Supplement

to

Wind farms and tourism in Scotland:
A review with a focus on mountaineering and landscape
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Tourism-related employment in scenic areas reduces after wind farm construction

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Tourism-related employment in scenic areas reduces after wind farm construction.

Introduction

1. Planning applications deny the possibility of any effect on tourism from the construction of onshore wind farms, regardless of the quality of landscape involved.

2. Empirical evidence is now available that shows tourism-related employment in scenic areas decreases after construction of a wind farm.

Data and Method

3. Data on tourism-related employment in the vicinity of 28 wind farms constructed between 2009 and 2015 is contained within a report by Biggar Economics (BE) *Wind Farms and Tourism Trends in Scotland: A Research Report. October 2017*.[1] The wind farms included are listed in Annex 1. The BE report has a number of conceptual and methodological problems, reviewed elsewhere[2], but here we need only note that BE's data are presented without any of the cautions or caveats usually attached to survey data. For example, the possibility of statistical sampling error is noted but no confidence intervals are presented. (Confidence intervals are the conventional way of quantifying the uncertainties inevitable when working with sample data.)

4. A table of 26 wind farms consented within local landscape designations was presented at the Public Local Inquiry into the proposed Upper Sonachan wind farm in north Argyll.[3] They are listed at Annex 2. Similar lists have been presented as part of other wind farm planning applications. I have accepted this most recent list at face value and have undertaken no checking of its completeness. Local landscape designations are established by local authorities and cover around 27% of Scotland (Annex 3).[4]

5. It will be noted that both these data sources have been used to support wind farm planning applications. They are, however, drawing on factual data – though with some concern about the quality and robustness of data used by BE – so bias in the basic data should not be an issue. (Bias in perspective and interpretation cannot be excluded as a possibility but this should not affect the basic data.)

6. I compared wind farms consented within local landscape designations (LLDs) with the wind farms analysed by BE[5] and identified those wind farms on both lists. I compared tourism-related employment trends for wind farms in LLDs with trends for Scotland, local authorities and the wind farms in BE's report not located in LLDs.

Conceptual framework

7. If there is any adverse impact on tourism and recreation from wind farms, it might be hypothesised that it is more likely to occur in areas of higher quality landscape. This might have two interrelated causes. First, areas of higher quality landscape might be more vulnerable to being perceived as degraded or blemished by the introduction of large industrial kinetic structures and associated roads and other infrastructure. Second, areas of higher quality landscape might be particularly likely to attract tourists and recreationists attuned to landscape quality who are therefore more susceptible to discouragement by highly visible industrial structures. In short, both the landscape and those visiting it might have higher sensitivity to wind farms than would be expected in areas of more modest landscape quality.

8. A hierarchy of vulnerability of local tourism economies to wind farms might look something like this:

1 Most vulnerable	Designated National Parks and National Scenic Areas. Mapped Wild Land Areas (as recognised in Scottish Planning Policy).
2	Areas designated by local authorities for their landscape and scenic value.
3	Undesignated areas of extensive land use (e.g. rough grazing, red deer range) commonly perceived (albeit, wrongly) as 'natural'.
4	Farmland, commercial forestry and, possibly, some areas of intensive game management – outwith categories 2 and 3 above.
5 Least vulnerable	Urban and industrial areas

9. Scottish Government planning policy implicitly recognises the top end of this hierarchy by not permitting wind farms in National Parks (NPs) and National Scenic Areas (NSAs) and by asserting a heightened level of protection for Wild Land Areas (WLAs), though not the same absolute protection afforded to NPs and NSAs. In practice only one wind farm has been approved with turbines within a WLA and it is not yet constructed.

10. Commercial wind farms are unlikely in urban areas, for various reasons including turbulence and 'bad neighbour' characteristics such as noise and flicker.

11. The theoretical hierarchy of vulnerability is thus truncated for any empirical analysis to categories 2-4. Identifying areas in categories 3 and 4 separately would be an immense task. So in practice the comparison is a dichotomous one between wind farms in local landscape designations and all other wind farms (assumed to be in categories 3 and 4).

Results

12. The BE report includes three wind farms located within local landscape designations (LLDs). These are Clyde, Glenkerie and Kelburn. The table below compares the trend in tourism-related employment for these wind farms with the average for the local authorities in which they are located.

13. The average percentage change for the three wind farms in LLDs over BE's study period was -7% compared with +36% for the 25 wind farms not in LLDs. The Scottish change was +15%. Compared with their local authority area, the area around Clyde wind farm had a greater loss of tourism-related employment than South Lanarkshire; Glenkerie had a loss compared with Scottish Borders gain; and Kelburn had a loss similar to North Ayrshire.

Wind farm Local authority	**% change in tourism-related employment 2009-2015**	
	In area local to wind farm	**In Local Authority area**
Clyde	-14	
South Lanarkshire		-9
Glenkerie	-4	
Scottish Borders		+13
Kelburn	-4	
North Ayrshire		-5

Discussion and Conclusion

14. There is very little empirical evidence of the impact of wind farms upon tourism. As a retired person, I no longer have the clearance and organisational status to obtain data to which public access is, rightly, restricted to maintain confidentiality. Nor do I have access to the tools required to undertake a proper analysis. Necessarily, therefore, I have to rely upon second-hand access and accept the limitations and weaknesses attached to such access.

15. Biggar Economics' examination of tourism-related employment is the only empirical study for Scotland that has tried to look systematically at individual wind farms. This makes the superficiality of its work all the more disappointing. It does not look at the context of each wind farm and so combines extensions with wholly new wind farms as if they are of equal weight to tourism. It does not separate out the short-term effect of construction-generated tourism-related employment from the long-term pattern of *bona fide* tourism. It dismisses lightly the significant uncertainties associated with the data source. In short, it is not a robust study. But it is the only source of relevant data that is publicly available.

16. Tourism-related employment does not distinguish between activity generated by *bona-fide* tourists, by residents and by temporary influxes of construction workers. This confounds attribution of outcomes to changes in tourism specifically. It also makes baseline and, particularly, outcome data difficult to interpret without establishing a full history of wind farm construction sequencing for each area. BE ignores the issue. I have looked at two examples where I had some personal knowledge – Lochluichart and Clyde – and both showed an uptick in 2015 – the key outcome year - associated with new construction adjacent to the original wind farms. The absence of properly robust research calls for caution rather than confidence in the interpretation of results.

17. The list of wind farms consented in local landscape designations (LLDs) was submitted to a wind farm planning inquiry. It had to be withdrawn to correct errors and resubmitted. It still contains at least one error in that it purports to include wind farms 'approved and installed' but at least one, Dorenell, is only under construction. It would be possible to work through the 27% of Scotland covered by LLDs and the 398 consented onshore wind farms in Scotland[6], however the context in which the data is presented to planning inquiries encourages the maximum statement of wind farm consents in LLDs. It is presented by applicants to show that wind farms have been – and thus their particular application can be – consented in LLDs. It seems a reasonable assumption that the list of wind farms consented in LLDs is accurate and complete, but I cannot be confident of that.

18. LLDs overlap with other designations and defined areas. There is some overlap with the Cairngorms National Park and with Wild Land Areas. Nonetheless, it seems noteworthy that only 7% (26/398) of Scottish wind farm consents have been in LLDs which, allowing for the overlap with national designations and defined areas, perhaps amount to around one fifth of the country.[7] This suggests that the planning system is limiting development in the more scenically attractive areas that are locally but not nationally designated, either directly through decisions made on applications or indirectly by dissuading developers from making many applications within such areas.

19. If there are few consented wind farms in LLDs, there are even fewer for which tourism data has been compiled. The BE report which is the source of the data used here provides no information on statistical sampling error, but it may be substantial at the level of individual

wind farms in sparsely populated areas. It would therefore be most unwise to seek to draw definitive conclusions from the analysis presented in this paper.

20. It can be cautiously concluded, from the limited evidence available, that **wind farms in locally designated landscapes have an adverse impact upon tourism-related employment in their local area**. All three wind farms in such areas in this study lost employment (averaging -7%), compared with a Scottish increase of 15% between 2009 and 2015, and an increase of 35% in the vicinity of wind farms in non-designated areas.

21. This conclusion is drawn from empirical data presented in support of wind farm applications. It shows how important it is to collect, analyse and interpret data in depth in an unblinkered way. The Scottish Government should commission a study of wind farms, landscape quality and tourism impact from a demonstrably independent research body. Pending the outcome of this, the planning system should reset the bar for approval higher for applications for wind farms in locally designated landscape areas.

Annex 1 Wind farms included in Biggar Economics (2017)

Wind Farm Name Alphabetical
Allt Dearg
Arecleoch
Beinn an Tuirc extension
Berry Burn
Carscreugh
Clyde
Drone Hill
Earlseat
Easter Tulloch
Glenkerie
Gordonbush
Griffin
Harestanes
Hill of Towie
Kelburn
Kilbraur extension
Little Raith
Lochluichart
Mark Hill
Mid Hill extension
Millenium extension 2
Millour Hill
Muirhall
Novar extension
Spurness repowering
Tullo extension
West Browncastle
Whitelee extension

Wind Farm Name Ranked	% Change in Tourism Related Employment 2009 - 2015
Lochluichart	135
Kilbraur Extension	95
Novar Extension	77
Allt Dearg	64
Carscreugh	62
Harestanes	61
Gordonbush	53
Easter Tulloch	49
Drone Hill	39
Hill of Towie	34
Millenium Extension 2	32
Tullo South	32
Mid Hill Phase 2	25
Beinn an Tuirc P2	24
Griffin	20
Berry Burn	20
Muirhall	16
Scotland	***15***
Spurness repowering	14
Arecleoch	13
Whitelee Extension	12
Mark Hill	10
Little Raith	0
Millour Hill	-2
Kelburn	-4
Earlseat	-4
Glenkerie	-4
West Browncastle	-10
Clyde	-14

Data from Biggar Economics (2017) Table 5.2 (see endnote 1 for full citation)

Annex 2 Consented wind farms in Local Landscape Designations

Wind Farm Name	Local Landscape Designation when consented	Local Authority
Afton	SLA	East Ayrshire
Aikengall I & II *	AGLV	East Lothian
Burnfoot Hill & Extension	SLA	Clackmannan
Clachan Flats (Ardkinglas)	APQ	Argyll and Bute
Clyde Windfarm (North and Central)	AGLV/SLA/RSA	South Lanarkshire
Craigengelt Hill	AGLV	Stirling
Craigton	AGLV	Stirling
Crystal Rig & Extensions	AGLV	Scottish Borders
Dersalloch	SLA	South Ayrshire
Deucheran Hill	Local Scenic Area/Regional Scenic Area	Argyll and Bute
Dorenell	AGLV	Moray
Earlsburn (North Extension)	LLA	Stirling
Fallago Rig	AGLV/SLA	Scottish Borders
Glenkerie	AGLV/SLA	Scottish Borders
Hadyard Hill	SLA	South Ayrshire
Hagshaw Hill Extension	AGLV/SLA	South Lanarkshire
Hare Hill	SLA	East Ayrshire
Kelburn Estate	SLA	North Ayrshire
Kildrummy	Area of Landscape Significance.	Aberdeenshire
Moy	SLA	Highland
Tangy Farm	Within 300m of APQ.	Argyll and Bute
Tom nan Clach	SLA	Highland
Tormywheel	ASLC	West Lothian
Tralorg	SLA	South Ayrshire
Wardlaw Wood (Dalry)	SLA	North Ayrshire
Wester Dod (Aikengall 2) *	AGLV	East Lothian

* Aikengall 2 and Wester Dod are the same wind farm and including them separately in the list is inconsistent with other extensions not being similarly listed separately.

For table source see endnote 3. I have tidied the presentation of the table from the original but made no substantive changes.

Endnotes

[1] BiGGAR Economics. *Wind Farms and Tourism Trends in Scotland: A Research Report.* October 2017. http://www.biggareconomics.co.uk/recent-publications/new-research-finds-no-link-between-wind-farms-and-tourism-jobs/

[2] See Appendix 3 in *Wind farms and tourism in Scotland: A review with a focus on mountaineering and landscape.* November 2017. https://www.mountaineering.scot/assets/contentfiles/media-upload/Wind_farms_and_tourism_in_Scotland_-_a_review,_Nov_2017_20171106.pdf

[3] This list is currently available within the documents for the Upper Sonachan wind farm application on the DPEA website at: http://www.dpea.scotland.gov.uk/Default.aspx . Search for application WIN-130-2, then identify the document submitted on 16 November 2017 named 'Core Document CD 09.011 - Updated Local/Regional Landscape Designations in the National Context Table'.

[4] A map of LLDs can be found at: https://www.snh.scot/professional-advice/safeguarding-protected-areas-and-species/protected-areas/local-designations/local-landscape-areas . The 27% figure comes from *Rural Scotland: the Association for the Protection of Rural Scotland Newsletter. November 2017*.

[5] Biggar Economics states that there are 28 wind farms but this is double-counting since two (Tullo South and Easter Tulloch) were merged into a single development prior to construction. (For further detail see *Wind farms and tourism in Scotland* (op cit note 2), p.39 'Definition of study cohort.) 'However, despite the fact that they are the same geographical site, BE must define their local areas differently since it calculates different changes in tourism-related employment for each. I have no way of properly combining these two calculations so have had to treat them as if they were two separate wind farms, as BE did.

[6] Renewable Energy Planning Database. October 2017 version. https://www.gov.uk/government/publications/renewable-energy-planning-database-monthly-extract

[7] The true figure for consents in LLDs will be very slightly higher – but no more than 8% - since extensions would be recorded as separate wind farm planning applications in the renewable energy planning database.