



**Critical Appraisal of Biggar Economics Limited's
Research Report
*'Wind Farms and Tourism Trends in Scotland'***

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An opinion for the John Muir Trust

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Cover image: Stuart Young's photomontage of a proposed windfarm at Muaitheabhal

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EXECUTIVE SUMMARY OF MAIN POINTS

The reasons that Biggar Economics' methodology is inappropriate are:

- a.** It focuses only on the correlation between wind farm construction and operation with employment trends – ignoring other major influences such as currency fluctuations or post 2007/8 recovery;
- b.** It uses a short and selective timeframe, ending in 2013 though official figures are available for 2014. If 2009 to 2014 had been used instead, stated employment growth across Scotland would have been much lower than the 2009-2013 figures, so it would not demonstrate a significant trend;
- c.** It includes spending by local and business people in hotels, restaurants and other sectors which is classed as 'tourism-characteristic' activities, though statistics professionals agree this 'non-visitor' spend will be at least 50% of the total;
- d.** It includes the large urban tourism sector in the all-Scotland figures when the contentious issue is impacts on nature and landscape tourism in rural and remote areas;
- e.** There is a circularity in including wind farm construction workers' direct impacts on spending and employment multipliers (often cited by developers as a significant boost in its own right to local employment) as part of "tourism" figures;
- f.** Biggar Economics ignores the ONS caveats and methodological advice on small-scale studies ('Measuring Tourism Locally' Guidance Notes 1&2), especially the unreliability caused in small studies by using rounded ONS national survey figures inappropriately.

1. INTRODUCTION

1.1 Context

The alleged negative impacts of wind farms on surrounding communities have been matters of increasing contention in recent years throughout Scotland as the pace of turbine construction has accelerated and developers' attention has moved from easier to more controversial sites. Applicants, understandably, concentrate almost exclusively on the claimed benefits of their schemes to Scotland or to the local area in additional jobs or 'community benefit' monies and typically ignore, deny or minimise any possible disbenefits. In practice, wind farm applications at either local authority or Scottish level (under Section 36 of the Electricity Acts) are determined primarily on relevant planning grounds of landscape, habitat or peatland impacts but there have been persistent arguments by objectors at Public Local Inquiries (PLIs) and elsewhere that potential disbenefits such as turbine noise, construction and transport disruption, impacts on property values and (especially) impacts on tourism activity should also be considered. Reporters have usually allowed limited discussion of these 'externalities' at PLIs but, to date, the author is not aware of any wind farm application being refused on grounds of projected adverse impacts on local tourism economies or businesses. The received wisdom, indeed, is that no convincing evidence has yet been adduced either to support or refute such concerns.

In principle, therefore, the present Biggar Economics (BE) Report offers the prospect of a definitive, evidence-based resolution of this particular area of contention. The report states that *'overall, the conclusion of this study is that published national statistics on employment in sustainable tourism demonstrates that there is there is no relationship between the development of onshore wind farms and tourism employment at the level of the Scottish economy, at local authority level nor in the areas immediately surrounding wind farm development'*. If that can be established beyond reasonable doubt, then future objections to wind farms on this particular ground could, in principle, be dismissed without further consideration.

If, on the other hand, the available evidence underpinning the BE conclusion does not stand up to independent scrutiny then the arguments on potential displacement effects by wind farms on local or regional tourism activity will remain live. This would be inconvenient to the wind energy industry and its supporters.

1.2 The Expansion of Renewables and Wind Energy in Scotland

From 2007 onwards the Scottish Government has set significantly and increasingly more ambitious targets for the development of electricity from wind turbines (and from 'renewables' generally) in Scotland than those set at UK or European level. Provisional statistics show that Scottish Government had already met its interim target that renewables should generate the equivalent of 50% of gross annual electricity consumption by 2015¹ and progress is well on track to achieve its ambition for 100% equivalence by 2020. This has been facilitated by a policy environment explicitly designed to encourage the very rapid development of electricity from renewables, and

¹ 56.9% is claimed in the Scottish Government's 'Energy Statistics for Scotland' June 2016, which is the source for all statistics in section 1.1 which are not specifically attributed elsewhere.

especially in recent years that from on-shore wind turbines. Both UK-wide policy and subsidy support and specifically Scottish initiatives had, until recently, been actively harnessed to this particular ‘drive for renewables’ in Scotland, though the early phased end in 2016 of the ‘ROCs’ subsidy regime clearly now represents a weakening of those policy drivers at UK level.

A key consequence has been that both generation by, and installed capacity of, wind turbines in Scotland have increased markedly over the past decade and at a much faster rate than elsewhere in the UK. Since 2010 wind has provided the largest single generating component of renewables in Scotland, overtaking hydro sources in that year. The increase in actual wind *generation* between 2000 and 2015 was from 216.7GWh to 13,837.3GWh (a factor of nearly 64x over the period). Even in the relatively short incremental period of four years between the base of 2009 and final year of 2013 chosen by Biggar Economics for this current study, actual generation increased from the higher base figure of 4,553.9GWh to 11,133.3GWh, a factor of 2.44x. In *capacity* terms, the latest DECC figures for Scotland² show that installed wind turbine capacity over the ‘Biggar’ study period increased from 2,121MW in 2009 to 4,709MW in 2013, a factor of 2.22x. These statistics on the rapid growth of installed wind capacity in Scotland are, unlike other key elements of the Biggar analysis, beyond dispute here.

1.3 Different Perspectives and Interests of Proponents and Opponents

The unprecedentedly rapid increase in the numbers and operations of wind turbines in Scotland over recent years has, of course, been welcomed by many: by the politicians who willed it, by the commercial and landed interests which have greatly benefited financially from it and by those who trust to ‘renewables’ to reduce carbon emissions from electricity generation. It has not been welcomed by others who place particular value on rural, and especially wild, landscapes, or who doubt that the claimed environmental benefits actually outweigh the disbenefits of habitat or peat disturbance, who ascribe greater weight to local socio-economic costs, or yet again those who may doubt whether relatively extreme and expensive policy measures by part of a small country can have more than a token effect in ameliorating global warming³.

‘Developers’ who apply for permissions to create wind farms, companies which buy and implement the resulting consents, the landowners who provide the sites and the paid agents of all these share one key motivation: they all expect to receive financial returns, in many cases of a considerable scale, for their efforts. It is only fair to state that Biggar Economics also has a direct commercial interest in the current argument as it has, since its establishment in 2002, made much of its income from consultancy work in support of the renewables industry. If it can establish the present report as the definitive dismissal of the ‘tourism employment’ objection to wind farms it can expect many more paid consultancy commissions and fees for PLI appearances to flow from that. Whilst its arguments deserve to be examined seriously and dispassionately, Biggar Economics’ claim that ‘*this is an independent study*’⁴ has to be understood in that context.

Critics or sceptics of wind farm development, on the other hand, seldom have vested interests of this nature and indeed can frequently find that their involvement in wind

² in its data series ‘Renewable electricity capacity and generation’ to Q1 2016

³ Deiter Helm’s ‘The Carbon Crunch’ (ISBN 9780300215328, June 2015) is the classic statement of factually-based doubt on the efficacy of current renewables policy. It has profound implications *inter alia* for Scotland

⁴ First line of Introduction, page 2.

farm applications results in significant costs to themselves. Their motivations may or may not be valued by wind farm proponents but in general their good faith should not be doubted. Arguably they provide a free public good by interrogating projects which might prove not to be of net benefit to the wider community. Established charities and other bodies with a continuing interest in wind farm impacts - including The John Muir Trust, Mountaineering Scotland, Royal Society for the Protection of Birds and 'Scotland Against Spin' – will develop a longer-term understanding of the issues and arguments and most will be selective in their choice of projects to support or oppose. *Ad hoc* community campaigns against particular wind farms, however, typically find that they have much to learn and considerable time and money to find. It is these community campaigns which will have most to lose if their concerns on possible impacts on their local tourism businesses are effectively dismissed on the basis of a general study.

1.4 Objectives of This Appraisal

This appraisal seeks to critically examine the arguments and evidence base of the BE Report to reach a considered view on whether that Report should be accepted as a robust statement of the relationship between wind farm expansion and tourism employment in Scotland. This appraisal has been prepared by Douglas Wynn⁵, who is solely responsible for its contents and conclusions. It is based on nineteen years' experience as a policy academic in three university departments and then a total of twenty years' as a senior public sector consultant.

1.5 Structure of This Appraisal

This appraisal is organised in the following sections:

- Introduction and Context (this section);
- Retrospect: The 2008 'Moffat' Study;
- Defining and Quantifying 'Sustainable Tourism';
- Selection of Timeframe for the 'Biggar' Report;
- Selection of Wind Farms for the 'Biggar' Report;
- Summary of Weaknesses in the 'Biggar' Methodology.

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2. RETROSPECT: THE 2008 ‘MOFFAT’ STUDY

We comment briefly on this earlier study as it is cited at Chapter 3 of the Biggar Economics report as further support for an argument that *‘there is no evidence to suggest that wind farms have a serious negative economic effect on tourists’*.⁶

2.1 Utility of the ‘Moffat’ Study

Socio-economic assessments by ‘Developers’ of the likely impact of particular wind farm schemes on local economies typically assign monetary values to potential benefits of the schemes (especially construction jobs and ‘community benefit’ monies) but rarely assign any values to potential disbenefits, such as construction disruption or impacts on local transport, housing values or tourism. Indeed these potential negatives are usually not acknowledged at all or, if so, held to be ‘negligible’. To date, wind farm applicants and their agents have relied heavily on the Glasgow Caledonian or ‘Moffat’ study⁷ to dismiss local concerns on potential tourism impacts⁸ and so ease the consenting process.

Since its establishment in 2002 Biggar Economics has developed a specialism in paid advocacy on behalf of wind farm applicants at application and PLI stage. The following extract from its contribution to the 2013 application by Talladh a Bheithe Wind Farm Limited exemplifies this: *“tourism impacts have been assessed using evidence from existing studies ... (and) in particular, work commissioned by the Scottish Government in 2008 (Glasgow Caledonian University, 2008) on the effects of wind farms on tourism, which remains by far the most robust and comprehensive source available.”*

We disagreed at the time that the Moffat research was actually a *“robust and comprehensive source”*, not least because its fieldwork was undertaken as far back as the summer of 2007, when wind farms were significantly less intrusive with an installed capacity of just 1,150 MW in Scotland compared to 4,709MW at 2013 (the date of this particular Biggar advocacy) and 5568MW at 2015⁹. Public acceptance of wind farms appears to be changing as a consequence of expansion, particularly as wind farms are located in increasingly controversial areas – many easier sites having been taken earlier.

Some methodological weaknesses of the Moffat study are:

- it relied on surveys of stated *intent* and not actual actions - which we do not regard as a reliable method as behaviour has repeatedly been shown to differ from stated intent, and the results of which are open to differing interpretation;
- the substantive interview programme for the study was of just 380 persons in total across Scotland;
- all interviewees were selected from visitors to *built* tourist attractions – Stirling Castle, Callendar TIC and Tullibardine Distillery in the case of the Stirling and Perthshire group. Moffat might fairly claim to have considered the impact of wind farms on the propensities of visitors to *built* attractions but its sampling frame was

⁶ First paragraph of section 3.1 of the BE report. Please note that the conclusion as stated here is less categorical than that of BE itself in the last sentence of its Executive Summary – which flatly asserts *‘that there is no relationship between the development of onshore wind farms and tourism employment ...’*

⁷ ‘The Economic Impacts of Wind Farms on Scottish Tourism’, Moffat Centre, Glasgow Caledonian, March 2008.

⁸ To be clear: our own view is that socio-economic disbenefits of wind farm projects – including damage to local tourism businesses – will vary in different local circumstances and should require balanced empirical assessment at an appropriate level of focus. It is deeply unhelpful to assume *either* that significant costs always or never arise.

⁹ Source: DECC Table 6.1c: Renewable electricity capacity and generation: Scotland.

simply inappropriate for a study of the motivations and responses of visitors to countryside areas, attracted in the main by the outdoors: hillwalking, mountaineering, birdwatching and nature tourism, where landscape qualities are intrinsic to visitor attraction and enjoyment.

2.2 Other Views in Brief

It should be noted that the findings of the Moffat study were at variance with a wide range of contemporary surveys undertaken by other researchers across different countries in that it assigned a much lower negative impact to wind farms than did other studies. Even so, its actual survey results did not entirely support the conclusion drawn that the negative impact of wind farm schemes on local tourism would be “negligible”. The Moffat findings, in our view, did not represent the consensus at the time and should not have been represented as authoritative. They are more fairly seen as an ‘outlier’ in their assessment of the likely impact of wind farms on visitor response and behaviour, researched in very different circumstances and using a sampling frame which was irrelevant to the specific tourism offer in remote areas, which is the focus of our interest.

The Mountaineering Council of Scotland’s March 2014 report: *‘Wind farms and changing mountaineering behaviour in Scotland’* concluded that “*mountain-goers do not want to pursue their activity, and spend their money, in areas they regard as spoiled by industrial-scale wind farms. They are changing their behaviour to avoid such areas, and sometimes Scotland altogether.*”

The survey on which this was based was carried out by the Mountaineering Council of Scotland between November 2013 and January 2014 and covered 970 respondents (that is, more than 2.5 times the sample in the Moffat survey) of whom two-thirds were MCS members. This survey found that:

- 67% of respondents thought that Scotland was becoming less appealing to walking and climbing tourists, with similar proportions thinking it already was (35%) or would become so as more wind farms were built (32%);
- 64% said that there were places in Scotland they were less likely to visit or revisit because of the presence of wind farms (with 32% disagreeing);
- those living outside Scotland were significantly more likely to agree that there were places in Scotland they were less likely to visit due to the presence of wind farms – at 74% compared with 61% for those resident in Scotland. This is an economically significant result because, if wind farms result in fewer visitors coming to Scotland from abroad it would cause a net loss of income to Scotland. Whilst Scottish residents might spend money saved on rural holidays on other services within Scotland, this would not be the case for English or overseas visitors who decide not to holiday in Scotland at all as a consequence of the presence of wind farms;
- 56% of respondents stated that they will adapt their future walking and climbing plans in response to the increasing number of wind farms in Scotland. 43% of respondents did not expect their mountain-going activity to change, though 15% expect their enjoyment to be diminished;
- 5% of respondents expressed a preference for accommodation with a wind farm in view but 73% did not want such a view.

These are highly negative results, which, if translated into actual behaviour, would probably signal a substantial decline in local tourism in remote and highland areas.

The Mountaineering Council of Scotland also cite other public surveys which “*suggest a trend of rising visitor discouragement due to wind farms, from under 10% before 2008 (the year of the Glasgow Caledonian ‘Moffat’ study) to 17% in 2011 and 26% in 2013.*” The surveys cited include a YouGov survey commissioned by Scottish Renewables in 2013 – i.e. by an organisation which supports wind farm development – which found that 26% of visitors would be discouraged by wind farms. MCofS consider that this “*suggests a lagged adverse response to the increase in turbines constructed and visible in the landscape. These figures provide no support for the proposition advanced by some applicants that, as more tourists see wind farms this will lead to conditioning visitors to expect their presence while visiting Scotland.*”

3. DEFINING AND QUANTIFYING ‘SUSTAINABLE TOURISM’

The BE Report attempts to examine the relationship (if any) between employment trends in the tourism sector and the growth of wind farms in Scotland. To be precise, the report goes beyond the statistically correct statement that *no evidence had been found* of co-variance within the evidence assembled, to state instead as an absolute that *there is actually no relationship* between these factors. That is – strictly speaking - a leap beyond the evidence, but is very far from the only methodological difficulty here.

3.1 Using Tourism Statistics from The Office of National Statistics (ONS)

The BE report claims that it is based throughout on ‘*tourism employment data ... from the Office of National Statistics. This found that in the majority of cases (66%) sustainable tourism employment performed better in areas surrounding wind farms than in the wider local authority area*’¹⁰. The BE report refers throughout to ‘*sustainable tourism*’ as its primary analytic category and specifically to the ONS Business Register and Employment Survey (BRES) as its primary source of base data¹¹.

There are a number of real methodological difficulties in the ONS base dataset¹²

ONS lists what it calls ‘the main tourism-characteristic activities’ as:

- accommodation for visitors;
- food and beverage serving activities;
- passenger transportation activities;
- travel agencies and other reservation activities;
- cultural activities;
- sports and recreation activities;
- country-specific tourism activities;

but then adds an essential qualification: ‘*a feature of food and beverage serving activities is that, although they are considered tourism-characteristic activities, establishments in these industries also cater to a large degree to non-visitors or local residents. For some establishments but also for the industry as a whole, these non-visitors might represent the majority of customers, permanently or at certain times of the year only.*’ Similar considerations will apply *inter alia* to cultural, sports and recreation activities. Although loosely referred to as ‘Tourism Industries’, this means that we cannot rely on even the unadulterated BRES statistics to accurately capture the contributions to local employment by visitors attracted into a local area from outside, let

¹⁰ Verbatim from the penultimate paragraph of the Executive Summary

¹¹ It would have been very helpful, however, if the BE report had actually identified the precise datasets within ONS or BRES being referred to at various points. Please note ONS’s general caveat that ‘*since BRES is based on a sample of businesses, it can be affected by sampling variability. In particular, the quality of the estimates may deteriorate for smaller geographies and this should be taken into account when making inferences about the figures*’. This is a particularly salient caution by ONS as the cells in the BE report’s sub-national analysis (starting at table 6.1) are rounded to the nearest 100 and nearly one-third of the cells (27 of 90) are at this level. (See ONS Information Paper on Quality and Methodology Information at <http://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/employmentandemployeetypes/qmis/businessregisteremploymentsurveybresqmi>)

¹² in its paper ‘Definitions of Tourism (Version 2, 2012, revised February 2016) See <http://www.ons.gov.uk/economy/nationalaccounts/satelliteaccounts/methodologies/economicvalueoftourismguidancenote1definitionsoftourismversion22012#guidance-note-1-definitions-of-tourism-version-2-appendix-1>

alone assess the variances due to any alleged wind farm ‘disincentive’ for outsiders to choose to visit.

The accommodation and food and beverage elements within ‘tourism’ (however misleading that label) are by far the largest, together constituting 83% of the total, so are presented by ONS on one line of the standard BRES data sets as ‘Accommodation and Food Services’¹³. In principle, this can be precisely captured by Standard Industry Classifications (SICs) and indeed ONS itself is throughout clear on methodologies.

Another significant difficulty in BE’s reliance on ONS methodology is that, despite the elision in the BE Executive Summary, the ONS base data most certainly does not support BE’s assertion that *‘tourism employment data ... from the Office of National Statistics (demonstrates that) in the majority of cases ... sustainable tourism employment performed better in areas surrounding wind farms...for the simple but sufficient reason that ONS itself does not recognise or use ‘sustainable tourism’ as an analytic category.* In correspondence with ONS on this precise point, ONS tourism specialists informed this author that *‘Sustainable Tourism’ is an area where a lot of work has been done on definitional issues in particular - but there is no formal workable definition as yet.* The latest considered statement of ONS views on the practicality of applying the concept of ‘Sustainable Tourism’ in statistical analysis is in an October 2011 paper by its Information Policy Team *‘Sustainable Tourism: A Review of Indicators’*¹⁴. It has not subsequently chosen to apply it. On 28 July 2016 ONS announced the *‘Cessation of the Sustainable Development Indicators’* across the UK economy on the grounds that *‘user engagement has revealed limited use of these statistics’*. In reality, it has clearly proved difficult enough for ONS to provide a coherent and discrete definition and scoping of ‘tourism’ itself, let alone ‘sustainable tourism’. There is a certain irony in basing BE’s review of employment trends in ‘sustainable tourism’ on data collected by a professional organisation which itself declines to use that as an analytic category.

3.2 Definition and Scoping of ‘Sustainable Tourism’ in Scotland

A review of official Scottish Government literature for workable definitions of ‘Sustainable Tourism’ for the purposes of practical statistical analysis reveals this somewhat imprecise ‘definition’ by VisitScotland¹⁵:

‘Sustainable tourism is tourism committed to generating a low impact on the surrounding environment and community by acting responsibly while generating income and employment for the local economy and aiding social cohesion.’

A more recent and apparently authoritative statement is this verbatim ‘Growth Sector Definition’ in ‘Growth Sector Briefing – Sustainable Tourism’ from the Office of the Chief Economic Adviser to the Scottish Government of February 2016, which offers:

‘Sustainable Tourism sector was identified in the Scotland’s Economic Strategy as one of the growth sectors in which Scotland can build on existing comparative advantage and increase productivity and growth. Scotland’s tourism sector is a diverse industry, with a range of sub- sectors such as hotels, camping sites and other provision of short

¹³ See Table 4 of the annual BRES datasets on Regional Level Employment for Scotland.

¹⁴ <http://webarchive.nationalarchives.gov.uk/20160105160709/http://www.ons.gov.uk/ons/rel/tourism/sustainable-tourism/review-of-indicators/rep-st-indicators.html>, DECC had earlier commissioned

¹⁵At http://www.visitscotland.org/business_support/sustainable_tourism/what_is_sustainable_tourism.aspx

stay accommodation, restaurants, bars, travel agents, museums and other recreational and cultural activities. In addition, other sectors in the Scottish economy, for example retail and transport, benefit directly and/or indirectly from the tourism industry. Economic activity generated by tourism expenditure cannot be precisely captured using SIC Codes, as tourism is a characteristic of demand rather than specific products or services. However, a number of industries within the service sector can be used to capture economic activity in a set of tourism-related industries outlined below. Data based on this classification do not represent a direct measure of economic activity from tourism, as part of the demand in these industries will be generated by non-tourists as well as tourists.'

Neither of the above attempts at definition is particularly useful in statistical analysis but it is much to be welcomed that the Chief Economic Adviser repeats in respect of Scotland the ONS caveat that only an undefined proportion of the recorded demand in 'tourism industries' is actually generated by visitors from beyond the area. Despite the Chief Economic Adviser's statement that '*economic activity generated by tourism expenditure cannot be precisely captured using SIC Codes*' his Briefing nevertheless then proceeds to list the 14 SIC codes which he takes to constitute 'sustainable tourism':

'The Sustainable Tourism growth sector is defined by the Standard Industrialisation Classification (SIC) 2007 codes:

- SIC 55.1: Hotels and similar accommodation;
- SIC 55.2: Holiday and other short-stay accommodation;
- SIC 55.3: Camping grounds, recreational vehicle parks and trailer parks;
- SIC 56.1: Restaurants and mobile food service activities;
- SIC 56.3: Beverage serving activities;
- SIC 79.12: Tour operator activities;
- SIC 79.9: Other reservation service and related activities;
- SIC 91.02: Museum activities;
- SIC 91.03: Operation of historical sites and buildings and similar visitor attractions;
- SIC 91.04: Botanical and zoological gardens and nature reserve activities;
- SIC 93.11: Operation of sports facilities;
- SIC 93.199: Other sports activities (not including activities of racehorse owners);
- SIC 93.21 Activities of amusement parks and theme parks;
- SIC 93.29: Other amusement and recreation activities;'

... and a full dataset of employment statistics, using this consistent framework of 14 SIC codes, is then provided for the years 2009 to 2014 inclusive in '*Scotland's Economic Strategy – Growth Sector Statistics*'.

The BE Report, however, presents statistics on 'Sustainable Tourism Employment in Scotland by Sub-Sector' in Table 4.1 on a *different* matrix of 10 areas rather than the 14 SICs identified by the Chief Economic Adviser as constituting 'Sustainable Tourism' in Scotland – and then gives the source simply as 'ONS (2015) Business Register and Employment Survey 2009-13' without more precise reference. No reason is offered by Biggar for adopting this particular data framework (nor is its origin noted) though it is accepted that the total employment figures it generates are close to those in *Growth Sector Statistics*.¹⁶

¹⁶ The terminology preferred by the Scottish Government – 'The Sustainable Tourism Growth Sector' – is unsatisfactory in our view – it rolls two policy aspirations into one apparent definition. This terminology contrasts

For our part we simply do not understand why Biggar Economics chose not to use the same scoping, SIC framework and yearly data for ‘Sustainable Tourism’ which (despite its analytic flaws) has been accepted for official use and publication in Scotland as the basis for its analysis. That would have been both transparent and consistent.

3.3 Allowing for Residents’ Inputs to ‘Sustainable Tourism’ Industries

Nor do we understand the very slight treatment by Biggar Economics¹⁷ of the crucial methodological point made by ONS that *‘for some establishments but also for the ‘tourism’ industry as a whole ... non-visitors might represent the majority of customers’* and by the Chief Economic Adviser that *‘some of the spending in these sectors comes from residents and not tourists’*. Biggar refers in passing to some of its own earlier work in the Stirling Council area to estimate that roughly half of all spending in ‘sustainable tourism businesses’ in Stirling was from residents and half was from visitors. It fails, though, to analyse this to any adequate degree by either SIC codes (which will vary greatly in the extent to which their employment is driven by *external* tourism) or to give any estimate of a ‘correction factor’ which may be applied across the whole of Scotland. In consequence, the employment statistics on which Biggar’s later analyses are based are not corrected for this well-recognised and systematic overstatement of the impacts of spend by travellers into particular areas – and the purpose of the study after all is to assess the possible effects of wind farms in dissuading ‘outsiders’ to visit areas where turbines are built.

There is another implication of Biggar’s failure to distinguish between residents’ and visitors’ spend within the ‘tourism industries’: given that a substantial, geographically variable but unrecorded proportion is due to *residents* and that the timeframe chosen for the study is 2009 to 2013, an unknown share of the ostensible growth trend of 10.76% on which Biggar founds its conclusions will actually be due to a recovery of domestic activity after the global economic crisis of 2007-08.

3.4 Urban Skew in Scottish Data: Methodological Implications

The greatest contention in respect of the alleged disincentive effects of wind farms on local tourism business has been in remote areas with fragile economies and limited alternative employment opportunities. Often these areas are mountainous or at least contain uplands which make their relief conducive to efficient wind generation. The John Muir Trust (and others such as MCS and RSPB) has been highly selective in opposing only those wind farm proposals which threaten wild or particularly cherished landscapes and habitats and it is our strong view that any statistical methodology which aims to assess the possible impacts of wind farm construction in such areas must be sensitive to their particular characteristics. The nature of ‘tourism employment’ in such areas is systematically different from that in cities and will include (for example) a much lower or negligible component of full-time, permanent tour operators, reservation services staff and museum and gallery employees (SICs 79.12, 79.9 and 91.02 in the Scottish Government’s scoping of ‘sustainable development’). Conversely, a higher but unrecorded proportion of ‘tourism’ employment in remote areas than in cities will be part-time, seasonal work in accommodation and catering (all of SICs 55 and 56).

markedly with that of the much more restrained professional statisticians of The Office of National Statistics, who prefer simply *‘tourism-characteristic activities (sometimes called the tourism industries)’*

¹⁷ last paragraph of Page 6 – section 4.1 on ‘Sustainable Tourism Employment’

A statistical methodology which was sensitive and ‘fit for purpose’ to assess the alleged impacts of wind farms on the local economies of rural and remote communities would not incorporate trend data from the 35.7% of ‘tourism’ employment in Scotland which is actually generated in the three largest cities of Edinburgh, Glasgow and Aberdeen alone¹⁸ – because it is different in composition. A much more focused and ‘granular’ methodology is required.

3.5 Multi-Causation, *inter alia* Impact of Changing Currency Values

Statistical trends in tourism and the employment generated from that, even when the analysis can be restricted simply to ‘real’ tourists, have always been driven by multiple factors and we may not have appropriate data or the statistical tools to disentangle these. The current report seeks simply (whatever its other strengths or weaknesses) to examine co-variance with one factor – wind farm development. An important influence on the trends here noted is likely to have been the fluctuations in the relative strength of the UK pound, as total spend on tourism, from both domestic and international visitors, is known to be inversely correlated with its external value. Tourism is highly price sensitive, and when the pound is strong, as it was in 2014 and 2015, more UK residents tend to travel abroad for their holidays while fewer overseas visitors come to the UK because it is relatively expensive. Conversely, there is likely to be a significant increase in tourism earnings and employment in late 2016 and 2017 as a result of the decline in the external value of the pound from \$1.50 to \$1.30 since the Brexit vote.

An adequate study of tourism trends would attempt to control for other known significant influences on such trends in Scotland, insofar as data could permit. It is self-evident that other factors will have impacts, and some may well be more important than wind farm development.

¹⁸ The source is the Scottish Government’s February 2016 ‘Growth Sector Briefing’. (15.8%, 14.3% and 5.3%.)

4. SELECTION OF APPROPRIATE TIMEFRAME FOR THIS STUDY

The Scottish Government has provided, in ‘Scotland’s Economic Strategy – Growth Sector Statistics¹⁹’ a SIC framework and scoping of what it understands as ‘sustainable tourism’ in Scotland. The data provided is certainly based on ONS original surveys but are organised into SIC categories which the Scottish Government takes as constituting ‘sustainable tourism’ as it defines that term²⁰. The latest data set so organised and published extends from 2009 to 2014 and the relevant extract is reproduced below:

Employment by Sector		2009	2010	2011	2012	2013	2014
Sustainable Tourism (Tourism related Industries)	SIC 55.1: Hotels and similar accommodation	49,200	46,500	53,400	50,100	53,600	46,600
	SIC 55.2: Holiday and other short-stay accommodation	2,900	2,900	3,200	3,000	3,400	2,700
	SIC 55.3: Camping grounds, recreational vehicle parks and trailer parks	2,200	2,100	2,300	2,300	2,500	2,200
	SIC 56.1: Restaurants and mobile food service activities	66,900	68,400	59,900	64,900	84,300	83,100
	SIC 56.3: Beverage serving activities	41,600	36,300	35,700	30,500	32,600	29,300
	SIC 79.12: Tour operator activities	1,600	1,700	1,600	1,400	1,000	1,600
	SIC 79.9: Other reservation service and related activities	1,000	1,100	1,100	1,200	1,700	1,300
	SIC 91.02: Museum activities	4,100	3,800	4,500	4,400	4,400	4,500
	SIC 91.03: Operation of historical sites and buildings and similar visitor attractions	1,000	700	2,400	2,200	2,400	2,500
	SIC 91.04: Botanical and zoological gardens and nature reserve activities	2,100	1,700	1,900	1,800	2,000	1,800
	SIC 93.11: Operation of sports facilities	13,400	12,100	12,400	13,400	13,600	13,700
	SIC 93.199: Other sports activities (not including activities of racehorse owners) nec	2,000	2,300	2,900	3,800	4,100	3,900
	SIC 93.21: Activities of amusement parks and theme parks	600	700	600	500	800	500
	SIC 93.29: Other amusement and recreation activities	2,300	3,200	3,000	2,000	4,900	2,200
TOTALS:		<u>190,900</u>	<u>183,500</u>	<u>184,900</u>	<u>181,500</u>	<u>211,300</u>	<u>195,900</u>

We do not understand *either* why Biggar Economics chose to use a different sub-sector analytic framework of its own (see the ten categories used in Table 4.1) or – more significantly – why it chose to analyse employment trends over the period 2009 to 2013 rather than (as the dataset permits) the longer and more recent period of 2009 to 2014. We trust that there is no significance that the timeframe which Biggar chooses (2009-2013) delivers arithmetically a rounded increase in ostensible tourism employment in Scotland of 11% (211,300 / 190,900 or 10.76% as BE claims at its section 4.1) whilst if it had chosen to analyse over the period 2009 to 2014, BE would only have been able to report an increase in ostensible tourism employment over that period of some 3% (195,900 / 190,900). We simply observe that the later figure would be less useful in demonstrating a significant growth trend of ‘tourism employment’ at the same time as wind turbine numbers were expanding greatly in Scotland.

¹⁹ at <http://www.gov.scot/Topics/Statistics/Browse/Business/Publications/GrowthSectors/Database>

²⁰ We note the ONS caveats on their own base data which reflect the weaknesses they see in the statistics they themselves collect and publish on ‘tourism-characteristic industries’. See also Section 5.1 below.

We are not alone in noting a downturn in ‘sustainable tourism’ employment over the year 2013-2014: the Scottish Government’s Chief Economic Adviser in the ‘Growth Sector Briefing’ cited earlier noted that ‘*Employment in the Sustainable Tourism growth sector stood at 196,000 in 2014, representing a 7.2 percent decrease from 2013 (down 15,200 jobs)*’.

The base BRES dataset – which, as noted, publishes its data on a somewhat different basis as it telescopes the SIC codes relevant to ‘tourism’ into simply ‘*Accommodation and Food Services*’ (these constitute over 80% of the ‘Tourism-related industries’) – shows in the annual sequence for Scotland in Table 4 that the employment trend between 2009 and 2013 was +5% (191,700 / 183,100) whilst the trend between 2009 and 2014 (though not uniform) was precisely a rounded zero (0 - 182,700 / 183,100).

As a third confirmation and consistent with this evidence of a downturn in activity in the Scottish tourism-related sector in 2014 compared to 2013, the ONS Annual Business Surveys²¹ for Scotland, though in this dataset offering only ‘total employment costs’ rather than numbers, and analysed into just seven industry sectors:

- *Hotels and similar accommodation*
- *Holiday and other short stay accommodation*
- *Camping grounds recreational vehicle parks and trailer parks*
- *Other accommodation*
- *Operation of historical sites and buildings and similar visitor attractions*
- *Botanical and zoological gardens and nature reserves activities*
- *Activities of amusement parks and theme parks*

also shows employment costs falling over that year, omitted from Biggar’s analysis.

4.1 An Adequate Rationale?

The only rationale offered by Biggar Economics for its choice of study timeframe in this report is in the second paragraph of its section 4.1 which reads: ‘*The figures used in this study consider the years between 2009 and 2013. Scotland was host to large one-off events in 2014, such as the Commonwealth games and the Ryder Cup and therefore data from 2014 has been omitted to avoid any misleading trends*’.

In our view this is unconvincing as it implies – quite contrary to the evidence – that an extension of the study timeframe to include the year 2014 would have artificially *increased* the trend line of tourism activity rather than, as would actually be the case from extrapolation of the official data, *decreased* that trend line. The latter choice would have been inconvenient for the argument which Biggar has consistently wished to support, but we trust that was not a consideration here.

²¹ <http://www.ons.gov.uk/surveys/informationforbusinesses/businesssurveys/annualbusinesssurvey> ‘ABS Data for Accommodation and Visitor Attractions in Scotland 2010-2014’ ONS reference 005990 4 August 2016.

5. SELECTION OF WIND FARMS FOR THE LOCAL STUDY

5.1 Is ONS Survey Data a Suitable Basis for Small-Area Analysis?

To supplement its calculations of trends at an all-Scotland level Biggar Economics also sought to examine possible co-variance at a relatively low level (*'localities within a 15km radius from wind energy sites'*) – in its Chapter 6. We have already noted that ONS warns users of its BRES data of an unavoidable impairment of statistical accuracy which necessarily accompanies the rounding of 'small area' estimates based on its sample survey to the nearest 100 - but Biggar Economics uses the ONS base data for this purpose anyway. Whilst it may be convenient for a researcher to be provided with a dataset which does not require actual fieldwork, we consider this use of BRES data for 'small-area' analysis to be rash and to ignore the direct advice of the statistics professionals in ONS.

ONS actually provides sound guidance on terminology and appropriate methodologies for small area analysis in its 'Guidance Notes: Measuring Tourism Locally', which contains inter alia this: *'These concepts and definitions relating to tourism are used at a national level within ONS and find their way into definitions and classifications used in the National Accounts and Balance of Payments, International Trade in Services, and Household and Migration statistics. It is important, therefore, that these standards are adopted more widely at the sub-national level to promote a cohesive approach to the measurement of tourism. It is crucial that this conceptual framework is adopted by users when undertaking data collection or analysis on tourism, particularly at the local level'*. That advice appears not to have been followed by Biggar Economics.

Table 6.1 in the BE report lists the particular wind farms chosen by it for the purpose of examining employment trends in the surrounding areas (whether or not ONS would consider this a justifiable use of its base statistics). We note that 27 of the 90 cells in this table record the local 'tourism-related employment' at the rounded figure of 100 and all are rounded to the nearest 100. We cannot accept this as an appropriate basis for the accurate calculation of local trends and we would be surprised if ONS considered it compliant with the definitions and methodologies which it advises for small-scale research.

5.2 Are Construction Workers *Actually* Tourists?

As the counting of employment in the tourism-characteristic sector actually includes jobs generated in relevant services for *any* clients - locals, visiting workers and businesspeople as well as actual 'tourists' who visit by personal choice – the total of such jobs as recorded will be driven in part by the demand for accommodation, sustenance and other qualifying services by workers and professional staff staying locally in order to construct a wind farm. In small and remote local economies, the uplift due to a one-or-two year influx of construction staff may well constitute a large proportion of the ostensible 'tourism-related' economic activity. This effect will be the more significant and skew the statistics more the smaller the area of analysis, such as that attempted in Chapter 6 of the BE report. The report, however, nowhere acknowledges this likely analytical circularity in claiming to chart 'tourism-related employment in wind farm areas' (tables 6.1 to 6.4 in the BE report) over the very periods of wind farm construction activity. Even allowing for the 'blunting' of local

employment statistics due to rounding to 100, it is not sensible to chart such employment just over the period of local wind farm construction and then claim that the analysis shows that the two can co-exist and grow at the same time and so constitutes evidence ‘that there is no relationship between the development of onshore wind farms and tourism employment at the level of ... the areas immediately surrounding wind farm development’. In reality, these employment trend figures will be at least in part a direct consequence of local wind farm construction activity.

5.3 Basis of Selection of the Wind Farms Used in this Study

The qualifying conditions set for the selection of the eighteen wind farms used by BE in its sub-national analysis of trends are stated somewhat ambiguously at section 6.1 of the BE report as: *‘All of these sites were constructed between 2011 and 2012. Therefore, in 2009 the wind farm did not exist and was constructed and became operational during the time period to 2013 ... Only wind farms with a capacity of over 10MW were selected. The selected wind farms were geographically spread throughout Scotland ...’*

From checking the Department for Business, Energy & Industrial Strategy ‘eunomia’ Renewable Energy Planning Database it appears that what was in fact used as a basis of selection by BE was simply *those wind farms listed as becoming operational within calendar years 2011 or 2012*, not those *constructed* in those years as stated. Though this criterion could have been stated with greater clarity, we understand that its ostensible rationale was to capture any run-through negative effects of wind farm construction and operation on employment in the ‘tourism-related industries’ over the chosen study period of 2009-2013.

We have reviewed data on the wind farms selected and find that there is significant confusion here in that at least four of the eighteen listed were simple extensions of larger wind farms which were, in fact, already constructed or in operation *prior* to 2009:

- Kilbaur, which started generation in June 2008;
- Millenium, started generation in October 2008 with Extension III from April 2011;
- Spurness, started generation in November 2005 and was repowered in October 2012;
- Whitelee, which first generated in May 2009.

This means that these local study areas already had wind farms at their hearts even before the commencement of Biggar Economics’ attempt to chart the impacts of (ostensibly) new construction of wind farms on local tourism-related job trends.

Whether extensions of existing wind farms or genuinely new constructions, the DBEIS Renewable Energy Planning Database records that two of the eighteen wind farms selected for this study were actually under construction in 2009, and another eight under construction in 2010, so it is clear that over half of these case studies are incapable of showing any ‘before and after’ effects of wind farm construction on local tourism employment, as is apparently being attempted.

In our view, Section 6 of the Biggar Report – on local case studies – is simply unclear on timing and sequences, and methodologically confused.

6. SUMMARY OF WEAKNESSES IN THE ‘BIGGAR’ METHODOLOGY

6.1 The Central Purpose of Research in This Field

It is helpful to remember the central issue which needs to be investigated here: **whether or not the construction of wind farms across many parts of Scotland has the potential to put off at least some external visitors – to Scotland overall, or to particular localities - and so can have some adverse economic effect on ‘the main tourism-characteristic activities’²² at all-Scotland or local levels.**

The practical question for this appraisal is whether the methodology used in the Biggar Economics’ Report is appropriately designed and focused and its evidence clear and robust enough that the Report is capable of establishing reliable conclusions on this.

6.2 Key Weaknesses in the ‘Biggar’ Methodology

We see a number of significant weaknesses in the Biggar Economics methodology and its underlying evidence and summarise these briefly here, starting with the most general:

1. **Analytic Framework.** It is essential for clarity in empirical studies that terminology and analytic frameworks are always well-defined and consistently applied. We have noted the advice of the professional statisticians of ONS that *‘concepts and definitions relating to tourism are used at a national level within ONS It is important, therefore, that these standards are adopted more widely at the sub-national level to promote a cohesive approach to the measurement of tourism. It is crucial that this conceptual framework is adopted by users when undertaking data collection or analysis on tourism, particularly at the local level’*²³. Biggar confirms that it takes its data from the UK ONS but nevertheless chooses to use the Scotland-only concept of ‘sustainable tourism’ throughout²⁴, and then never actually maps that on to the ONS scoping. As noted, the Chief Economic Adviser to the Scottish Government provides (in ‘Growth Sector Briefing’, in addition to commentary) a usable 14-element SIC framework for ‘sustainable tourism’ and that *could* have been used in this study (though at the price of consistency at UK level and on the assumption that base data for Scotland was available in that format). Ideally for clarity and consistency, the ONS data should have been analysed using the conceptual framework by which ONS produced them – in this report, however, Biggar simply confuses concepts and data from the two levels of government. It does not help that key terms are undefined and that the main data source throughout is simply ascribed to ‘ONS Business Register and Employment Survey 2009-13’ without further detailed reference. Having worked through this study, we still do not understand the rationale of Biggar’s analysis of ‘sustainable tourism’ into 10

²² The ONS term *‘main tourism-characteristic activities’* is preferred to that used in Scottish Government publications - *‘sustainable tourism growth sector’* - as the former deliberately does not pre-judge key aspects, in particular whether such activities are actually sustainable, are actually growing, and are actually all due to tourists.

²³ ONS ‘Guidance Notes: Measuring Tourism Locally’

²⁴ Biggar states at its section 4.1: *‘The most accurate indicators of the health of the tourism industry at a local level are perhaps the figures on employment in ‘sustainable tourism’ industries, where the sectors that form this category are defined by the Scottish government. The data can be found from the annual Business Register and Employment Survey (BRES).* For reasons noted, definitional and substantive, this is confused and plain wrong.

sub-sectors at Table 4.1 as this is consistent with neither the 14-element ‘Scottish’ definition nor does it have any apparent warrant from ONS.

2. **Multi-causality of changes in employment activity in the ‘tourism-characteristic sector’.** This study compares trends in just two factors – the growth of wind farms across Scotland and changes in aggregate employment in what it terms ‘sustainable tourism’, and then concludes that because both trends are generally positive at Scottish and local levels there is no evidence that wind farm construction reduces ‘tourism employment’ at either level. This actually needs much more careful consideration, both of the self-reinforcing aspect of wind farm construction on local employment (5 below) and of wider influences on ‘tourism employment’, such as currency fluctuations or special events. Correlation does not prove causation – nor the absence of causation.
3. **The inclusion of non-tourist economic activity in the employment trend data.** ONS repeatedly warns in its substantive and methodological papers that much of what it more carefully terms ‘tourism-characteristic activities’ in the overall economy are actually generated from services to non-tourists or non-visitors. The ‘non-tourism’ share of nominally ‘tourist industries’ can vary across industry sub-sectors or geographically, and can represent a majority of such activity (3.1 above). This essential advice is repeated by the Chief Economic Adviser in the case of Scotland and he also notes as a further caveat that *‘economic activity generated by tourism expenditure cannot be precisely captured using SIC Codes’*. Biggar virtually ignores such niceties. Only one short paragraph (the last in its Section 4.1) makes any relevant comment and that is both vague and in reference only to one town. This factor actually has significant implications for the understanding of trends and warrants serious consideration – if half or more of ‘tourism’ employment is actually generated by *local* demand then any increase 2009 to 2013 in aggregate employment will very probably be brought about in part by domestic UK recovery over this period.
4. **The inclusion of the cities in the employment trend data.**

The composition of the ‘tourism-characteristic activities’ in cities is different to that typical of rural and remote communities potentially affected by wind farm applications. Full time museum or gallery security, domestic or professional jobs will be absent in the latter, as will box-office, sports facilities and tour organiser posts. Including the 35.7% of all-Scotland ‘tourism employment’ represented by three cities in an analysis such as this will simply skew the overall figures and is simply inappropriate in understanding the possible local impact of wind farm expansion on communities across Scotland.
5. **Employment multiplier effects of wind farm construction itself on the trend data.** It is not sensible to consider co-variance of two factors without considering the causal effects which one may have directly on the other. In this case, we know that the spend of wind farm ‘developers’ and their employees during construction may constitute – at least in some rural communities and usually well trumpeted by applicants – a significant uplift to local business activity and so to local employment. Given that Biggar’s approach to reviewing impacts on ‘immediate areas around wind farms’ deliberately chooses to study the construction phase, some sensible consideration or at least acknowledgement of this effect is required – there is none in the current report.

6. **Short and selective timeframe.** The shorter the timeframe for a trend analysis, the less reliable we can expect it to be. The ONS employment data (and that based on it but organised by ‘sustainable tourism’ categories by the Chief Economic Adviser in Scotland) in addition to their acknowledged and unavoidable limitations, show quite significant differences in totals year by year over Biggar’s chosen study period, so we would in principle have wished to see the timeframe extended where that is possible and appropriate. These data sets at UK and Scottish levels both extend beyond the ‘Biggar’ timeframe to include 2014 and the question must therefore be asked - why was the timeframe not selected to cover as far as the data allows, assuming no clear impediment existed? We note at 4.1 above Biggar’s ostensible rationale but find it totally unconvincing. The current Scottish ‘Growth Sector Briefing’ states at page 2 that *‘Employment in the Sustainable Tourism growth sector stood at 196,000 in 2014, representing a 7.2% decrease from 2013 (down 15,200 jobs)’*. That could and should have been included by the use of the most recent evidence.
7. **Basis of selection of local wind farm cases.** Despite Biggar’s apparent requirement that these wind farms did not actually exist at 2009, at least four of those selected were simply extensions of pre-existing wind farms. In addition, a total of ten of the selected wind farm cases are recorded on the DBEIS database as actually *under construction* in 2009 or 2010, making these particular cases irrelevant to any investigation of ‘before and after wind farms’ trends over the study period (... and also showing Biggar’s *claim that ‘all of these sites were constructed between 2011 and 2012’* to be, at best, misleading.)
8. **Limitations and caveats on the use of ONS data in local studies.** We would have wished that Biggar had respected the caveats and methodological advice so clearly offered by ONS, and in particular on the limitations and possible distortions due to rounding to the nearest 100 if ONS UK or regional data was used instead at a small-area level. The very well considered Office of National Statistics ‘Guidance Notes: Measuring Tourism Locally’, should inform the methodology of any future study if it is to be taken as authoritative.

6.3 Is Consensual and Conclusive Research Possible on This?

Further research is badly needed on this issue if future decisions on wind farm consents are to be properly informed in respect of socio-economics – and we are not alone in that view. For example, we have seen correspondence from the Chief Executive of VisitScotland on 28 June 2014 to a major business in highland Scotland that: *“since the beginning of 2014, VisitScotland has been consulted on 28 renewable sites across Scotland - either through scoping opinion requests or application representations. In each response to developers, via the Scottish Government, we continue to push for Tourism Impact Statements to be drawn up as part of the Environmental Impact Analysis, and prior to any approval process. It continues to be imperative that any potential detrimental impact of the proposed development on tourism - whether visually, environmentally and economically - be identified and considered in full.”*

For the longer term, **it would be of immense assistance to have a robust empirical study by a genuinely independent and professional economic research institute of the actual performance of local tourism in remote areas where wind farms have been developed.** Such research would be focused on the specific areas and their

particular pattern of ‘tourism’ businesses and use comparisons with control cases where no wind farms were constructed to assess impacts in a series of case studies²⁵.

At the moment the evidence base for assertions on the level of impacts of wind farms on local tourist numbers and spend is poor *inter alia* because:

- regular tourism statistics are simply not collected at an appropriate level of granularity to inform such research;
- the base data from ONS and BRES are subject to several important caveats (freely acknowledged by themselves and noted in the body of this appraisal) such as the inclusion of non-visitor generated spend in reported ‘tourist industry’ statistics;
- neither ‘objectors’ nor applicants have any material interest in funding a controlled, longitudinal study of pre- and post-construction impacts.

Until and unless we have such robust statistical evidence on the actual impact on visitor numbers and expenditure in areas where wind farms have been developed, compared to control cases and national trends, the socio-economics of wind projects will remain unnecessarily controversial.

An adequate empirical study should also comply with the professional advice of the Office of National Statistics in its ‘Guidance Notes: Measuring Tourism Locally’, on consistency of terminology and methods.

²⁵ Note the difference from the current BE report, which presumes to extrapolate local trends on ONS-provided small-area statistics rounded to the nearest 100, and so loses focus and accuracy. See section 3 below.