

This consultation document should be congratulated for its wide ranging consideration of sectors which may be impacted by this Scottish Government's (SG) aspiration to more than double existing onshore wind capacity.

However, the substance of the overall assessment and the lack of evidence underpinning the reasons for the SG's direction of travel with respect to onshore wind is disappointing in the extreme.

The consultation document is peppered with 'potential' and 'could' presented as evidence of the success of on shore wind to date. The lack of reference to actual evidence in a number of areas results in the conclusions being drawn as conjecture. For a Government policy which will have such far reaching effects on the Scottish economy and households across Scotland, this would seem to be drawing conclusions on unstable foundations. This policy consultation appears heavily weighted in terms of a wish list drawn up by the renewable industry itself.

This document completely ignores both documented and potential adverse effects of further on shore wind expansion on existing fragile rural populations, rural employment, rural cohesion and detrimental effects upon the environment.

It is evident that this consultation document is directed solely for consultation responses from the Renewable industry. Given the emphasis of this government for proclaiming inclusivity and community consultation as being superior to other UK nations, the lack of referring to consideration and consultation on this policy with rural industrial windfarm host communities seems an extraordinary omission.

The SG's green aims and 'building back better' after Covid will impact for better and worse on the wider public in Scotland, so the insular approach in this document is disappointing and risks alienating a large section of the Scottish public .

Chapter 1: Current Position - Consultation Questions:

1. Does this chapter provide a fair reflection of the current situation faced by Scotland's onshore wind industry?

No.

No detail is provided of the current status – the profits earned by the industry and actual numbers and locations of windfarms and turbines in Scotland built, consented and refused both by local authorities and following appeal by Scottish Ministers. This is the essential data required to make sensible decisions about further expansion onshore and whether there should be constraints in areas which are already saturated.

Instead of putting energy consumers and the wider energy consuming and manufacturing economy first and forefront, this policy puts the financial profitability of the renewable industry as being paramount.

This is a betrayal of Scotland's people and wider economy and perhaps explains why

promises from the previous first Minister in 2010 for cheaper electricity based on renewable electricity generation has not materialised

This document does not set out the financial barriers to developers, merely states that guaranteed profits are required to continue building on shore wind. Guaranteed profit can only come as a result of UK consumer or taxpayer subsidies as levies on already extortionate energy bills.

It is cheaper, easier and more profitable for developers to develop on Scotland's pristine rural landscapes than it is to build off shore windfarms – previously considered the preferred option to provide 100% renewable generated electricity in Scotland (Alex Salmond 2010). If profit for the renewable industry is the prime mover, then it appears this is why this Government supports such a marked expansion of onshore wind.

The recent announcement of the £700million SG sell off of off shore rights for windfarms (17/01/2022), which will provide more than five times the total energy demand of Scotland questions why any further on shore windfarms should be consented at all and questions the need for this policy document and for any proposed changes to be made in NPF4 to facilitate easier consenting for on shore wind applications.

2. How can the maximum number of developments be enabled to buildout without finance acting as a barrier?

The financial concerns as a barrier to commercial, largely foreign owned and domiciled renewable companies should not be the prime concern of this Government. Those same financial barriers exist for every small and large commercial company and there is evidently less support for these home grown businesses than for renewable companies where profits will go off shore..

A SG policy of maximising development and profit to commercial windfarm developers will encourage the development of on shore windfarms in unsuitable places simply to benefit from UK subsidies, constraint payments and capacity agreements paid for by beleaguered electricity consumers.

This is already happening and evidenced across Scotland where grid capacity is overwhelmed and windfarm operators receive more in constraint payments than if they actually produced electricity. In 2020 UK consumers paid £235 million in constraint payments; the majority(£230 million) to Scottish windfarms with Scottish Power Renewables (Spanish owned) receiving the largest proportion for Whitelee and Kilgallioch windfarms. (Renewable Energy Foundation 2021) Meanwhile, Scottish public authorities received millions of pounds from windfarm developers e.g Forestry and Land Scotland alone received £12,420,562.02 in 2020 in rental income from windfarms. (FOI/202100227704).

The SG awards consent directly to windfarm applications over 50MW. If these are on publicly owned land, there is direct financial benefit to the Scottish Government and its agencies.

Millions of pounds annually are also paid in business rates to local authorities – incentivising the award of consent against the wishes of local communities.

It would seem that there is a major conflict of interest in a SG policy of '**maximising**' the build out of onshore windfarms which will result in direct valuable income for the SG at the

consumer's expense.

***3. Can more be done to support the use of PPAs/Private Sector Finance?
Is there a need for more policy signals from SG, and/or UKG, to provide
investment security/surety***

No.

The EU is also currently running a public consultation on this matter.

The market should dictate the need for PPA's from other sectors of industry. Green carbon levies already drive PPA's for energy intense industries who require a stable energy price. Electricity rates are already considerably lower for large industrial consumers than for domestic users. (Data from OFGEM and LCCC)

Obligatory PPA's will be punitive for smaller companies who provide the majority of employment opportunities in Scotland..

Ultimately, obligatory PPAs set by the SG or UK Government will distort the market still further and impact on the profitability of other industries locating in Scotland and the UK and their ability to provide sustainable employment and a thriving wider economy.

***4. This section also underlines the Scottish Government's strong
commitment to the role of community energy, and to community
benefit and shared ownership. In what ways can we maximise the
benefits of these policies as onshore wind development and
repowering increases over the coming decade?***

No evidence is presented as to actual percentage of community ownership for either onshore generating capacity or number of turbines, as opposed to the 'discussion' of ownership, even in the presented case studies in this document.

The policy document gives the perception that community ownership and buy in is widespread, when the converse is true. There is no evidence presented that the millions of pounds spent by SG in supporting and promoting community ownership through its CARES scheme has produced an actual increase in community ownership and buy in. Instead, thousands of pounds of taxpayers money has been lost to would be developers using this scheme to fund their own feasibility studies (e.g. Alton Muirhouse windfarm, 2018, CARES grant of £120,000 for three 130m turbines. No community buy in. Application refused)

There are successful community owned schemes (e.g. Gigha, 3-4 turbines since 2004) which are built with local support and initiative and which are designed to avoid unacceptable impacts on residential neighbours, unlike proposals from commercial developers.

SG state that community engagement and public participation in the planning process is paramount and better than in England. Whilst community engagement by developers is a requirement in planning applications, responses are frequently ignored or suppressed; a behaviour apparently sanctioned by the SG, its Energy Consents Unit and the DPEA. Community engagement in the planning process for windfarm applications appears to the public to be a tick box exercise and proposed changes to NPF4 aim to dilute public influence still further.

Instead of building resilient communities, some windfarm developers cause actual rural depopulation by buying up rural properties where adverse effects from a windfarm would be deemed unacceptable. (e.g SPR purchase of four properties to facilitate Whitelee windfarm and its extensions, CWP purchase of three properties and rural businesses to facilitate Sanquhar II windfarm.)

Community depopulation and rural disbenefit are never recognised or addressed by SG as an adverse effect on onshore windfarm development.

To the public, it would seem the SG are supporting a policy of 21st Century land clearances in the name of 'saving the planet', and to facilitate profits by foreign owned companies. It would seem a repeat of the 18th Century Highland clearances condoned by our own Government.

Any financial community benefit should be at a fixed rate, increasing by CPI. It should be obligatory, enforceable and encompassed in s.75 agreements along with Title to the windfarm.

All residents within 2km of a windfarm development site should receive direct benefit against energy bills, which should not act as a means to increase noise exposure allowances under the guise of financial involvement – currently driven by ETSU-R-97 and upheld by the SG.

It is common practice amongst developers to sell the windfarm once consent has been obtained, or the windfarm built. Community benefits are then not binding and may not be paid by a new windfarm owner seeking to maximise profit.

Enforced community benefit and compensation to the nearest residents would help to compensate for the loss of residential amenity and drop in property values associated with proximity to an industrial windfarm.

The SG wishes to see an increase in Contracts for Difference (CfDs) subsidies, which are paid for by public consumers. It should therefore be a requirement in a CfD contract that community benefit payments and energy subsidies to the nearest residents are a mandatory requirement. (see also further comment on CfD's page 19 below)

Chapter 2: Future Position and Net Zero - Consultation Questions:

6. What are your views on the installed onshore wind capacity that will be necessary over the coming decade, recognising the ambition Scottish Government have proposed for 8-12GW? Please share any evidence

By March 2021 Scotland had 11.9 GW installed wind generating capacity (8.4 GW on shore), with a further 14.6GW (9.7GW onshore) of renewable electricity capacity at various stages of development in the pipeline. The SG's ambition for a further 8-12 GW of generation has already been met by the number of consented and not yet built onshore windfarms. On this basis there is no requirement for consenting more on shore windfarms.

Scotland had a target of 100% of electricity demand to be met by renewable energy production. In 2020, renewables met 97.4% of electricity demand. Due to failure to meet the 100% target, the target has been revised downward to 95.9%, thus ensuring that the target was met.

Energy consumption figures in Scotland have declined (13.9% in 2019 and 12% 2020) (Energy Statistics for Scotland Q1 June 2021- energystatistics@gov.scot)

There is therefore no justification for doubling the number of onshore windfarms. The electricity produced will be surplus to Scotland's requirements and will serve only to profit commercial companies and the Scottish Government by reaping UK consumer funded subsidies while exporting electricity for profit to other countries.

Against this drive to more than double existing onshore wind capacity must be balanced the damage to Scotland's heritage landscape and rural communities and that is not considered in this document.

Scotland now has no coal power generation and only one remaining nuclear power station (Torness) and only one gas powered generation facility (Peterhead). There is now a critical lack of baseload and available generation to balance the intermittency provided by wind generation.

This is evidenced by only 8,768 GWh of renewable electricity generated in 2021 Q1, **down 24%** from Q1 in 2020. This was considered to be due to weather changes. This situation deteriorated still further in Q2 and Q3 in 2020. (SG and UK generating figures). 2020 saw long spells where wind contributed **less than 5%** to electricity requirements and where UK Battery storage provided in total, less than half an hour back up.

In 2019, each kilowatt hour of electricity generated in Scotland added an estimated 40.9 grams of carbon dioxide into the atmosphere (gCO₂e/ kWh). **This is above the 2017 low of 22.9gCO₂e/kWh and was due to increased fossil fuel generation to compensate a fall in nuclear generation since 2017.** (Energy Statistics for Scotland Q1 June 2021- energystatistics@gov.scot)

That situation has deteriorated further with the 2021 closure of Longannet coal power station and the 2022 closure of Hunterston B nuclear power station.

The need for increased balancing by gas generation of electricity (and importation of nuclear, coal and gas generated electricity) will therefore **increase** Scotland's carbon emissions and whilst this adverse climate effect has been recognised by the SG, it is ignored in the push for further intermittent wind power generation.

Doubling onshore windfarm capacity proposed in this consultation document will not necessarily produce more electricity when the wind fails to blow, but it *will* increase the price of electricity to consumers. This will be due to reliance on additional expensive gas generation and increased reliance on various consumer subsidies by the renewable industry. (The Renewable industry claims to be building 'subsidy free' on-shore windfarms, but if constraint payments and capacity payments from building BESS units are included, this is not the case.)

Whilst Scotland has historically been a net exporter of electricity, this has been dependent on its base load generation, provided until recently by 2 nuclear power stations, extensive hydroelectric capacity, coal and gas generation, in addition to intermittent wind generation from on and off shore windfarms. 2021 saw a marked 20% overall drop in electricity by wind generation.

It would be reckless to continue with further consent of yet more windfarms until those windfarms built and consented are seen to deliver on promised and expected capacity. More onshore windfarms will not produce more electricity when the wind fails to blow, but the burden of that expansion on rural communities, and environmental and landscape adverse effects will increase disproportionately.

The reduction in electricity costs to consumers promised by both the UK and Scottish Governments as a consequence of transition to renewable generation has not materialised and instead of meeting carbon emission targets, carbon emissions have actually increased, despite reduced consumer demand for electricity.

The current installed onshore capacity should therefore not be increased until a coherent low carbon and stable energy generation policy for Scotland is in place and seen to be working for current and future demand of the Scottish people and Scottish industry.

7. What more can be done to capture the potential and value of hydrogen production from onshore wind and how best can we support the optimal integration of these technologies?

The production of green hydrogen requires immense amounts of renewable electricity and clean (public) water. It should never be the case that public supplies of water and electricity become secondary to the need to produce green hydrogen for commercial profit.

It takes 50-55 kwh to produce hydrogen through electrolysis and there is a further loss of 30% @ 18kWh) converted back to electricity in a car for example. 9Kg of clean water is required to produce 1 Kg of hydrogen. It is an industrial process that is significantly more expensive and inherently less efficient than the production of 'blue' hydrogen from natural gas with carbon capture, which also does not contribute to climate change. Twice as much hydrogen can be produced from each molecule of natural gas compared to one molecule of water.

Despite this, production of hydrogen as a fuel is a carbon free, attractive proposition for using 'overproduction of electricity' from wind turbines when the grid capacity has been reached, to avoid payments of constraint subsidies by consumers. The production of green hydrogen would be a good way to use this surplus energy, provided the economic and practical use of green hydrogen can be tailored to intermittent production as a consequence of intermittent excess wind energy. It will never be the case that battery storage will economically produce sufficient energy for electrolysis for more than a few hours at best. Additional public subsidies for battery storage systems linked to hydrogen production should not be spent to produce a fuel to be sold on for commercial profit with no benefit to electricity consumers.

Whilst hydrogen appears an attractive use of surplus wind energy storage, the intermittency of wind generated power in producing expensive hydrogen needs to be addressed first from an economic and supply chain perspective by the SG.

In Norway, 'green hydrogen' has been produced by electrolysis since 1930 (until 1971), but this was reliant on stable, continuous hydropower, not wind generated electricity. There are lessons to be learned from Norway.

Compressed, liquid hydrogen is explosive and corrosive to ordinary steels. (Health and Safety Executive 2009: Installation permitting guidance for hydrogen and fuel cell stationary applications: UK version)

Its production, introduction into domestic gas pipelines and widespread use in transport infrastructure should be governed not by green ideology, commercial interests, commercial profit and political targets, but by safety considerations and the environmental impacts of the significant required energy and water consumption.

The development of stand alone windfarms on uninhabited Scottish islands linked to adjacent production of hydrogen would be an attractive proposition, provided there is sufficient clean water and an established route to market to justify investment.

8. In what way(s) can we maximise the benefits of repowering over the coming decade?

This is a strange question. What are these benefits and to whom do these benefits go? That is not addressed in this document, although it would appear the benefits are primarily aimed at developers.

If the benefit is to save the planet by reducing carbon emissions, then it should be remembered that Scotland contributed at its worst, to only 0.1% of global carbon emissions. Meeting and going beyond Scottish political targets of net zero carbon emissions will not save this planet but it may cause irreparable harm to Scotland's environment and landscape heritage and actually increase carbon emissions from the energy sector. (SG data)

This document seeks views on the SG ambition of an additional 8-12 GW of onshore wind to be installed in Scotland by 2030 to help reach a net zero commitment.

Scotland has already met its target of providing 100% of electricity demand from renewables; there is no justification for increasing capacity further, given that the evidence from SG data is that this will increase carbon emissions over the next decade.

SG energy figures show that there is a substantial decrease in electricity demand. No figures have been presented in this document which substantiate the statement (para 2.1.1) that there will be a substantial increase in demand over the next decade.

Additional capacity from new windfarms, enlarging existing windfarms with repowering and consenting extensions will add further to Scotland's carbon emissions in the form of carbon emissions from manufacturing, construction and transport of imported turbines, and from the increasing problem of required recycling and disposal of used components. It may be that this government discounts carbon emissions generated in other countries caused by activity in this country. That is false accounting and will not save the planet.

The question which should be asked then is which windfarms should be repowered, not that there should be a planning assumption that all windfarms should be repowered.

The Climate Change Committee's findings are misquoted (para 2.1.5). The CCC developed four scenarios assuming an increased capacity of 25-30GW of UK onshore wind capacity. It did not prescribe that an additional 12GW of capacity would have to be sited in Scotland. Nor did it look at scenarios where existing on shore capacity remained stable, but other forms of low carbon generation were built. This is a misleading interpretation of that committee's findings and therefore invites biased comment on this policy document likely to perpetuate errors in planning a more robust energy strategy.

There are further inaccurate conclusions drawn in this document, such as the need for less deforestation with larger turbines installed in repowering schemes.(see also comment p.15)

The evidence presented is that larger turbines have larger diameter blades to increase efficiency. Mature trees (especially deciduous varieties) contribute most to carbon capture and storage and mitigation of climate change high rainfall events.

Despite what has been written here, there is still a windfarm operational requirement that trees should not reach mature heights of 50 to 60metres, but should either be small maturing varieties or be felled at about 10 metres height (e.g as specified in Whitelee windfarm extension environmental statement 2014) to avoid wind shear affecting turbine efficiency and lifespan.

The SG position in this document that windfarms will contribute to carbon capture from increased forestation in Scotland is therefore a false premise.

There are economic attractions in repowering existing sites, as some existing windfarm infrastructure may be reused, but the reality is that the move to larger, fewer and more efficient turbines results in a different windfarm footprint with new turbine and crane foundations which will still be built on deep peat, as per the original consent. Nature Scot (SNH) consider any peat >1m to be deep peat.

Repowering is an opportunity to evaluate the environmental impacts of an existing windfarm which may not have been understood or properly considered when the windfarm originally gained consent. Many older windfarms were built on deep peat before the value of peat as a carbon sink was recognised. (e.g. One million cubic metres of peat were excavated to build the original Whitelee windfarm in 2006. Those turbine foundations were often on peat more than 8 metres deep. (East Renfrewshire Council Whitelee windfarm construction facts) Each metre of peat takes a thousand years to form and is essentially irreplaceable over the term of this Government)

If there were underestimated environmental impacts associated with the original windfarm such as effects on groundwater and private water supplies, then it is not a suitable site for repowering and redevelopment unless repowering is confined to replacing existing turbine components. For these reasons and many others, repowering applications should still be subject to full planning scrutiny, as required under Environmental Impact Regulations.

In regard to community support for repowering, this consultation document states, " Most communities have thus far been either ambivalent towards, or supportive of, the repowering of wind farms in their locality." (para 2.2.10). Yet there is no evidence supporting this statement in this document.

This consultation document refers to a UK paper by R, Windemer, (Cardiff University, Wales), but that publication presents no evidence of any UK wide community consultation on repowering existing windfarms. However, this paper does report in regard to repowering "*Interviews with government officials in England and Wales revealed uncertainty regarding where the 25-year planning period originated from but identified the benefit, particularly to local communities, of providing an opportunity to review the development and assess its impacts.*" There is no mention of Scottish consultation.

Scotland is unique in the UK in its overwhelming policy of support for repowering of onshore wind as a material planning consideration, whilst requiring continued community benefit and opportunities for potential ownership to host communities.

Host communities and direct windfarm neighbours will be best placed to decide whether

community benefits from the existing windfarm mitigate effectively against the lifetime adverse impacts of living next to an industrial windfarm.

It is these communities and windfarm neighbours who should have a material influence on awarding consent for repowering, rather than politicians, local authorities or Scottish Government Reporters.

Repowering is therefore an opportunity for developers to reengage and be judged by local communities. Those developers/operators who have worked consistently and effectively with host communities over the lifespan of an existing windfarm will have nothing to fear. This is reflected in the SG comment in paragraph 2.2.12.

If developers or operators avoided full payment of community benefit, then this should be a material consideration against repowering or extension on the same site.

Some developers are attempting to avoid the need for future planning permission for repowering schemes by applying for permanent planning permission initially, even if this is for a windfarm on forested, publicly owned land. (e.g. Arecleoch windfarm Extension on Forestry Scotland land). Of course, awarding such consent will provide long term guaranteed rental income to the Scottish Government and its agencies. This practice should be condemned for its potential to alienate local communities and avoid payment of community benefit without accountability.

It is disappointing that this consultation paper does not ask any direct question about community opinion or influence, impacts of windfarm developments on communities and does not seek to define what constitutes a vulnerable group (para 2.4.2). The World Health Organisation defines rural and isolated communities as vulnerable. This serves to increase perception that this consultation is directed primarily to facilitating benefit to commercial windfarm developers and operators, rather than seek public opinion on a document which will shape the energy supplies of Scotland for decades to come.

Chapter 3: Barriers to Deployment: Technical and Reserved Matters - Consultation Questions

Additionally, details on the proposed Aviation and Renewables Collaboration Board are available at Annex 2, this also includes specific consultation questions on the formation of this board.

9. We would be grateful for comments on the issue of aviation lighting and suggestions for the focus and outputs of the Aviation Lighting Working Group – what are your views on the assessment of aviation lighting and how this should be undertaken?

Wind turbines greater than 150 m in height are now the norm for both new and repowered windfarms. (See narrative in the consultation document para 2.2.3)The majority of recently consented windfarms in Scotland will therefore require at least one aviation light. Taller turbines may require lighting on both the nacelle and tower. If the turbine blade rotates in front of the light, these will appear as red flashing lights. This night time strobing effect is readily appreciated in the Uplawmoor area of East Renfrewshire due to its proximity to Glasgow airport. *(See personal statement below)

The SG considers there to be a gap in guidance from various bodies on the assessment of the effects of aviation lighting (para 3.3.2). However, the extraordinary omission from this consultation document is any consideration of the effect of flashing red aviation lights on otherwise dark rural skies and windfarm host neighbours. There is no consideration of the effect of multiple red lights at elevation on internationally recognised dark sky parks and the effects that aviation lighting will therefore have on local tourism.

Unfortunately, this omission reinforces the belief by rural communities that their concerns of adverse effects from living adjacent to windfarms are ignored and that their loss of residential amenity and effects on health are regarded by developers and politicians alike as being acceptable collateral damage.

Aviation lighting could be controlled on and off by transponders within a defined safety distance by incoming aircraft. Unfortunately this does not entirely remove the effect of red lights at elevation above host communities. Infrared lighting may also be used to replace some, but not all visible spectrum warning lights. However use of these mitigation measures requires to be assessed against standard aviation detection equipment available in all aircraft, including light aircraft likely to be in lower level airspace at greater risk. These are issues which need to be addressed by the proposed aviation and renewables collaboration board.

The renewable industry receives billions of pounds of subsidies from UK consumers, including guaranteed returns for investors encompassed in the Contract for Difference scheme.

It is completely unreasonable to expect taxpayers, consumers or the aviation industry (para 3.2.6) to additionally fund air safety mitigation measures which would otherwise preclude consenting windfarms within unsuitable areas with the potential to affect air safety. If more windfarms are consented within air safety 'exclusion zones', those developers will be able to share the cost of mitigation between operators, as happens at present.

The aviation industry is currently worth £4billion a year to the Scottish economy (Transport Scotland 2020). There are over 4000 jobs in the aviation industry, compared with 1,900 in the on shore wind industry (para 5.1.1) Why should the renewable sector jeopardise another viable and expanding sector of to the Scottish economy?

The issue of who pays for aviation lighting and other air safety mitigation measures is one that should be debated publicly and in Holyrood, not made by those with vested interests in the renewable industry.

The overwhelming impression from this section is that safety of those in the air and on the ground is secondary and may be compromised by the SG overarching net zero carbon targets. That is unacceptable.

Aviation and Renewables Collaboration Board

This proposed group has no lay representation. This is contrary to many other 'public organisations' such as OFGEM.

The SG is keen to be seen to transparent and accountable in implementation of air safety mitigation measures (Annex 2 and para 3.2.7)

On this basis, there should be at least one lay representative to represent to interests of rural host communities, designated dark sky parks and air passengers.

***PERSONAL STATEMENT FROM A RESIDENT OF EAST RENFREWSHIRE**

There have been numerous discussions on the subject of aviation lighting over the years, starting with the application for Neilston Community Windfarm in 2009. Red aviation lights are required for all turbines over 150m in height but if they are close to an airport/military or private airfield or are situated over a certain height above sea level (AOD), then smaller turbines will be required to have lighting. In the Uplawmoor/Neilston area of East Renfrewshire, all turbines above 50m in height require to be lit. Only the lights on the Middleton Wind Farm are allowed to be illuminated at a reduced intensity of 200cd, when visibility is good, the rest operate at a constant 2000cd but there has never been an occasion, to my knowledge, when all of the Middleton turbines' lights have been reduced at the same time.

Depending on the wind direction and the location of your property, whenever the blades pass in front of the lights it causes a strobing effect which is extremely disorientating for drivers at night, and highly annoying for nearby residents when the flashing occurs inside their homes, reflecting off mirrors in riding arenas and metal farm buildings. <https://scotlandagainstspin.org/2021/04/aviation-safeguarding-lights-on-turbines-video/>

Misty weather causes a halo around the lights which turns the dark sky red and is visible over a greater distance <https://scotlandagainstspin.org/2021/11/neilston-turbine-lights-in-the-mist/>

The effect is akin to living in or travelling through an alien landscape and this has generated numerous objections to wind turbine applications in the Uplawmoor/Neilston area of East Renfrewshire in recent years.

Lighting has also been widely discussed at recent Wind farm Inquiries around the country. Mitigation suggestions have ranged from "cupping" the lights or using infra red (not acceptable in East Renfrewshire due to the proximity to the airport), to software which turn the lights on only when an aircraft approaches (ADLS) but with a high volume of aircraft this could generate more complaints. It is not yet available in this country in any case.

On Tuesday 2 February, Ms Carol Anderson, Landscape Architect for South Ayrshire Council, gave evidence on Landscape and Visual Issues at the Arecleoch Inquiry. One of the topics was aviation lighting. She referred to the fact that she had visited East Renfrewshire to view the aviation lighting on the turbines in order to assess the likely impact from the Arecleoch turbines.

Carol Anderson Inquiry Statement

5.20 Since drafting my appraisal in 2019, I have seen a temporarily illuminated wind farm in Moray with 64cd lighting and, more recently, the Middleton and Neilston Wind Farms in East Renfrewshire, where turbines are lit with a mix of 2000cd and 200cd lights more comparable with the proposal. With the benefit of having considered the intensity and extent of lighting effects in the field, I can confirm that 2000cd lighting would have a significant visual effect in views from roads and nearby settlement within the Duisk Valley, parts of the Stinchar Valley and surrounding uplands where people may appreciate the night sky. Reduced intensity 200cd lighting, which would operate when visibility is good, would be less bright but would still be clearly visible and I now consider that this would also have significant night-time

effects in views from part of the Duisk Valley, parts of the Stinchar Valley and surrounding upland areas.

5.21 Both 2000cd and 200cd lighting of the turbines would be likely to adversely affect the Dark Sky Park and the Merrick WLA but I cannot judge to what degree and whether these effects would be significant. This is because the Middleton Wind Farm, for example, which has a similar lighting specification to that proposed for the Arecleoch extension, **and which can be clearly seen from parts of Glasgow some 15km distance** away, is located in an area with relatively high ambient light levels which is likely to reduce the brightness of lighting compared with seeing similar lighting from the core and buffer zones of the Dark Sky Park and the Merrick WLA. <https://www.dpea.scotland.gov.uk/Document.aspx?id=730905>

As with wind turbine noise, the impact of turbine lighting is only fully understood by the people who are living with it on a daily basis.

10. We would also be grateful for your views on network charging and any of the other aspects set out under section 3.4.

Grid, Networks and Regulation

The SG considers that the increased transmission charges to on shore windfarm developers in Scotland is a barrier to development.

That is not borne out by figures which confirm that the majority of the UK's on shore capacity is already located in Scotland; 8.4GW of a total UK onshore capacity of 14GW (2022 figures).

It is of concern that SG considers the profit profile for largely foreign owned and offshore wind development companies and their investors ahead of costs to UK consumers of expanding national grid connections.

It is also of concern that the SG is considering proposals that promotes expansion of overhead grid lines using the Scottish Ministers powers to automatically award consent, perhaps regardless of public and environmental concerns. (para 3.4.11)

It is worthwhile examining the costs and benefits of one of the most contentious power lines to be built in recent years:

The new 137 mile Beuly Denny transmission line (opened 2015) cost £820 million, replaced a previous 132kv line and was built to export power from northern Scotland's on shore windfarms both built, consented and those that might be built in future, to provide power to the rest of GB. (Transmission Charges. An overview of charges for Use of the GB transmission system. SHET Feb 2021)

Although this project was paid for by Scottish Hydroelectricity (SHET) and Scottish Power, OFGEM **allowed these costs to be recouped from its customers.** (Tobiasson, W., Beestermöller, C. & Jamasb, T. Public engagement in electricity network development: the case of the Beaulay–Denny project in Scotland. Econ Polit Ind 43, 105–126 (2016). <https://doi.org/10.1007/s40812-016-0030-0>)

Those grid expansion costs are therefore ultimately paid for by electricity consumers. Direct charges by National Grid to domestic consumers average £23.19 (2020/21), *excluding charges* from energy suppliers and providers (eg. social and environmental charges – subsidies, which account for more than 20% of a consumer bill (2019/20) (Figures from National Grid. Electricity Transmission. Performance 2019/20)

It is a basic physical and economic principal that it is more efficient to produce power close to where it is needed.

The National Grid power lines transmit at up to 400kV. (National Grid information) A 100 mile (160 km) overhead line at 345 kV carrying 1000 MW of power has losses of 4.2%. This is the difference between what a windfarm might produce and what the operator (and consumer) pays for and the actual amount of electricity reaching customers.

Ignoring generation losses from windfarms even more northerly than Beaully, the 137 mile Beaully-Denny line may therefore experience actual **electricity losses of more than 4%**. It is only right that windfarm operators benefiting from natural and cheap wind resource in northern Scotland, far from the point of use, **who are getting paid for electricity which will never reach consumers**, using a transmission line paid for by the public, refund some of their profits back to consumers by paying enhanced transmission costs to be able to develop and operate in remote rural areas.

OFGEM has as a core principle that it needs to protect consumers, as well as to help facilitate net zero ambitions. It will not protect vulnerable consumers by facilitating further expensive grid transmission lines to provide more renewable energy than can be consumed in Scotland, if a) these costs to facilitate commercial profits associated with export of electricity are to be passed onto consumers and b) if there is inordinate loss of the electricity which is again passed onto consumers.

Security of Supply / Storage Potential

This policy document refuses to consider reliable low carbon energy generation policy as a whole.

The SG considers that the climate emergency has 'overtaken' the existing logic and design of the UK's National Grid and charging system (para 3.4.8) and that the needs of the renewable industry should rewrite the design and charging system of the National Grid. There is lack of cognisance of development of alternative nuclear power via Small Modular Reactors (SMRs) which will be introduced in England nearer centres of demand at cheaper cost for consumers than importing more expensive low carbon renewable power from remote areas of Scotland. The UK Government has invested £210 million in SMRs as part of the UK Green Industrial Revolution strategy, with the first SMR expected to go live in approximately ten years.

Where is the logic that consumers in UK should pay more for intermittent renewable wind generation from a distance, paying for energy loss that occurs with each km of transmission, as well as increasing costs of building further transmission infrastructure, when advances in nuclear power generation will be just as effective, more reliable in decarbonisation, help to meet net zero targets, cost less and have less impact on rural communities and the environment?

The EU now accepts that nuclear generation is low carbon and should be included in Member State's energy mix to zero transmission. (EU announcement 01/01/2022) Whilst it may be SG policy to abhor any form of nuclear power generation in Scotland, it

behoves policy makers to look south of the border to examine what market there would be in future for export of Scottish on shore wind electricity.

Battery Storage Systems

Increasing numbers of windfarms in Scotland are being consented with co location of Battery Storage (BESS units). The policy document provides no evidence underpinning the conclusion that BESS units reduce the costs of electricity. The scientific evidence is that BESS electricity is currently more expensive than any other type of electricity provision. It also fails to provide any evidence of how long BESS units are likely to be able to supply Scotland's needs in the event of a lack of wind. These are essential figures before widespread adoption of this expensive, potentially toxic and time limited technology is justified and widely adopted.

Despite this, the concept of battery storage and energy storage is to be commended as long as appropriate economic, environmental, safety and carbon calculations are included in the Environmental Statements submitted by developers. (A requirement under EIA Regulations). That does not currently occur.

BESS units are subject to spontaneous combustion with release of highly toxic by products. Such fires have occurred world wide, including some of the largest and highest profile units more recently in California, Arizona, South Korea, Australia and the UK 2021 (Liverpool). If there is to be public support it is essential that such risks are examined and mitigated in the planning process and consent.

Decommissioning costs and recycling of potentially toxic battery components must be included in planning applications given maximum battery life from new of approximately 10 years, depending on use. Currently, used lithium battery components cannot be completely recycled (Life cycle cost analysis for BESS optimal sizing. 2016 .Marchi B. et al)

The co location of hydrogen electrolysis with BESS and wind generation is an attractive proposition for storage of excess energy in periods of high wind when there is limited consumer demand. It is certainly preferable to consumer funded constraint payments to windfarm operators not to produce electricity because grid capacity would be overloaded. However, basic principles of environmental and public safety must be adhered to in the consenting of such projects – not just a focus on meeting net zero targets .

4. Barriers to Deployment: Environmental Factors - Consultation Questions:

Noise

1.4.1 states: "The Scottish Government puts communities front and centre when it comes to the development of renewable projects in Scotland ..." If that is true, why is there no mention of the impacts on people, other than noise and why are there no questions seeking the public's input on this subject?

The noise chapter is not impartial. The heading is "Barriers to Deployment". What an unfortunate turn of phrase. It suggests that any impact on people or the environment is a hindrance to the deployment of wind farm development.

4.1.3 states that WHO Environmental Noise Guidelines for the European Region, concluded that **there was not enough evidence at that time to make any specific recommendations for wind turbine noise, including amplitude modulation ..."**

In reality, the WHO Executive Summary (under Recommendations) states **“Specific recommendations have been formulated for ... wind turbine noise ...”** The coloured box which follows, headed “Wind Turbine Noise: Recommendation” gives further details of these recommendations.

The same paragraph in Chapter 4 also says that WHO “found no correlation between wind turbine noise and adverse health impacts”. That is incorrect; Table 36 shows that, **at a level of 45dB(Lden), 10% of people are highly annoyed. The evidence for this is of moderate quality. Annoyance is a critical health outcome** – see p18, Table 3 of WHO

4.1.5 refers to two reports but it is not made clear which ones. (None of the papers mentioned are properly referenced making it impossible for anyone not familiar with them, to locate and scrutinise. We assume the reports are “Health Effects of Wind Turbines” by Salford University, March 2013 and “Wind farm Impacts Study” by SLR/Hoare Lea, July 2015.

The last sentence of 4.1.5 says “Neither report showed correlation between the noise produced by wind farms and ill health”. That is at best misleading and incomplete. The first three bullet points of the conclusions of “Health Effects of Wind Turbines” says:

- The review shows there to be evidence for annoyance due to WT noise.
- There is also some evidence for sleep disturbance which has found fairly wide, though not universal, acceptance. It should be noted that environmental noise from other sources such as road traffic and aircraft noise is a known causes of annoyance and sleep disturbance so to find these effects from WTs is not unexpected.
- Some authors label these effects as health effects and others do not.

With reference to the Wind Farm Impacts Study, the scope explains:

“This study looked at whether the impacts predicted by wind farm developers in documentation submitted with their planning applications are consistent with the impacts experienced once the wind farm is operational.”

It did not show correlation between noise and health because it was not within the scope of the study. It certainly reports on residents’ perceptions of reasons for their ill health, but to suggest it showed no correlation is an irrelevance.

The recommendations set out in the Study have been largely ignored and/or forgotten by decision makers since its publication in 2015, not just in relation to noise but also in every other aspect. A follow up Study would be helpful and we look forward to a positive response from the Scottish Government on this matter.

An update of ETSU-R-97 is also long overdue and we would certainly support this move. SAS are well aware of the noise problems caused by badly sited windfarms and single turbines. As attendees at last year’s International Wind Farm Noise Conference we were disappointed to find that representatives from other governments around the globe seemed to have a better grasp of wind turbine noise problems than our own. The representative from the Scottish Government did not make any comment or ask any questions throughout the three day conference, despite the fact it was two ladies from Scotland (SAS members) who gave the talk on “The problems of living beside wind farms.”

Forestry

Contrary to the impression in this consultation document, SG has a policy of onshore development in publicly owned forests. Scotland's publicly forested areas (Land and Forestry Scotland – FLS) have been divided up into 5 areas allocated to specific developers e.g. Lot 1 South West Scotland has been allocated to SPR.

Since 2000, almost 14 million trees have been felled to facilitate windfarm construction. Statistics from Land and Forestry Scotland. (Herald 29/02/2020) Three million were felled for Whitelee windfarm stage one alone.

These figures exclude trees felled on privately owned land for windfarms.

It is mature trees that provide the greatest carbon store and protection from excess run off and flooding. The renewable industry point to compensatory replanting, but it takes more than 40 years for some trees to reach maturity. It is a sad indictment that deforestation is a consequence of the onshore wind industry.

FLS response to the felling of trees for windfarms is that this is only about 1% of Scotland's forested area has been felled specifically for windfarms and most of the felling was of commercially planted trees, even if these were immature. This seems to be a response which does not acknowledge the problem of otherwise unnecessary deforestation and the loss of carbon capture..

11. What are your views on the integration of taller turbines in forested areas?

The consultation document appears to misunderstand the physics of turbine blade mechanics by the author of the consultation document. There is an assumption that taller turbines (150 - 250m to tip height) will necessarily have blades which clear the heights of mature conifer trees (@ 50- 60m)

If wind hitting the bottom of the rotor is slower than wind at the top of the rotor blade it produces wind shear effects reducing the efficiency and longevity of the turbine. Growing and mature trees over a certain height in the windfarm have to be cut to remove those windshear effects.

Keyholing is often used during construction when turbines have not been commissioned, or later, when trees are small and immature and will not produce wind shear anyway..

A modern 200m turbine, e.g. Vestas 6MW turbine, has a tower of 125m, blade diameter of 150m and ground clearance will therefore be 50m. Recently proposed turbines, Nether Carswell 3 in East Renfrewshire, has only 9m ground clearance and Mochrum Fell in D&G has a 10m clearance. RSPB and NatureScot agree that bird strike is more likely with low ground clearance as a greater number of species fly at this height but due to lack of resources they are now unable to comment on smaller scale or single turbine developments unless a protected area or species is involved. NatureScot should have its funding increased to enable them to comment on any turbine application irrespective of size or location.

SPR's Arecleoch Extension recently consented (2021) by Scottish Ministers, is a good example of how keyholing into 'mature' forestry, implied in this document can be misleading. Arecleoch windfarm Extension is sited on publicly owned Forestry and Land Scotland assets. Turbine rental will be paid to the Scottish Government via Land and Forestry Scotland.

The developer has said in the ES,

“Fewer but taller turbines also reduces the felling required by increasing the rotor clearance above the tree canopy which reduces the impacts upon existing forestry operations” (ES 2.2 para 16)

The reality is that the existing baseline FCS felling plan was brought forward and changed to ensure clear felling, not keyholing, in the construction phase and area of the windfarm site. The ES states, advance clear felling of immature trees therefore extends to 135 Hectares, with overall loss of 60 HA forestry, even after replanting.

There will be replanting of shorter, slow growing broadleaf species, unlikely to exceed 30m maturity around turbines keyholed into these replanted areas. This effectively removes the need for felling around turbines for the lifespan of the turbines.

Is this what the SG understands by keyholing turbines into mature forests and avoiding the need for clear felling?

The developer is committed to compensatory planting somewhere, but these facts are not published. (Arecloch ES Appendix 3.2 Forestry technical report)

Other windfarms have approved policies to cut replanted trees when they are immature at 10m height, again to avoid wind shear on turbines. (Whitelee windfarm Extension ES)

Mature trees and deciduous trees provide the greatest benefit in terms of carbon capture. If turbines are consented in forested areas, there should be conditions which require that forestry is not removed early, apart from keyholing to a specified diameter around a turbine and that there should be designated and publicly identified compensatory planting elsewhere.

12. Can you provide best practice examples for effective peatland restoration (with carbon benefits) alongside the development of onshore wind?

The practice of the renewable industry appears to be that pristine peat is characterised as degraded, even when there has been no previous human intervention or development. It then suggests that peat will be improved after the windfarm construction impacts of excavation by stating for example, that existing drainage channels will be blocked.

The natural history of peat is that ‘peat pipes’ exist naturally within pristine peat, often at peat/till interfaces and that these naturally occurring channels often provide reliable private water supplies for rural inhabitants. Once the peat is disturbed its water retention properties may be lost, natural drainage channels are lost and dependent private water supplies may be lost.

Good peat management during windfarm construction may somewhat mitigate the damage, but it is an oxymoron to suggest that a windfarm can be constructed on deep peat without causing significant damage. Even ‘floating roads’ built on deep peat to avoid excavation will sink and compress and kill the underlying peat and disturb normal water channels in peat. Turbine foundations and crane pads must be built on solid foundations – peat therefore has to be excavated for these structures, even if turbine foundations are piledriven.

Thus mitigation measures outlined in the ‘Good practice during Windfarm construction 4 edition’, written in 2019 by the Renewable industry, SEPA, SNH and others is effectively attempting to mitigate the damage that will occur if windfarms are consented on peat. To protect this precious, slow growing carbon sink, the SG should enforce its policy of only

building windfarms in the right place and avoid building windfarms, access roads, hydrogen plants, BESS and their infrastructure on peat.

13. What, if anything, is not currently reflected in the good practice guidance for constructing windfarms, in relation to building on peat and other carbon-rich soils?

The need for avoiding consent altogether for windfarms where the site contains deep peat. Environmental consultants employed by windfarm developers will produce environmental statements that are frequently over optimistic in minimising peat depths. 'Micrositing' of routinely 50metres and sometimes more, will allow a developer to legally move a turbine foundation onto deeper peat if it is expedient and in their interests.

The measures set out in the Good practice guide should be enforceable, with penalties for poor practice evidenced by independent planning monitoring officers (PMO's). This will ensure that construction standards are improved and maintained.

14. From your own experience what can wind farm developments offer in terms of protecting and enhancing the natural environment, in particular through the planting of trees to compensate for those lost during windfarm development and through peatland restoration?

Windfarms are not a natural environment. They do not enhance any natural environment.

However, if SG considers windfarms must be imposed, regardless of the environmental and ecological damage caused, then mitigation measures to minimise those effects must be enforced more rigorously.

The replanting of broadleaved trees is mentioned above. In the long term this is preferable to commercial spruce plantations in terms of carbon capture, hydrology (surface water run off and pH) and ecological diversity.

The concern is that developer's compensatory planting areas are not identifiable by the public. Compensatory planting should not be on previously commercially forested areas which already require replanting. New compensatory forests should be subject to an enforced maintenance agreement and if felled or fail for any reason, require in enforceable planning conditions to be re planted by the windfarm developer/operator in another publicly identified site.

15. Can you provide best practice examples of encouraging biodiversity protection and enhancement, including connectivity between natural areas in wind farm sites

Windfarm sites should be subject to five yearly independent ecological surveys (paid for by the developer) to monitor the effectiveness of any scheme promoted in the environmental statement or in planning conditions to improve biodiversity against the original surveys of mammals, fish and birds, as well as groundwater dependent ecosystems (GWDTE) conducted by the developer for the Environmental Statements.

Only by doing such surveys can the SG assess which mitigation measures are actually effective and whether claims by any one windfarm developer/operator, that biodiversity has improved be properly validated. Such studies will provide valuable longitudinal data on the

health of Scotland's wildlife in the setting of rural industrialisation to meet net zero targets.

16. What is your organisation doing to go above and beyond when it comes to biodiversity protection, conservation and enhancement in wind energy development sites?

17. How can habitat management plans better balance protection of the environment with connectivity and the operation requirements of a site?

Chapter 5: Economic Opportunities

Whilst questions in this section are largely directed to economic issues and profitability for developers and supply chain companies, with the exception of questions on tourism, a core industry in rural areas, there is no consideration of the economic impact of a transition to renewable energy on households or economic impacts (good and bad) on properties and communities which are direct windfarm neighbours.

Comments below arise from the narrative published in this section of the consultation document.

Para 5.1.2

The research conducted by Scottish Power is not referenced or substantiated. The 'potential' construction employment increases and 'potential' increase in long term skilled UK jobs and the opportunities this 'could' present to local supply chains appear completely theoretical with as much substance as the 22,000 renewable industry jobs which did not materialise following predictions by Scotland's former first Minister in 2010.

The recent history in Scotland has seen windfarm manufacturing capability substantially decrease. Bi Fab in Burnt Island and Campbeltown Windtowers Ltd, both foreign owned companies in receipt of millions of pounds of Scottish taxpayer investment are now closed with loss of many jobs and substantial public investment.

Para 5.1.3

The document referenced (The onshore wind industry prospectus) is written by the Renewable Industry, Chaired by commercial company EDF. This is a gross conflict of interest. Nevertheless, the onshore consultation refers to the rosy figures published by Renewable UK which predict that 17,000 additional jobs 'could' be achieved if an additional 12GW of onshore wind is deployed by 2030. Once again this echoes the hollow promises made previously by this industry and by previous Scottish administrations. Are we to sacrifice Scotland on the alter of promises of false economic benefit made by foreign companies?

The GMB Union has been particularly vocal in highlighting the failure of economic and employment opportunities promised to Scotland by this and previous administrations which were supposed to result from Scotland's investment in the renewable sector. It is against this background that future promises by the Renewable sector and SG require to be backed by

evidence and guarantees.

Para 5.1.4

Shouldn't a data gathering exercise be conducted and assessed before new policy and planning reforms are implemented?

5.2. Consultation on Contracts for Difference (CfD) and Supply Chain Plans

Para 5.2.1. “ *The CfD mechanism has helped drive down the cost of renewable electricity support for consumers in recent years.*”

Where is the evidence for this statement?. The Low Carbon Contract Company administer the CfDs. Their 2018/19 annual accounts show nearly £1 billion cost to consumers for providing only 4% of electricity demand. That is hardly value for money for the UK consumer.

OFGEM figures show that over 20% of current consumer bills are due to social and green levies. 25% of the Scottish population are regarded as being in fuel poverty, but will be funding these CfD's. (SG figures 2018)

Northern Scotland electricity costs are already some 45% higher than the rest of the UK and 33% higher than southern Scotland. This is in part due to increased electricity transmission charges, (despite a £50million balancing subsidy paid by UK consumers) With rural reliance on electricity rather than mains gas there is also an increased payment towards renewable subsidies by rural residents. (BBC news 06/09/2019) Ever increasing subsidies to the renewable industry is unacceptable at a time of massive increase in energy costs in Scotland.

Para 5.2.3: The supply chain plans element of current CfD awards, which require applicants to provide information about UK supply chain providers, apply to projects of 300MW and over.

There are only two such on shore windfarms in Scotland, Whitelee and Clyde windfarms. It is a misleading statement in this consultation document to state that this will be a requirement for future on shore CfD applicants as it will not apply to the majority of large but less than 300MW windfarms.

There should be a binding contracts between developers and supply chain contractors for more than 50% of the capital value of the windfarm in order to benefit from any UK consumer or taxpayer funded subsidy or government grant.

Economic Opportunities - Consultation Questions:

18. What support do Scottish companies need from Scottish Government and agencies in order to successfully bid for and win contracts?

19. Should government consider options for introducing a sector deal similar to that of the Offshore Wind sector and if not, why is that your view?

20. How can individual organisations (including onshore wind developers, tier 1 suppliers, and the domestic supply chain) work collaboratively to ensure that key manufacturing projects for Scottish onshore wind stays in Scotland?

21. Circular economy and zero-waste are core principles that the Scottish Government are promoting. Where do you see the economic opportunities in relation to these policy issues lying with onshore wind? And are there any practical issues you think need to be addressed in order to maximise the benefits?

5.4. Refurbishment and Recycling

It is commendable that SG are recognising the severe problems that will be caused by the disposal of millions of tons of disused wind turbine components. This will be a particular problem for Scotland, rather than the other UK nations. The SG recognises that this will be a massive environmental problem and set up a Zero Waste Scotland (ZWS) organisation to address this.

Excluding the concrete and steel foundations, up to 85% of turbine components are potentially recyclable (steel, copper etc). The composite fibreglass/epoxy resin blade assembly for one medium size turbine weighs approximately 36 tons. These blades have a working lifespan of up to 20 to 25 years, but cannot currently be recycled, but often require to be replaced after 10 years due to loss of efficiency. 5500 turbines, at least 16,500 blades are expected to be decommissioned in Scotland by 2050. (The Future of Onshore Wind Decommissioning in Scotland-Zero Waste Scotland Report) At present the only large scale disposal solution is landfill for these blades.

This document refers to Renewable Parts at Lochgilpead, which receives taxpayer grants through SG . This company recycles and repurposes redundant turbine components which can be re used in other windfarms. It is misleading to suggest that it is involved with recycling or disposing of blades or other non recyclable components.

However, a £2million three-year project privately funded pilot initiative at Strathclyde University involves a consortium led by Aker Offshore Wind and Scottish researchers is commendable. Other academic and industry partners include Nottingham University, global waste management firm SUEZ, composite distributor GRP Solutions and composite part manufacturer Cubis Other companies in the Renewable sector should also be supporting such research with the aim of ensuring a more sustainable future for the global wind industry and the wider composites manufacturing industry – accelerating the drive towards net zero emissions and waste and creating new skills and job opportunities in Scotland and the UK.

5.4.4 It should be that this consultation document incorporates the important conclusions of the SG's own experts Jacobs Ltd, commissioned on behalf of ZWS. The conclusions of that report are not mentioned in this policy document.

Jacobs Ltd were commissioned to look at turbine decommissioning in Scotland for ZWS. It is a comprehensive assessment and report, looking at the need for future provision and assessing what recycling opportunities are available for Scotland at present and could be developed in the future.

For example:

Jacobs Report April 2021 for ZWS: Summary and Recommendations:

"Task 6 Opportunities - in moving to a circular approach to decommissioning: Limited infrastructure and supply chains in Scotland are a limiting factor frustrating much of the industry's efforts to become more circular. Equally, design for decommissioning is seen as one of the most prominent needs for circular economy gains, but there is limited evidence that this is being addressed."

There is actually no reprocessing currently available in Scotland, despite the prediction that turbine blades will increasingly be disposed of in their thousands from 2021 to 2050.

Comment invited on zero waste paragraph 5.4.7

It is not clear why commercial companies who will have received millions of pounds from consumers and taxpayers over the lifespan of a windfarm should receive yet more funding to recycle waste components.(para 5.4.5) It should not be left to commercial companies to dictate how they would or would not like to deal with their own non-recyclable waste.

If National Grid has adopted the principle of a circular economy and zero waste to landfill, it would be extraordinary if the SG would in contrast sanction thousands of tons of non recyclable turbine blades to be dumped in Scottish landfill (or sent to other countries to be disposed of their landfill).

It seems extraordinary that SG policy is to at least double onshore turbines over the next twenty years and yet there is no clear provision for recycling.

The question posed in this document relates solely to the economic opportunities of recycling and ' maximising the benefits' to others, not to the environmental concerns of landfill or export elsewhere if this problem is not addressed.. It would seem that this is a problem that should lie at the heart of a Government committed to zero waste and green policies.

The cost of disposal and recycling of redundant turbines requires to be included in planning consents. The costs of recycling should be underpinned by legal agreement attached to the windfarm Title and underpinned by insurance policy decommissioning bonds in the same way that decommissioning and land reinstatement for windfarms is ensured through section 75 agreements with local authorities.

22. How can the Scottish Government best support skills for the future of the onshore wind sector? Specifically we would be interested in oil and gas transition,

apprenticeships and entry-level positions for young people, as well as any other experiences you can share.

It is commendable that SG are seeking to remedy the lack of jobs that have come to Scotland to date in relation to the wind industry. However, it is important that skilled workers are not 'stolen' from other equally important areas of the economy such as the aviation and motor trade to work in servicing on and off shore turbines.

It is not clear whether the stated £25 million of taxpayer funding of training for the renewable industry workforce is also spent on training in other sectors of the economy. (para 5.5.4 and 5.5.4) Reskilling of redundant workers and training and apprenticeship for school leavers and graduates should take priority.

The document states (para 5.5.2) *"We are committed to an economic recovery from Covid-19 that is both green and fair –"*.

It is vitally important these green aspirations are 'fair' to vulnerable rural communities in particular, who host this onshore industry. A robust assessment of land taken from otherwise viable sporting estates and farms and of rural industry, including tourism and hospitality is required before a doubling on shore wind is approved, so that the socioeconomic effects of the SG green ambition to industrialise 20% of Scotland's rural land mass can be documented and if necessary, mitigated before it is too late.

23. Do you have any views on the impact of wind farms on tourism?

It is telling that this document does not even consider that there are any adverse effects on rural tourism from industrialisation of Scotland's landscapes and proximity to villages, towns and hotels/B&B establishments.

This denial is illustrated still further in the SG Outlook tourism assessment 2030, referred to in para 5.7.5. where there is the complete absence of any turbine in any of the multiple photographs and by the complete failure to even mention the word windfarm or turbine throughout the entire publication!

Misleading data is presented in paragraph 5.7.4, which seeks to suggest that there would be widespread public support for doubling onshore turbines from the current stated density of one turbine every two miles in Scotland:

"5.7.4. Public support for onshore wind has grown significantly across the UK, reaching a new record of 79% in 2019, with opposition decreasing from 12% in 2015, to 5% in 2020."

No references are provided which underpin this bald statement.

However, Renewable UK and BEIS commissioned polls in 2021, both of which purported to show overwhelming public support for on shore windfarms. The May 2021 Renewable UK poll reported *"Support for building onshore wind farms remains overwhelmingly high at 70*

per cent – with levels of support exactly the same among people who live within five miles of a windfarm as those living elsewhere’

The reality from the 1700 respondents polled were that only 7% (119 people, 0.002% of the Scottish population) were from Scotland which hosts more than 60% of UK onshore windfarms. Of those 119 Scottish respondents, only 38 (0.0007% of the Scottish population) lived within 5 miles of a windfarm (actual proximity to windfarm, receipt of benefit not specified, turbine size and number not specified) . In contrast, 192 poll respondents were from London, which has no turbines!

The March 2021 BEIS poll of public opinion is equally skewed with only 6.6% of respondents from Scotland and only 47 rural respondents in total from the entire poll. Despite this, this poll concluded that 83% of the Scottish populace supported renewables in providing our electricity!

A proper survey of public opinion in Scotland is required with a statistically representative section of the population which excludes those in receipt of windfarm financial benefit or employment and where respondents include those within 2km of the nearest industrial sized turbine.

It is clear that polls of public opinion conducted by industry organisations and even BEIS are unreliable.

Effects on tourism

Windfarms contribute to rural depopulation. For example, four rural farmsteads and businesses were bought by Scottish Power to facilitate Whitelee wind farm and its extensions (referred to in para 5.7.6). SPR has unsuccessfully applied for demolition orders for all of those properties, which are now ruinous.

At Sanquhar II windfarm (in planning) CWP Ltd bought out three rural properties, (including a successful B&B on the well known Southern Upland Way), that would otherwise be overwhelmingly adversely impacted. These are just two documented examples of viable rural homes and businesses being lost to on shore windfarm development, but there are others, where property buy out by foreign developers is referred to publicly as the new 21st Century Scottish clearances. The SG should be ashamed that it is condoning similar land clearances that caused such hardship and grief to so many Scottish families in the 18th Century.

Tourism supports 200,000 workers in Scotland, the failure to even mention windfarms in an official publication of the future of Scottish tourism supports the public perception that a real problem is being ignored.

Windfarm developers will refer to rural economic benefits as a result of accommodation needing to be provided to windfarm construction workers. The construction period of a windfarm is typically less than 3 to 5% of the entire lifespan of a windfarm (excluding

repowering or extensions). This is not sustainable benefit when both workers and tourists have left.

Windfarm service workers will stay for only the occasional night or two over a year. This is not sustainable economic benefit for the rural hospitality industry..

It is time there was an honest survey of the impacts of widespread windfarm industrialisation on fragile rural tourism, excluding tourism to Scottish city centres.

24. What is your organisation doing specifically to promote diversity and inclusion in the onshore wind sector?

25. Given the significant contribution onshore wind is expected to make to our net-zero ambitions, and the structure of the ScotWind process for offshore development, should Supply Chain Development Plans be introduced for onshore wind developments in Scotland?

Yes

Annex 1: Eskdalemuir working group and policy proposals

We must preface our remarks by observing that this consultation starts from the presumption oft-repeated by the Scottish Government and windfarm developers that windfarms are to be encouraged regardless of any adverse impacts.

We believe this is a narrow approach and quite wrong for a consultation document. This criticism extends to this annex where the terminology used is neither neutral nor particularly helpful but we tried to respond in a helpful manner to the four questions.

The history of the EKA and the ENB is set out accurately if briefly in paras 1-6. It should have been made clear that the closer a scheme was to the EKA the greater the impact from turbines would be.

After the submission of Earlshaugh in 2008 the MOD calculated that the ENB ceiling had been reached. A document from December 2012 shows the large number of schemes that had been blocked. The potential effect of these schemes on the ENB had been assessed by the MOD which didn't happen after the ceiling was reached again.

<https://scotlandagainstspin.org/2019/01/enb-threshold-table-december-2012/>

Developers then challenged the method of calculation used by the MOD and after input from Xi this changed in 2014. Several schemes which had previously fallen foul only of the ENB were consented and the revisions also reduced the amount of the ENB used by schemes within the ENB in the 2012 table.

The proposal at Faw Side though outside the Exclusion Zone was sufficiently close to it and of such a size that it used up all the remaining capacity in the ENB. The ceiling was reached turbine 3 of the 45 proposed.

Data on the ENB was featured in the NLEI PLI. This was produced in April 2018 and those schemes which featured in the 2012 list but which had been refused or withdrawn before April 2018 (such as Earlshaugh) no longer featured.

Developers queried whether the calculation method accepted in 2014 was too pessimistic so the EWG was reconvened. We have read the minutes of meetings on 29th July 2020, 2nd December 2020 and 4th February 2021 to see where things stand.

One option suggested in the July meeting was increasing the Exclusion Zone to 15km. CWP will have opposed this as it would block both Faw Side and Scoop Hill. The data from NLEI is reproduced at Section 9 Annex A.

The December minutes include tables at 3.1.1ff setting out the impact schemes blocked as at 240820 would have. This data is unreliable as its source is unclear. The list of 3 schemes which have been refused since 2018 is helpful though they do little to alter the position.

The February 2021 minutes show only limited progress in discussions between CWP and the MOD. In CWP's Statement of Case recently lodged for the PLI on Faw Side there is no indication the issue has been resolved. CWP has claimed that SG has decided not to extend the Exclusion Zone. I have seen no proof of this and it appears as Option 1.

Another document from NLEI states that in November 2019 the ENB was 100% oversubscribed. <https://scotlandagainstspin.org/2019/12/enb-nlei-comments-from-applicant/>

That figure (the source of which is unclear) is not set out in terms of capacity and will have increased in the subsequent 2 years.

The statement (at para 7) that "Planned Capacity" totalling 1.7GW is impacted by the current state of the ENB may well be accurate. It would be helpful to see further details. The implication is that unlocking this would give a huge boost towards renewable energy targets but that would only be the case if all unlocked schemes were acceptable for other reasons which we don't believe is true.

The conclusion in bold type at the end of para 11 isn't an entirely accurate reflection of the position of **Xi** and seems designed to imply that the resolution of ENB is a matter of huge importance and urgency. Developers are well aware of the ENB issue and amazingly CWP have even used it in the Sanquhar 2 PLI as a reason for proposing a scheme at that location rather than in the area affected by the ENB.

Annex 1: Eskdalemuir working group and policy proposals – consultation questions

26. Does the above accurately reflect the current position in relation to the Eskdalemuir Seismic Array and the barrier it presents to deployment in Scotland

Though not all that is going on is wholly in the public domain the annex seems accurate but the ENB is only a barrier to deployment for schemes that after full consideration are deemed to be acceptable.

27. Acknowledging that the Scottish Government require further evidence before taking a policy decision, at this point and reflecting the options outlined above do you/your organisation have any thoughts?

It may well be that the formula currently used was unduly pessimistic but caution is needed when dealing with the unknown. While SG is hugely supportive of onshore windfarms we take the opposite position so would obviously prefer option 4. That seems unlikely to happen if the data currently being gathered is found to be 100% reliable. We are concerned that options 1-3 means there would be no control on schemes more than 20km away

28. If Option 2 or Option 3 were to be selected, how could we best achieve or calculate an acceptable level of impact?

(One example being an agreement of a standard noise budget to MW generated proportional allocation i.e., for X MW generated = X amount of budget allocated)

We don't feel we have the expertise to answer this.

29. Do you/your organisation have any thoughts on how the EWG might be restructured to ensure continued engagement for interested parties whilst maintaining the core purpose of the group?

We do not know the make-up of the EWG.

Scotland Against Spin

20 January 2022