

**Comments on the Lewis Wind Farm Proposal reports by DTZ
And Regeneris Consulting**

Emeritus Professor Iain H McNicoll BA PHD FRSA

(26/01/2007)

Note: these comments are sequenced and initially referenced according to the DTZ report. Where necessary, specific references to the Regeneris report are given in the text.

1. DTZ para 3.14 Since DTZ has confirmed its proposed classification of tower fabrication and turbine assembly with the ONS, this must be accepted as “officially correct” and used in any subsequent analysis.
2. DTZ para 3.16. Table 3.3 shows that per capita *outputs* in the three sectors are not very different, and hence Regeneris’ misclassification will not lead to large errors through using the construction industry value. However, I would think that *value added/output* and *employment income/output* may be very different in construction from those in the manufacturing sectors, and inappropriate use of construction ratios could lead to significant errors in estimating GVA and employment income. Another point is that these ratios refer to outputs valued at 2003 prices. Outputs valued at prices of later years need to be deflated to 2003 before any of these output/employment ratios can be used.
3. DTZ paras 3.19-3.22. As DTZ suggest, at the UK national level, the net contribution of one construction project as opposed to another is likely to be negligible, and hence all such effects can be left out in a proper *ex ante project evaluation*. However, for a sub-regional “multiplier impact” assessment, reasonable arguments can be made for including them. **The key point is that all short-term “developmental” impacts must be kept separate from the medium/long term “operational” impacts.** Ideally, what is required is a *time path* of claimed effects for each year over the entire forecast project lifetime.
4. DTZ para 3.23. I have no previous knowledge of the “ten year rule”. In any event, the conversion of temporary employment to “permanent equivalents” seems a bizarre and pointless exercise, at best misleading and at worst wrong.

One temporary worker working full time for a year accounts for “one person year of employment” by definition, no conversion is required. Though it adds no additional information, one can say that one person year of employment is equal to one FTE job for a year.

FTEs are properly used in converting *part-time* employment during a year into *full-time equivalency* for that year. Thus 3 persons each working 4 months equals one person year of employment equals one FTE per annum.

To convert temporary jobs into permanent equivalents (though it is undesirable to do so) requires a definition of how many person years of employment equate to a permanent FTE. To make any sense at all, this presumably would be something like 40-50 years (i.e. one person working continuously from leaving school/college until retirement). 10 years definitely seems too low.

5. DTZ 3.24 This is correct and important. For a proper ex ante evaluation of a project, one must estimate the *net* effects, not simply the *gross* effects as Regeneris seem to do.

6. DTZ 3.25 and 3.26. Table 3.4 extracts results from Table 9.8 of the Regeneris report. Referring to both these tables, a number of points can be made:

* The ratios of employment income/output for both Scotland and the WI are extremely high (65% and 64% respectively). I do not have the official statistics in front of me, but I am willing to bet that, for either economy as a whole, not even entire Gross Value Added (GDP) is as high as 60% plus of aggregate gross output.

* in table 9.8, implicit output per “permanent FTE” (!) job is £750,000 for Scotland, but is £270,000 for the WI. No explanation appears to be given for this enormous implied difference in labour productivity. If the Scottish ratio were applied to the WI output estimate, the WI indirect employment figure would fall to 18 “permanent FTEs”

On balance, the earlier estimates produced by Regeneris seem more plausible in terms of internal consistency and conformity with economic reality.

7. DTZ paras 3.27-3.29 These remarks seem entirely fair and reasonable, given the results and explanations (or lack of them) in the Regeneris report.

8. DTZ para 3.32. If, in fact, Regeneris has used the *employment-output multiplier* in the way described, then this is entirely wrong and double counts knock-on effects. The use of the *employment multiplier* as described in this para is correct. One point to check is that all multiplier values used are Type I. If they are Type II, then all the induced effects are also being double counted. See also DTZ para 3.33.

9. DTZ para 3.34. Correct. All current price outputs must be deflated to base year values. Strictly speaking, allowance should also be made for real improvements in labour productivity from the base year.

10. DTZ para 3.35. DTZ have provided convincing argument that, even in terms of its own internal logic, the Regeneris report’s estimate of 51 jobs is far too high. A more plausible case could be made for somewhere between 10 and 20.

11. DTZ 3.38. I *think* the employment figures in table 9.8 have been converted using the ten year rule. Hence, I think they are saying that a total of 510 person years of indirect employment would be created over the four years of the construction phase. Table 9.7 gives the equivalent direct construction employment as 859 person years. Hence the implied Type I employment multiplier is $1369/859 = 1.59$. This seems very high for this sector in the WI; how does it compare with the equivalent construction industry value from the WI I/O tables?

12. DTZ paras 3.39-3.42. I agree with DTZ's remarks here. Regeneris's explanation of how they derive their results is inadequate, and there are signs of internal inconsistencies between their 2005 and 2006 work.

13. DTZ para 3.43. I think the employment numbers in table 9.9 are in fact converted using the ten year rule.

14. From Regeneris tables 9.7 through 9.10, it is possible to calculate various implied WI multipliers for the construction phase of the project. These are as follows:

	Type I	Type II
Output	1.18	1.35
Income-Output	0.31	0.37
Income	1.59	1.95
Employment-Output (FTE/£M)	1.77	2.20
Employment	1.59	1.98

How do these compare with the equivalent construction industry multipliers from the WI I/O tables, and, if different, why? Is the fact that the income and employment multipliers are virtually identical merely a coincidence? Also, it will be remembered that DTZ have shown that construction multipliers are inappropriate for this project.

15. DTZ paras 4.2-4.4. These are well-made points by DTZ. The assumption that all direct jobs will be filled by locals is not justified by Regeneris argument. Therefore, it is methodologically incorrect to take the "best possible" outcome as the single point forecast.

In fact, presumably *not* all of the jobs will be filled by locals, since some will be highly wind farm specific and the WI has no track record in this area.

Some of the jobs will be filled by locals leaving other employment. What happens to these latter jobs? What are the implied labour market dynamics?

In fact, Regeneris's entire discussion here shows significant **optimism bias** as defined in the Treasury Green Book. Since this will be referred to again in these notes, it is worth giving the formal Green Book definition:

“ **optimism bias** The demonstrated systematic tendency for appraisers to be over-optimistic about key project parameters, including capital costs, operating costs, works duration and benefits delivery.”

16 DTZ para 4.10 A good point of general relevance. Regeneris's applied methods seem unnecessarily obscure. Why not simply use the WI I/O tables as the basis for calculating all knock-on effects? This would be transparent and replicable.

17 DTZ paras 4.11-4.13 I entirely agree with DTZ here. In particular, if official statistics are available, then they must be used as the basis of calculation if the case study results are to have any general credibility.

18 DTZ paras 4.16-4.23 I have no disagreement with the points made by DTZ and would make the following additional comments:

* Is an important issue of displacement being ignored here? Specifically, presumably the land used by the wind farm is lost to crofting/agricultural purposes? This would lead to a lost market value of agricultural produce, and probably more importantly, a plethora of associated “crofting” grants and subsidies. In fact, are these lease/rental payments essentially *compensation* for lost income from other sources?

* On a specific point, I do not think the lease payments should be treated as an injection to the agricultural sector (they are clearly payments of household income) and I certainly do not agree that, as seems to be the case, *Scottish I/O* tables should be used to estimate knock-on impacts in the WI.

19 DTZ paras 4.29-4.32 I strongly agree with DTZ here. Regeneris’s approach of adding discounted present values and actual current annual values seems to fundamentally wrong in principal and certainly leads to highly misleading and confusing results in practice. For example, what is one to make of the 142 FTE jobs reported in Table 9.14? These seem to be “the discounted present value of an annual stream of temporary jobs translated in permanency equivalents accruing over a 20 year time horizon”. I am unable to interpret this in terms of real-world policy-relevant information. I need to know the forecast of person years of employment in each year (or at least an average year) of operation and how long the operational phase is expected to last. As noted earlier, information on the time-path of impact is essential for policy purposes.

20. DTZ paras 4.34-4.36 DTZ’s points seem well-made, and I would add another, again relating to ignored potential “displacement”, or better in this context, *revenue substitution*.

Specifically, if these community funds payments are used for some of the purposes outlined, will this not simply be a substitute for monies from HIE, the EU, etc that would otherwise have been received for these purposes? Is there not a danger of loss of rate support grant and other central government monies? I certainly know that Shetland had tremendous difficulties in spending its Oil Fund monies in ways that would not lead to losses of other public sector revenues.

21. DTZ para 4.38 Agreed.

22. DTZ 4.41 Agreed, and therefore it hugely matters whether these gross community fund payments truly will represent a net injection to the WI (see point 20 above).

23. DTZ para 4.42 This is a very fair summary of DTZ’s argument, which I think convincingly demonstrates that there are errors in Regeneris’s analysis and that these errors are cumulative, leading to a significant overestimation of the probable multiplier impact of the wind farm project. One could argue with DTZ’s own numbers presented here, but they are at least more *plausible* than Regeneris’s.

24. DTZ paras 4.43-4.45 Agreed. In fact, Regeneris do not do a sensitivity analysis of the actual project at all, but simply give a schematic outline of the claimed impact of an alternative project.

25. DTZ section 5 I think this is a well-presented and well-argued section.

26. DTZ paras 5.12-5.13 Good points. An extreme example of optimism bias: recognising a potential negative impact of a project and then ignoring it in calculation.

27. DTZ paras 5.16-5.17 This seems to me to be important and relevant local evidence.

28. DTZ para 5.20 Agree with point made, but more real evidence is required.

29. DTZ para 5.21 Fair point.

30. DTZ para 5.27 I think two things can be safely stated:

- no one is going to take a holiday to the WI specifically to visit the wind farm.
- To the extent that some extant tourists to the WI chose to visit the wind farm, this is simply displacement of tourism activity within the WI.

31. DTZ para 6.2 Good, and worth keeping emphasising because of the importance to a *realistic* appraisal.

32. DTZ section 7. Given their limited access to data, etc. DTZ's analysis is methodologically more sound than Regeneris's and their results they produce are generally more plausible.

It is probably too strong to forecast, as DTZ does in table 7.2, that the WI employment impact will actually be negative. Rather, having read both reports, my conclusions would be:

(a) assessed properly and realistically, the gross positive impact benefits to the WI will be real but small (I would expect this *ex ante*, given the nature and size of the wind farm project)

(b) assessed properly and realistically, a number of gross negative impacts will also arise, but these too will be small, unless there is a significant anti-wind farm reaction on the part of potential tourists.

Taking (a) and (b) together therefore, my view would be that the net multiplier impact of the wind farm project on the WI will be negligible, approximately zero in the first order. To the extent that this is correct, it is rather important since it implies that this aspect of the project's "contribution" *becomes irrelevant in a holistic cost-benefit analysis of the project's worth or otherwise*. I return to this point in my concluding remarks.

33 DTZ section 8. DTZ is entirely correct to be sceptical about Regeneris's claims for "non-quantifiable benefits" claimed for the wind farm. In fact, Tables 9.20 and 9.33 for example, provide virtually classic examples of optimism bias as defined earlier. In some cases, for example roads, project *costs* are treated as *benefits*. In most others, the claims wholly fail to take into account the holistic economic reality of the WI. For example, with regard to "cluster development", given the WI's

extreme locational disadvantages, what business is going to locate there simply to enjoy (unspecified) agglomeration economies through proximity to the wind farm? Why not go to Cumbria? And so on.....

In para 8.2, DTZ suggest the words “medium” and “high” be replaced by “insignificant” or “low”. I would suggest that “nonexistent” would be the appropriate substitute in many cases.

Concluding remarks.

DTZ’s critique of Regeneris’s report is fundamentally valid, and though harsh is not unfair: important policy decisions are influenced by this type of work, and hence it is important that it is done well. Significant errors in both method and calculation made by Regeneris are correctly identified, and DTZ’s own analysis, though handicapped by non-access to data, etc., is superior.

In an applied policy sense, Regeneris’s errors would be less important if they were offsetting, but unfortunately they are not: in every instance where a “mistake” can be identified it imparts an upward bias to the estimates of positive gross impact. In fact, the entire Regeneris report reveals severe optimism bias as described and warned against in the Treasury Green Book (Green Book 5.61-5.65). An idealised best-possible- world scenario is postulated and presented as an actual forecast by Regeneris. As explained in the Green Book, this type of “rose tinted” appraisal is no longer acceptable to the Treasury; rather, what is required is a proper evaluation of alternative plausible scenarios, at a minimum recognising the existence and importance of *downside risk*. DTZ’s analysis makes some positive moves in this direction.

Adopting this approach, a reasonable interpretation of the evidence presented by DTZ *and* Regeneris would be that the *expected value* of the wind farm’s multiplier impact on the Western Isles is approximately zero. This means that this aspect of the project’s contribution is essentially neutralised in assessing its overall net worth. Thus, *other* issues become predominant in appraising the project and making a final yes/no decision. For example:

Is the project *financially viable* at prevailing market prices?

Is the project *economically viable*? In particular, is it *cost efficient* in that it produces a unit of electricity at lower resource cost than available alternatives?

Does the project enhance the UK’s energy security, and if so what social welfare weight is given to this? What is the welfare gain to the Western Isles specifically?

What are the environmental gains from the project and what social welfare weights are attached to these? What par of this welfare gain accrues to the WI?

What are the environmental costs of the project and what social welfare weights are attached to these? What part of this welfare loss accrues to the WI?

If the project results in a welfare gain to the UK as a whole, but in a welfare loss to the WI, what compensation, if any, will be paid to the latter?

In fairness, perhaps these, and other key questions, are addressed in the other chapters of the Regeneris report(which I have not seen). If not, then effectively the entire appraisal needs to be redone founded on correct theoretical and applied economic principles.