Peer Review Report

Review Report on Geosciences and the Energy Transition

Review, Earth Sci. Syst. Soc.

Reviewer: Simon Jowitt
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EVALUATION

Q 1 **Please summarize the main theme of the review.**

The review looks at the challenges associated with the energy transition to low- and zero-CO_2 energy generation, storage and transport and how geoscience and geoscientists are important in this transition.

Q 2 **Please highlight the limitations and strengths.**

The paper covers most aspects quite well, albeit with a UK focus at times. There are some areas that are omitted or downplayed, and some key references are missing; I have highlighted these in the attached annotated version of the manuscript which provides detailed comments on a number of aspects of the paper. However, overall the paper gives a good overview of the topic.

Q 3 **Does the review include a balanced, comprehensive and critical view of the research area?**

Overall, yes.

Q 4 **Check List**

Is the English language of sufficient quality?
Yes.

Is the quality of the figures and/or tables satisfactory?
Yes.

Does this manuscript refer predominantly to published research? (unpublished or original research is non-standard for a review article, and should be properly contextualised by the author)
Yes.

Does the manuscript cover the topic in an objective and analytical manner
Yes.

Does the reference list cover the relevant literature adequately and in an unbiased manner?
No.

Does the manuscript include recent developments?
Yes.

Does the review add new insights to the scholarly literature with respect to previously published reviews?
Yes.

Q 5 **Please provide your detailed review report to the editor and authors (including any comments on the Q4 Check List):**

The paper provides an overview of the geoscience challenges and hence the role of geoscientists to the energy transition. The manuscript is generally well written but some better linking of sections is required to ensure that the reader can follow the thoughts of the authors throughout. There are also some minor grammatical and spelling errors but these are easily corrected. Some topics are perhaps over-done and take up too much room, and others (like CO2 mineralisation in ultramafic rocks) are under-done. There are also key references that are omitted and provide more recent updates on some aspects of the manuscript; a fair few of these I have coauthored and therefore perhaps am biased but also politely suggest these papers provide extra detail and important nuances that are not present in the current version of the text. Overall, if asked I would suggest this manuscript deserves to be published but after moderate revision; the details are there, but the writing needs to be sharpened and areas of omission need to be rectified. I also think a bit of reordering of some sections would make the text flow better; these are again outlined in the appended annotated version of the manuscript, which has far more comments than I have included here.

QUALITY ASSESSMENT

Q 6	Quality of generalization and summary	
Q 7	Significance to the field	
Q 8	Interest to a general audience	
Q 9	Quality of the writing