

Response to Reviewers

JEPO-D-18-01797 - Energy Policy

Dear Editor,

We thank the reviewers for their detailed response to our research paper. We appreciate the questions raised and requested clarifications and suggested edits.

Please find attached the revised submission of the paper, along with an annotated table of the changes made in response to the comments. We concur with the reviewers that the suggested amendments will help improve the paper's clarity. Through the changes made, we feel we have both clarified the need of the work and developed the discussion to highlight the broader implications of this work.

Overall, changes have been made to the paper to make the novel contributions and innovation in the research more clearly defined. This includes revisions to the Introduction, Background literature, some additional presentation of the results and discussion.

Please let us know if there are any outstanding queries which are not resolved.

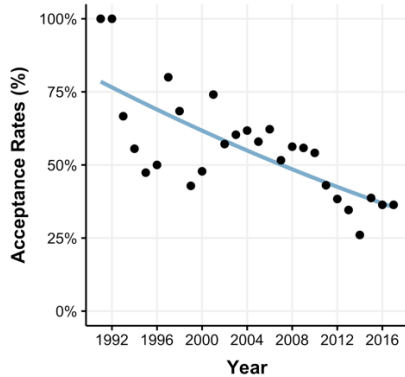
Kind Regards,
Michael

Reviewer Comments

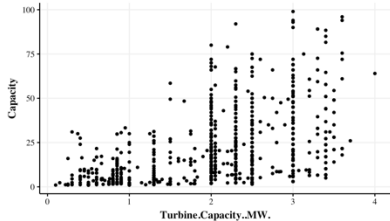
Reviewer #1: The paper examines the impact of different geospatial, political and social parameters in determining the success of wind farm planning applications. Producing a model which indicates areas where planning permission is most likely to be successful. I found it to be an interesting and timely paper, in light of the recent changes in the planning system for onshore wind in the UK. It is both clearly presented and well written; in my opinion it contributes well to the field and with some minor revisions should be accepted, please see my comments below regarding these.

Reviewer #2: 1. This manuscript intended to discuss the relationship between the social acceptance of onshore wind by using geospatial modelling method. The topic is interesting, but based on the conclusion of the authors, the models have a relatively low overall fit.

Suggested Revisions/Additions

Reviewer's Comment	Author's Comment	Revision Made	Update Location	Extent of Revision
Reviewer 1				
Check preferred reference system - seems to be a different one to Energy Policy	We have updated the style to "Elsevier Harvard", which appears to be the correct reference system. As explained in the guide for authors : The reference style used by the journal will be applied to the accepted article by Elsevier at the proof stage.	Update to reference style	Throughout document	Minor
Page 3 line 40 Figure 3 - I don't feel comfortable with the linear fitting of the relationship, polynomial seems far more suitable (3 order). The last point (2017) adds too much leverage.	<p>We agree that a polynomial fit is more suitable for the data. However, upon further inspection, it was found that the original graph was accidentally displaying the average acceptance rates of all renewable energy technologies, not only onshore wind.</p> <p>The method used to plot the graph has also been adjusted to filter out sites which have been submitted but are yet to receive a planning decision. This was resulting in the reduced acceptance rate for 2017 as many projects were awaiting a planning outcome and therefore not being flagged as accepted</p>	<p>The graph has been corrected with the revised code as shown below:</p> 	Figure 3	Minor
Page 3 line 40 Figure 3 - Plateauing seems to occur in 2006 and it is only the most recent year which from which this varies substantially, I think this follows the narrative of the	Having corrected the graph, the new graph highlights that there has been a continued reduction in acceptance rates.	The preceding text has been revised to reflect the updated graph.	Page 3 Lines 50 - 53	Minor

Reviewer's Comment	Author's Comment	Revision Made	Update Location	Extent of Revision
paper but not the text preceding Figure 3.				
Page 3 line 40 Figure 3 - It would seem the year parameter would present a higher R ² value in further modelling if this plateauing was taken into account.	<p>Although this issue was no longer likely to be present after the corrections had been made to the graph, the relationship was still investigated.</p> <p>The impact of plateauing the year variable on the overall statistical model has been further assessed (included within the supplementary statistical analysis). Two approaches were considered:</p> <ol style="list-style-type: none"> 1. Rounding any years greater than 2006 down. This results in an overall r² value of 0.175 for the complete model (compared to 0.206 of the original model). 2. Creating split regression models for before and after 2006 <p>Neither of these approaches resulted in an improved model fit, as detailed by the supporting statistical analysis.</p>	<p>Having explored alternative model fits, the original model has been kept.</p> <p>Supporting statistical analysis has been added to the technical appendix.</p>	No changes made in text	Minor
Page 6 line 11 typo (Nationa Parks)		Typo Corrected	Page 6, Line 48	Minor
Page 8 line 48 Table 1 Footnote b - assume this is meant to be 132 kV to 400 kV		Typo Corrected	Page 9 Table 1	Minor

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Page 9 Points features and lines. Whilst I do not have a problem with 30 km being set as a limit, saying no visual impact beyond this distance will not be true in all cases.	Agreed, error in language.	Change sentence to “which is recommended within literature as the maximum typical distance at which the visual interference of wind turbines should be considered”.	Page 10 Lines 36-28	Minor
Page 13 Section 5.1 first paragraph, surely this is also due to larger turbines being more likely to be in installations over 50 MW and associated planning system implications.	<p>It is agreed that this is a valid conclusion which could also be reached. Correlation between the two variables was 0.35. A visual inspection of the correlation plot below also highlights that turbines smaller than 2MW are rarely used on projects larger than 50MW. However, above this threshold, there seems to be no dominant turbine size.</p> 	This point has been added to the text to highlight both potential inferences.	Page 13 Lines 59-60	Minor
Page 15 line 12. Word countries is used where nations would be more appropriate.	Agreed	“Countries” replaced with “Nations”	Page 15 Line 33	Minor

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Discussion section - I feel perhaps in the discussion some deeper consideration and a wider system perspective is needed. For example, Dumfries and Galloway already suffers from major curtailment issues due to lack of available grid capacity but is marked in places as a likely site.	The authors agree that the wider system perspective is an important aspect when applying the results of this model. Such considerations are not directly integrated into the model however do form an important aspect of how the results are applied.	Discussion has been added to highlight that site selection is reliant on more than just social acceptance, and that technical and legislative issues must be considered. social acceptance of sites for developing wind turbine, and as such, does not assess the specific spatial nature of the grid. It doesn't know about capacity (other than distance to grid?) but could possibly be updated to include that?	Page 16 Line 56 to Page 17 Line 3	Major
Discussion section - The study also suggests further development round the Whitelee area, which Scottish specific research indicates is of low value from an energy security perspective. I feel it should possibly be mentioned that this significant factor of existing wind developments leading to further successful developments (which was rightly identified as an interesting outcome of the study) does not promote the most cogent strategy for onshore wind development - in regard to increasing energy security from this variable resource.	The model can only indicate areas that, based on the assumptions and information in the mode, whether a site would be more likely to gain acceptance at planning. It doesn't say they are good sites against other criteria. It is agreed that there are broader limitations which should be considered beyond the issues of planning acceptance. The findings from this model could be integrated with these technical parameters in future analysis.	Added paragraph to the conclusions raising the importance of broader issues. Issues surrounding grid constraints have been referenced.	Page 16 Line 56 to Page 17 Line 3	Minor

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Discussion section - I would also like some discussion of how strong this model is likely to be in the context of the changes in the planning system post 2015. For example, in Scotland a strongly supportive devolved government helped to enable wind deployment but now the system they work within has changed how would this influence the model?	<p>We agree that adding such an explanation to the paper is an important consideration.</p> <p>As the model does not explicitly model planning constraints, it is difficult to apply the model in the latest legislative regime. The tool may still be of use to developers who may wish to prospect areas for development where they may seek engagement which potentially engaged communities.</p>	Added paragraph to discussion based on the applicability of the model under the existing planning regime.	Page 14 Line 9 to 18	Minor
Reviewer 2				
The first question to the reviewer is that the authors did not explain why they choose this method in the manuscript. Are these two things really relevant or affected with each other? In other words, if these two are not relevant or not affected each other, is it meaningful to test this by using this model?	<p>We have clarified the introduction to explain why we have developed a model to understand the relative importance of geospatial, political and social parameters in determining the success of wind farm planning applications.</p> <p>We have also clarified the evidence that they are likely to do so in the text. The model results demonstrate the extent to which these factors do this and so the value of the model in predicting acceptance rates at new sites.</p>	The introduction has been updated to reinforce the reasoning behind the modelling approach.	<p>Page 2 Lines 9 to 11</p> <p>Page 2 Lines 46 to 48</p> <p>Page 7 Line 2 to 15</p>	Major
To the reviewer, the authors seemed just randomly selecting a model, collecting data relevant to the model, running the analysis, and trying	We agree with the reviewer's point that geospatial parameters in isolation do not provide a strong predictor for onshore wind however the value of the model is in explaining (on average) how acceptance	Amended the conclusions to expanded upon this point in paragraphs 2 & 3.	<p>Page 16 Line 46 to 47</p> <p>Page 14 Line 36 to 38</p>	Minor

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to find something to discuss from the results. Based on common understanding, the social acceptance is affected greatly by human rather than geospatial conditions. In other words, if a wind power developer can address the oppositions from local residency, geospatial conditions will have less influence to social acceptance.	<p>might vary with these different factors. It therefore allows a developer to filter (out) areas which have positive geo-spatial conditions but more challenging social acceptance conditions.</p> <p>Models are typically based of an implicit assumption that geospatial parameters can be used to determine suitable sites. As shown in Section 2.3, there has been a growth in quantitative methods to assess planning acceptance rates of onshore wind.</p>			
The reviewer suggests the authors to explain why they choose the model and firstly prove these two have certain relationship and thus worthy of continuing analysis.	Please refer to comment above re clarifying text and explaining the purpose of the model.			Major