

From: [Jonathan Dean](#)
To: [NDE](#)
Subject: More feedback
Date: 14 November 2019 01:07:06
Attachments: [Draft NDF consultation feedback - overall renewables strategy v0.2.pdf](#)

I am writing to provide further feedback on the National Development Framework (NDF).

The NDF has a target of achieving 70% of electricity from renewables by 2030. However, as there is no estimate of electricity consumption in 2030 it is impossible to know how much energy this corresponds to, or what generating capacity is required.

The target needs further definition to make it actionable.

The NDF aims to produce all of this renewable energy from onshore wind and solar. My understanding of Planning Policy Wales is that the NDF has to take account of any current National Marine Plan (NMP), which, since November 12th, we now have.

The NMP supports offshore wind, tidal range, tidal stream and wave power, although no target for generation is given. Some, or all, of these are likely to contribute significantly to achieving the 70% target. Possibly so much so that land based generation isn't required.

The renewable energy elements in both the NDF and NMP need to be combined into a single renewables strategy with a timeline to achieve the target.

Buried in an appendix of one of your consultants' reports is a target figure of 9 TWh of power, although this is not quoted in the NDF. It also shows how the 15 Priority Areas can generate 95 TWh from 20% of Welsh land. Ambition is good, but I question whether we really need to generate ten times the energy we need, especially as this figure does not include marine energy from the NMP, or the NDF include any actions to drive up demand

The generation target needs to be set with a grounding in reality in order to be achievable.

I would urge you to consult again and consult widely. There is an enthusiasm for tackling the challenges of climate change and the people of Wales can help develop and deliver a realistic, achievable plan

Many thanks for the opportunity to contribute. Please also see the attached

--

Dr Jonathan F Dean



<https://you.38degrees.org.uk/petitions/anglesey-says-no-to-pylons>

	Draft NDF	NMP	Comments
2018 consumption			91 TWh total energy, 14.9 TWh electricity of which 7.4 TWh is from renewables (50%)
2030 target	70% of electricity from renewables		<p>Setting a target is the right thing to do, but as neither the NDF or NMP give figures for the absolute level of generation, this is somewhat meaningless as it gives no indication as to how much generating capacity is required. Particularly relevant as the total energy mix will change with growing use of electric heating and EVs.</p> <p>One Arup report gives a “target” of an additional 9 TWh generation, 4.3 GW capacity for onshore wind & solar (total of 16.4 TWh from renewables).</p> <p>With major uptake of EVs and heat pumps, and total phase out of fossil fuels for generation, demand might be as high as 31.3 TWh total with 23.9 TWh from new capacity (see below)</p>
Energy conservation	✗	✗	All credible future scenarios predict this needs to be significantly improved. Neither NDF or NMP explicitly address this, although NDF P1-4 aim to reduce transportation and P7 supports EVs
Onshore wind	✓		The NDF focuses on land area, selecting 15 areas that equate to 20% of the land area of Wales. No estimates for the energy potential of this area are given, except buried in an appendix of one Arup report the range 9.6 TWh generation, 4.6 GW capacity up to 95.9 TWh generation, 46 GW capacity , more than Wales needs
Solar PV			
Offshore wind		✓	<p>All these technologies are supported by the NMP, but none have targets set for generation or even an estimate of the generation potential, other than tidal stream and wave, not yet commercialised in Wales, at 6.4 GW capacity.</p> <p>There seems to be a particular focus on tidal stream and wave, which doesn't align with the recent advancements in marine generation which have all been in wind energy</p> <ul style="list-style-type: none"> Record low generation costs below £40/MWh (4p/kWh) Floating turbines rather than fixed base <p>Tidal range has great potential in both north and south Wales and brings additional opportunities such as coastal protection and housing development</p>
Tidal stream			
Tidal range			
Wave			
Other	✓	✓	Other technologies supported in principle in the NDF such as biomass, district heating and even marine biomass (fuel production from algae) in the NMP
Hydrogen	✗	✗	Although barely commercialised at present, this is likely to become a significant energy source during the life of both the NDF and NMP
Nuclear	✓	✓	This is supported in north west Wales only with a combined capacity from Wylfa Newydd and an SMR at Trawsfynydd of about 3.5 GW
Storage & balancing	✗	✗	Battery storage and both transmission and distribution connected gas peaking stations, as well as substations and cabling will all be required, but get no specific mention

Sources

Energy Generation in Wales 2018

<https://www.regen.co.uk/wp-content/uploads/Energy-Generation-Wales-2018-1.4.pdf>

Draft National Development Framework (NDF)

<https://gov.wales/sites/default/files/consultations/2019-08/Draft%20National%20Development%20Framework.pdf>

National Marine Plan (NMP)

https://gov.wales/sites/default/files/publications/2019-11/welsh-national-marine-plan_5.pdf

Stage 2 – Refinement of priority areas for wind and solar energy

https://gov.wales/sites/default/files/publications/2019-08/stage-2-refinement-of-priority-areas-for-wind-and-solar-energy_0.pdf

How much electricity does Wales need?

Wales currently uses 91 TWh of energy of which 14.9 TWh is electricity. Of the 14.9 TWh, 7.4 TWh is generated from renewable sources, and 7.5 TWh comes from mainly gas and some coal and diesel.

The remaining 76.1 TWh is primarily gas, oil and coal for heating and petrol, diesel and paraffin for transportation.

Estimating future electricity consumption depends on the assumptions made for the:

- trend in current electricity use for homes and industry;
- quantity of electricity required to displace gas, oil and coal for heating buildings (homes, factories, retail etc); and
- quantity of electricity required to replace petrol and diesel for transportation.

DUKES 2018¹ estimates² that a complete (100%) electrification of all heating (using air, ground and water source heat pumps) and light transportation (EVs), with hydrogen and biofuels for heavy transportation would lead to a threefold increase in electricity use

- Total (100%) electrical demand would be = $3 \times 14.9 = 44.7$ TWh
- Total electrical demand to achieve target = 70% of 44.7 = 31.3 TWh
- Existing renewable = 7.4 TWh
- New renewable generation required = $31.3 - 7.4 = 23.9$ TWh

This level of generation could be provided by 360 GE Haliade-X 12 MW offshore wind turbines³, less than the combined Hornsea 1, 2 & 3 in the North Sea.

¹ <https://www.gov.uk/government/collections/digest-of-uk-energy-statistics-dukes>

² Page 61 of <https://news.files.bbc.co.uk/include/newsspec/pdfs/bbc-briefing-energy-newsspec-25305-v1.pdf>

³ <https://www.ge.com/renewableenergy/wind-energy/offshore-wind/haliade-x-offshore-turbine>