (requiring foundations the size of 5 Olympic swimming pools for each turbine) are left in perpetuity permanently destroying carbon sink soils. Recent research[19] has indicated that in a year the dieback of peat is over 10 times the original area affected. WAG stresses it is 'important that carbon sinks are retained … it is estimated Welsh peat soils contain around 400MT of carbon'.[20]
- forestry land industrialisation also directly contravenes unequivocal WAG policy[21]: 'strategy for woodland and trees to maximise the carbon storage capacity by increasing planting rate from 500Ha p.a. to 5 000Ha p.a.' Since 60 % of all SSAs is afforested land the scale of partial or clear felling is hardly commensurate with this environmentally friendly policy.

We need responsible and sustainable land management not industrialisation.

10. Flood Risk large scale intrusions of hard surfaces and concrete will affect soil absorption and hydrology. Watercourses will be altered as well as polluted. The level of increased flood risk must be properly assessed. Given the 'projected winter average rainfall increase in Wales is 7% by 2020'[22], we cannot be sanguine on this matter.

11. Conflict of interest. Designated SSAs in S. Wales communities and Dyfnant Forest have received billions of euros regeneration and social funding. The proposed industrialisation is in direct conflict with the purpose of such grants for environmental amelioration, recreation and employment opportunities. The European Court of Auditors would be justified in clawing back such monies where Government policy is directly contravening stated purpose.

The need for review of TAN8: At the time TAN8 was written (2004/5) much of the above was not known. The situation has changed markedly and it is imperative that the TAN is reviewed and, pending which, a moratorium on all further development is implemented.

There were a number of assumptions made at the time that are now patently untenable:

- That wind energy would become an effective technology. A load factor of 30%+ was presumed whereas in operation this is around 20%. To put this into context, modern power generation plant operates with a load factor around 85-90%

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[15] *Sir John Banham (former CEO of the CBI) statement 2011*
[16] *Capita Symonds reports for Powys CC and WAG 2007 and for Powys CC 2010*
[17] *Powys CC response to draft TAN8 consultation 2004*
[18] *Vesta's statement in response to NAWAG 2011:*
[19] *'The Destruction of Ireland's Protected Raised Peat Bogs' Friends of the Irish Environment 2011*
[20] *The WAG 'A Low Carbon Revolution – the WAG Energy Policy Statement' 2010*
[21] *The WAG 'A Low Carbon Revolution – the WAG Energy Policy Statement' 2010*
[22] *A Low Carbon Revolution- the WAG Energy policy Statement' 2010*

- No additional transmission infrastructure would be required other than a 'strengthening' of the local area network in Mid Wales as in ManWeb's submission to OFGEM in 2002 i.e. no transformer hub or steel pylon towers.

- Turbines would not double in height to be the 150m moving monoliths that now threaten the Welsh uplands. Visual impact and transport problems could not be taken into consideration.

- That TAN8 would limit the proliferation of windfarms. The TAN identifies seven upland zones with virtually all planning constraints removed **plus** a 5km 'buffer' zone for further windfarm development **plus** an exhortation to LAs to identify areas outside SSAs for windfarms up to 25MW (scarcely small at 12- 20 turbines) **plus** a presumption in favour of further development of existing windfarms, several of which are outside SSAs. WAG decided on a concentration approach to provide economies of scale for the associated transmission infrastructure[23] not to limit windfarms.

- Even the Garrad Hassan report considered that a target of 700MW was unachievable with normal planning constraints applied[24]

- Transport to upland areas would not be a problem. Narrow, single track, winding, unstable roads, bridges, houses adjacent to the roadway will create major problems and give rise to disproportionate infrastructure 'improvements' costs and disruption as identified in a subsequent detailed report by Capita Symonds.[25]

- Landscape, peat, hydrology, ecology and historic landscape could all be left to individual LAs to carry out as 'refinement exercises[26]. The refinements [27] resulted in a reduction in SSA areas of some 50% but as a result of appeal decisions and other challenges they were not implemented so we are left with the original areas where virtually no planning considerations are applied.

- Windfarms would generate employment. The only real jobs are in manufacturing components and Wales does not have this capacity. Most developers are from outside the UK, where the subsidies go.

- Turbines would have no impact on nearby dwellings. Noise is now known to be a major problem and has even led to people abandoning their homes[28]. Vibration and amplitude modulation are also increasingly recognised as problems and reports of resulting ill health are amassing. Arup set an arbitrary and low separation of 500m for turbines from dwellings. In most of Europe this is at least 1km and a motion currently going through the House of Lords[29]

- Any amount of wind energy could be accepted by the Grid. In practice unpredictability and variability means that a mix including in excess of 10% would totally destabilise the Grid.[30]

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[23] Arup final report 2004
[24] Garrad Hassan report for the WAG 2004/05
[25] Capita Symonds reports op cit
[26] TAN8 (2005) Annexe D
[27] For example in Powys CC Review Exercise 2008 Arup (S. Power) and J. White
[28] 60% of existing windfarms have generated serious noise complaints to Councils. cf current High Court case Davis & Davis v developer (decision pending)
[29] *Lord Daffyd Reay's Separation Bill proposes a sliding scale of up to 3km separation depending on height of turbine (Second Reading June 2011)*
[30] *cf ref 2*

- Higher levels of developer interest than predicted because of the 'free for all' planning regime in SSAs and the level of subsidies.

Additionally:

- Other renewable technologies mentioned in TAN8 have barely been developed. Biomass and anaerobic digesters can provide up to 1 GW of continuous power and can be sited appropriately for transport and the grid. Co-firing is cheaper and reliable and the technology is available. Advances are being made, clean gas and low energy nuclear reaction (no nuclear waste) offer real promise. Wind energy with it's 20-25% load factor will only ever be tinkering at the edges. It offers no hope of energy security or noticeable impact on carbon reduction but with unimaginable impact on Wales.

- The limited TAN8 consultation produced 1 700 responses. Those from the wind industry resulted in changes in their favour but 95% of the respondents raised serious concerns. All of these were ignored in the final drafting including legitimate concerns raised by Powys CC and their request to specifically remove Nant y Moch from the SSAs. Given the level of potential impact review of TAN8 must include a thorough, transparent and meaningful consultation including and listening to every affected community, engineers and scientists not only the wind industry.

- We have the opportunity to learn from the experiences of other countries who have already invested heavily in on-shore wind before following a policy likely to lead to environmental and economic disaster and civil unrest. Denmark, Holland and Canada have halted their programmes and France has removed subsidies from on-shore wind. Interestingly, the carbon output of Denmark and Germany has continued to rise steadily over the past 10 years although that of the UK has fallen slightly.

In Conclusion : Continuing to pursue an energy 'policy' thinly disguised as Planning Advice Note TAN8, will have serious and enduring impact on the economy of Wales, the well being of her people, the delicate ecological balance of the uplands and the wanton destruction of beautiful, unspoilt wild places. UK renewable targets are unrealistic and undeliverable and all have been missed to date. Welsh targets are inexplicably higher, exceeding even the energy needs of the population

In Montgomeryshire alone the impact of the WG defined output maxima and associated infrastructure will affect over 40% of the county. Mid Wales already has 250 turbines contributing to targets and there is no further capacity in the Local Area Network. Further development beyond microgeneration in a local context is unsustainable.

Overall, we seem to have lost the plot. The **only green unit is no unit. I**t is crucial we refocus attention on energy use reduction as the only permanent and achievable solution. An urgent redirection of funds would have long term impact and create real employment in Wales. For example, every home and building, old and new, should be insulated to the highest standard and community level schemes, such as we are already seeing in some areas, actively encouraged.

Calling for Westminster to devolve energy policy is a red herring, Welsh Planning policy has to be taken into consideration and local Councils are statutory consultees when major Welsh infrastructure projects are assessed. Only when the Welsh people are assured that the overriding interests of the population and environment are properly balanced against the limited effectiveness of on-shore wind, can a call for power devolution be supported. The failure to comprehensively review TAN8 and implement a balanced multi-renewables approach appropriate to the location does not inspire confidence that WG legislation would give Wales a better future than under the draft UK government NPPS.

Thank you for the opportunity to make these points. it is encouraging that the Environment and Sustainability Committee is taking an early opportunity to investigate these issues in depth. I am happy to provide any further clarification or references if helpful.

Yours faithfully

Jill Kibble (Mrs)