

## Environment and Sustainability Committee

### Inquiry into Energy Policy and Planning in Wales

EPP 18 – Oili Hedman

5<sup>th</sup> September 2011

In July 2011, there were 3,344 wind turbines operating in the UK. Their combined capacity (*not* actual output), is 5.5 gigawatts (GW) of electricity. Another 1,161 wind turbines are under construction, 1,966 have planning permission and 3,252 are awaiting approval from planning committees.

The EU *Renewable Energy Directive*, signed in 2009, binds the UK to generate 15 percent of UK energy needs by renewable means within nine years and to increase UK renewable electricity production from 7.4 percent to 30 percent. To achieve this, the current capacity of 5.5GW of wind energy must increase to a mind boggling 33GW.

Since wind is unpredictable, is this turbine race the correct answer? Are they doing more damage than good?

The current First Minister, the Rt Hon. Carwyn Jones, AM/AC, stated in July 2011, that the current Welsh Government is "strengthening environmental protection and putting sustainable development and planning on a sounder footing." This might be hard to swallow since his idea of "strengthening environmental protection" is giving access to wind farm developers to create heavy access roads snaking up to and from control stations to electricity substations via a corridor of double metal pylons supporting a network of cables the size of my wrist. In June 2011, the Rt Hon. Carwyn Jones, the First Minister of all of Wales, sided with us, declaring that his government "would not support the construction of large pylons in mid-Wales". That promise did not take long to break.

Each turbine requires concrete (60 lorry-loads) and 28 tonnes of steel for its foundation. If this wind turbine race carries on, the current First Minister and his (also current) Minister for Environment and Sustainable Development, the Rt Hon. John Griffiths, AM/AC, are concreting over mid-Wales bit-by-bit since, if we take the current Welsh Government's environmental policy to its final conclusion, what is now absorbent peat, bog and marsh lands will be replaced by non-absorbent concrete. Where is the rain water going to go?

We will all end up with a landscape imposed upon by two politicians: the previous Minister for Environment and Sustainable Development, Carwyn Jones, and his replacement, John Griffiths. This intrusive industrial project of theirs is insane and beyond comprehension; a coal-fired power station would be far less horrific and uranium powered one less shocking. None of a wind turbine's pre- and post production of electricity is renewable, and definitely not sustainable. It is bewildering why wind turbines considered "green" when they eat into natural landscapes, cut rare birds into bits and require huge amounts of concrete and steel. And all this for a miserably small amount of electricity produced in an unreliable and intermittent way.

The raw materials for wind turbines, which depend on magnets made of neodymium alloys imported from Inner Mongolia, are mined in an especially dirty process involving boiling in acid that produces toxic and slightly radioactive waste. To put it simply: wind turbines are more dependent on foreign suppliers than the oil industry, which the First Minister so criticises for their price rises. If we had those raw materials here, would the First Minister approve that sort of mining to take place in Wales?

If the idea of lakes of boiled acid and chopped-up Norwegian white-tailed eagles and Californian golden eagles feels a little unpleasant, at least some of the wind farm developers bury their connecting cables. Here in mid-Wales, however, the Scottish Power Energy Networks is going to carry the variable, to say the least, output of a wind farm along overhead lines because transporting "clean energy" using these dirty mega-pylons is cheaper. Nobody in their right minds can possibly defend this filthy aspect of wind farms.

The National Grid, which in July 2011 announced a 15 percent increase in its profits to £3,600m (that is: 3.6 billion pound Sterling) for financial year 2010/11, insists that it will cost 12 to 17 times more to bury the cables than to run them through pylons. This cost difference is unreliable and remains

unverified. The estimates the National Grid has been quoting so confidently are nothing but guesses, based on a wet finger in the air: the Institution of Engineering and Technology failed to provide sufficient information for KEMA consultants to complete their calculations. If the First Minister and his current Minister for Environment and Sustainable Development believe the National Grid's cost estimates with no questions asked, perhaps they should relinquish control and look for a different way to earn a living.

The cost difference between over and under-ground cables is about three times as much, which is peanuts to conserve the landscape and our quality of life here in mid-Wales. The National Grid would collect return to its investment within months since cables underground lose less electricity than those hanging over our heads.

It would cost an average of £5.90 per household per year to bury all cables underground and, given the hike in the National Grid's ridiculous profits, I am sure that with a little bit of thought and an awful lot of good will, the cost of building a massive 400-kilovolt (kV) transmission line through one of the most glorious parts of UK in order to connect the wind farms of north-Wales to the grid across mid-Wales and on to consumers in Shropshire and England would easily be absorbed by the very profitable National Grid.

Enough of useless wind farms. Here is what I suggest we do (\*):

## **1 INTRODUCTION**

Upland on-shore wind farms are costly, inefficient and environmentally destructive. By their very nature they are sited in remote areas (of natural beauty) far from existing national grid arteries. Their construction requires huge public subsidy and their proven intermittent operation requires back-up generating facilities of equal capacity. Their only attraction is that they provide short-term opportunities for meeting national commitments under the Kyoto agreement and for the dubious market in carbon trading.

For thirty or forty years we have known that oil reserves are finite, increasingly difficult and expensive to extract and fraught with political uncertainties.

We have also known that existing nuclear power stations are already overdue for closure and decommissioning and that that process in itself poses huge problems in terms of long-life radio-active waste storage. Fukushima, like Three Mile Island and Chernobyl before it, have increased reluctance to either invest in or insure further conventional nuclear capacity.

The answer does not and cannot lie in any big fix new technology but in a mix of alternative forms of power generation. Here are some of them.

## **2 COMBINED HEAT AND POWER**

Coal, oil, gas and nuclear powered generating facilities, many of them situated close to urban areas, use diminishing and increasingly expensive forms of fuel to make steam which drives turbines which, in turn, generate electricity. Those power stations are surrounded by huge cooling towers which then treat the steam as waste and pump it up into the atmosphere.

The technology exists for the deployment of that waste steam to heat the homes and workplaces in the Nordic countries and in Germany. Up to now we have thought the development of community heating facilities to be an unnecessary expense. It has now become imperative.

## **3 FLUIDISED BED COMBUSTION AND SCRUBBING**

Before it was closed down by the Thatcher government, the National Coal Board research centre at Grimethorpe developed fluidised bed combustion technology which both significantly increased the yield for burning coal and, at the same time, decreased pollutant exhausts. The conversion of existing coal-fired power stations to fluidised bed combustion, combined with scrubbing of exhaust gases, could eliminate the problem of acid rain and prolong their active life.

## **4 TIDAL POWER**

When the proposed Severn Barrage was politically rejected thirty years ago it would then have been capable of generating sufficient electricity to power the entire rail network of the United Kingdom. Had the decision been taken thirty years ago, the Severn Barrage would have been up and running by now for fifteen years. In addition, lessons learned from its construction and operation could have been applied to other estuarial opportunities. The present government recently rejected this type of energy development for a second time on the grounds that its lead-time of fifteen years would not help us in meeting our Kyoto obligations.

## **5 WAVE POWER**

In the 1970s the UK held a world lead in the development of economic wave generating technology. But we closed down our research into this invaluable resource and left it to another island nation, Japan, to become world leaders. Investment in wave power generation could provide work for the now largely redundant shipyards of the Clyde and the Tyne and, as well as providing power generating capacity at home, and create a valuable export commodity.

## **6 OFFSHORE WINDPOWER**

As with wave power technology, the UK once held a world lead in wind turbine design and manufacture. We have a wide continental shelf surrounding our islands on which large-scale offshore wind farms could be built. They would provide work for the declining aerospace industry and for the shipyards. Their environmental impact would be minimal as compared with their on-shore variants, they would be sited in areas of more consistent wind and the power generated would be brought ashore by undersea cables. Furthermore, all our existing nuclear power stations have been built in coastal locations and feed into existing national grid arteries. The power from offshore wind farms could be brought ashore to feed into these arteries with minimal environmental impact and at comparatively low cost.

## **7 SOLAR AND DAY-LIGHT**

The miraculous photovoltaic cells do not require blue skies and direct sunlight to function. Even in our own less sun-drenched climate they provide huge opportunities both for small scale domestic power generation and for large scale farms.

The photovoltaic cell converts sunlight to electric current with no moving parts, provides huge opportunities for power generation both at home and abroad. The sun-baked deserts of the world are almost crying out for photovoltaic development. Once again, the continental shelf is the place for large scale photovoltaic solar power generation but, in the short term, almost every building in the land could be retro-fitted with photovoltaic roof panels to make a significant contribution to national power requirements.

## **8 USING LESS**

We have hardly begun to take advantage of building insulation which would dramatically reduce our dependence on heat generation. But, loft insulation, cavity wall filling and double-glazing are not sexy new technologies for which politicians can claim legacy medals but a really determined programme of both retro-fitting and new-build requirements could make a huge contribution to solving the problem that we face.

## **9 NUCLEAR FUSION**

The answer to our power generating requirements cannot come from one big technological fix but nuclear fusion presents that possibility in the long-term future that we hope to secure for our planet. Historically nuclear fusion has been the El Dorado for which we have so far searched unsuccessfully. But to be able to reproduce on Earth the process at the heart of our Sun is the holy grail of large-scale energy generation. We have been bedevilled in the recent past by the false claims of cranks but significant investment in the development of nuclear fusion should be part of the programme that we need to initiate urgently to prevent the lights going out.

## **10 CONCLUSION**

The objection to on-shore upland wind farms is not driven by NIMBYism but by a widespread perception that they are economically inefficient and environmentally destructive. They may appear to provide politicians with a short-term solution to the problem of meeting the obligations to which

they have belatedly signed up but, in the long term, they are nonsense. What we require of our politicians is the vision and commitment to proceed with a coherent combination of viable technologies and it is with this combination in mind that we can confidently say that

### **Other very clever points:**

In her letters to Chris Penfold and me, Joyce Watson makes passing reference to other renewable energy technologies that are supposedly being pursued by the Welsh Government. But she makes no mention of two which would provide a huge number of jobs for local people and which seem a perfect fit with Labour values and objectives:

1       Retro-fitting of all public buildings and council owned properties with loft and cavity wall insulation, and double glazing. Perhaps the current Welsh Government could adopt a policy to encourage individuals to understand the need for energy saving and, in so doing, to encourage the employment of thousands of local people in relatively unsophisticated but vital work. Using less is far more economically viable than generating more. Reducing carbon emissions is our primary objective — not the relentless generation of yet more and more energy.

2       Almost every building in the land is already connected to the National Grid through the existing electricity delivery network and almost every building, particularly large public buildings and commercial premises, have huge roof space which could be fitted with the new generation of photovoltaic cells. Huge numbers of these cells could be manufactured in Wales, providing vast numbers of truly 'green' jobs. This is the technology of the future; photovoltaic cells must be fitted wherever possible and the excess electrical current fed down the existing electricity delivery network into the National Grid. This will not require the erection of huge pylon lines. Another perfect policy for the current Welsh Government, it would seem, yet it warrants no mention in Joyce Watson's letters and precious little emphasis in the Welsh Government's policy documents on meeting EU requirements to reduce carbon emissions.

Labour is missing a huge public relations trick together with a golden opportunity to reverse its reckless and ultimately pointless industrialisation of upland Powys. The current and future generations will quite rightly punish the members of the current government at the ballot box, because, whatever the current First Minister says, TAN8 differs very little from current Westminster Government's energy policy.

Joyce Watson might expect to benefit from towing the party line on this issue but her constituents, current future electorates, would benefit more if she grasps the nettle and seeks to change policy.

Yours sincerely

Oili Hedman

(\*) Adapted from ***There is an alternative***, by Chris Penfold, 23 April 2011, and our correspondence with Joyce Watson, AM/AC.