

By David Clubb



RenewableUK Cymru has a vision: “A sustainable Wales which makes full use of its renewable energy resource”.

This vision matches that of a ‘Zero Carbon Wales’. But what does ‘full use’ of our renewable energy resource mean in practice?

Well, although it’s difficult to predict how our energy systems, economy and social structure will unfold over the coming decades, we know the following:

From a climate change perspective –the most pressing challenge facing humanity – fossil fuels are better off in the ground

Onshore wind creates about ten times as many local jobs as the equivalent-sized gas power station<sup>1</sup>

Onshore wind developments are usually accompanied by significant community benefit funds, which can be strong drivers for local economic activity<sup>2</sup>

In light of the above, the imperative is clear; we need to maximise the development of onshore wind in Wales, subject to sensitivities around protected landscapes, and in line with national energy and planning policy.

The Welsh Government has aspirations for about 2,000MW of onshore wind by 2025. I would like to see these aspirations lifted far higher. Why? Because the

benefits – environmental, economic and social – are in direct proportion to the installed capacity. And as someone who believes that Wales needs sustainable livelihoods, improved upland habitats and thriving local communities – rural as well as urban – I can think of no logical or ethical reason not to exploit our resource to the maximum.

Recently we heard that Denmark hit the 100% mark for electricity produced from wind (albeit momentarily). We know that Scotland aims to produce 100% of its electricity from renewables by 2020; so here’s my suggestion – a Wales that produces a yearly average of 100% of its electricity from wind.

What would this mean in practice?

Well; let’s assume that each turbine is 2.5 MW in size, and has a load factor of 25%. That’s an annual output of about 5.5 GWh per turbine. Wales’ electricity generation in 2011 was about 28,000 GWh. So we’d be talking just over 5,000 turbines.

Natural England<sup>3</sup> has suggested a spacing of 3.6 turbines per km<sup>2</sup>, which means a land requirement of 1,400 km<sup>2</sup>, around 95% of which can still be used for a variety of other purposes. If we assume that half of that is placed offshore, we’re left with a ‘headline’ figure of 700 km<sup>2</sup> on land - only 35 km<sup>2</sup> of which is unusable for other activities.

That’s the land requirement; what about the social and economic aspects?

Onshore wind is responsible for considerable job-creation activity: a huge amount at the front end with construction and installation, but not inconsiderable activity during operation and maintenance.

My initial calculations, based on research<sup>4</sup> from Cardiff Business School and Regeneris, estimate 0.121 jobs/GWh; so producing 28,000 GWh gives you nearly 3,500 sustainable livelihoods. I call them sustainable livelihoods, not just because the sector is a major part of the sustainable economy, but because those jobs are needed over the lifetime of the wind farm, and then probably beyond as new turbines get installed in place of old ones (‘repowering’). These jobs will be long-term, high-quality, and embedded within the communities which host the wind developments.

<sup>1</sup> [www.ynnicymru.org.uk/blog/if-you-want-jobs-vote-for-wind/](http://www.ynnicymru.org.uk/blog/if-you-want-jobs-vote-for-wind/)

<sup>2</sup> e.g. Pen y Cymoedd windfarm, consented 2012, which will have a fund of approximately 1.3m p.a.

<sup>3</sup> [www.naturalengland.org.uk/Images/wind\\_workshop\\_outline\\_tcm6-19370.pdf](http://www.naturalengland.org.uk/Images/wind_workshop_outline_tcm6-19370.pdf)

<sup>4</sup> [www.ynnicymru.org.uk/blog/publications/](http://www.ynnicymru.org.uk/blog/publications/)

An installed capacity of 12,500 MW might attract something in the region of £75m per annum in Community Investment Funds<sup>5</sup> (CIFs), with many of these funds targeted in areas of low economic activity, and able to be matched with Welsh Government or EU funding to maximise the impact. The possibility for innovation and creativity arising from such a large injection of ‘clean’ funds is an incredibly exciting prospect.

Finally, we shouldn’t forget the extremely important contribution to management of upland habitats which can be made through wind farm Habitat Management Plans. As somebody from the conservation sector mentioned to me recently – this is a once-in-a-generation opportunity to drive funding into the management of a traditionally under-managed area, with all the benefits that will bring to habitats and species across the uplands of Wales.

Some opponents of onshore wind decry the ‘industrialisation’ of the landscape; I take a different view. Humanity has an interaction with our environment, and that interaction changes with time and with the different requirements that our needs and understanding provide for us. For previous generations this industrialisation took the form of fossil fuel extraction in the south, and large-scale conifer plantations in the mid and north. For our generation, and probably future ones, that interaction means accepting a new change in the look of the landscape in return for a revolution in electricity generation, and a renewed economic opportunity in the heartlands of rural Wales.

Wind? I’m a big fan.

### About the author:

David is the Director of RenewableUK Cymru, the representative body for renewables in Wales. He has worked in the renewable energy sector for ten years, in a career that has seen him move from Spain to Denmark, via three different parts of the UK. He has a strong interest in economics, communication, and experience in a range of renewable energy technologies, in policy development and project management.

David has a Ph.D. in applied physics.

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<sup>5</sup> The figure of £6,000/MW, offered for the CIF at Pen y Cymoedd, has been used