Reviewer Comment 2

Dear Reviewer 2,

Thank you for your constructive review. We are glad that you feel that the manuscript is well written and will be of interest to both natural and social scientists working on various aspects of fracking and related topics.

Regarding your General Comments, the research does indeed rely on UK data and narratives. The UK makes an interesting case study which we make clear in the abstract and throughout the paper (see lines 138-140 for example). We understand why you view this as a limitation, but expanding the research to include international data and scholarship is outside the scope of this research. We agree, however, that we should draw on the research and perspectives around perceived risk of induced seismicity from the US and elsewhere in the discussion, and we will implement this suggestion in the revised manuscript.

We address your specific suggestions alongside our responses to your specific comments below.

Best wishes,

Jen Roberts (Corresponding Author)

Below, our response to each of your specific comments can be found beneath, in blue text.

Specific concerns:

1) In section 2 on page 6, the authors discuss their sources for expert views of induced seismicity from fracking. They note in the second paragraph, "We do not consider peer-reviewed publications in scientific journals, since relevant outcomes should be captured within the expert reports." Then later on the page they state, "Most expert reports conclude that the risks of induced seismicity from fracking in the UK are very low. It is therefore fair to conclude that there is scientific consensus that the risks of induced seismicity are low, lower or no different to other human-induced seismicity..." This seems problematic to me. To conclude that there is scientific consensus on a topic, without consulting the peer-reviewed academic literature does not make sense. While some of the reports will undoubtedly have some scientific information in them, there is also the potential for bias in those reports who are going to often be more sympathetic to industry positions. Academics often have different opinions than industry and government people, which they derive primarily from peer-reviewed journal articles. The authors themselves note this on page 20 (albeit in another context), "It would be fair to presume that most academics would source their information from research papers..." This lack of the use of peer-reviewed science gage the "expert" opinion on induced seismicity is a serious weakness of this study.

We disagree. The reports that we include in our study are expert-led, policy and public facing (and therefore publicly accessible) reports which draw on the many hundreds of peer-review publications to inform the recommendations and/or conclusions. These reports are open access and were led by academics, or were academic-advised, as we note in the paper (learned societies, expert panels, scientific enquiries). Peer reviewed publications are not public facing, nor are they necessarily publicly accessible, and do not advise on the general risks related to the shale gas industry. Rather, peer-reviewed publications form a body of

evidence which is synthesised in the expert-led reports to inform expert advice. Our key interest in these reports is the language used to communicate risks of induced seismicity to a range of stakeholders.

Regarding consensus, we will check use of phrasing around consensus / expertise throughout the manuscript. Since not all shale gas experts are necessarily scientists, we will also check the wording throughout the manuscript and replace the use of the word 'scientific consensus' with more appropriate phrasing such as 'general agreement amongst expert bodies'.

2) On page 9 the authors discuss language usage in survey questions and how that may affect how respondents answer the questions (e.g. the questions are emotionally phrased, leading, etc.). At the bottom of page 9, the authors note that term "earthquakes" "evoke imagery of destruction and disaster, whereas phrases like 'seismic activity'....are less threatening." This is, of course, true. However, the authors do not discuss that researchers may chose to use the word "earthquakes" rather than "seismic activity" or "induced seismicity" because not all members of the lay public will know what those phrases mean. This is a common issue in survey question construction and should be acknowledged. This is probably one of the reasons why you find that, on page 25, "Academics use the phrase earthquake far more than those employed in other sectors..."

Thank you for highlighting that academics might choose to use the word 'earthquake' for ease of communication and understanding. This is a very good point and we will include this in the discussion on page 9 and in following Discussion.

3) In the discussion of the participants in section 3.1.1, it would be helpful if the authors could provide information on how many of the 387 participants were employed in industry, government, academia and so on.

We agree this will be helpful, and we will provide this information in the revised manuscript.