

## Response to Referee #1

The manuscript entitled “Grand Challenges: Wind energy research needs for a global energy transition” is an introductory letter to a series of articles dedicated to the grand challenges that the wind energy scientific community need to tackle to ensure that the wind energy deployment will reach the targeted level world-wide in the next decades. The context, the genesis and the relevance of this initiative are explained in a very clear and convincing way. The list of the ten articles (some are already published, some are still under review or preparation), completed with a short abstract, is given.

Thank you very much. This summary captures the intent of the paper very well.

A few minor revisions are needed still:

- Lines 39-40: “Clearly, wind will be a foundational energy source in the electricity grid at the heart of a future integrated-energy system, replacing traditional electricity generators powered by fossil fuels and synchronous machines and providing grid-reliability services in addition to energy (Hodge et al., 2020; Holttinen et al., 2020).” The mention to “synchronous machines” seems a bit too specific/technical here compared to the other more general aspects (electricity generators without fossil fuels and grid-reliability services). It is difficult to understand, without reading the dedicated article, what are the limitations of the synchronous machines.

We agree that the introduction of “synchronous machines” at this point introduces a detail at a point where it is not needed. The phrase is deleted.

- Lines 49-50: why not using exactly the same sentence as highlighted below: “every data point showing the speed of change in energy can be countered by another showing the stubbornness of the status quo”?

We agree and have changed the wording accordingly.

- The link towards the list of publications on the EAWE website is not working <https://eawe.eu/organisation/committees/publications-committee/>

Thank you for the alert. The web page should now be in working order.

(Note to authors: The EAWEA webpage is not yet up. If it can not be up before we resubmit, I would change the response to “The link has been changed to a working web page: <https://www.nrel.gov/wind/grand-challenges.html>”)

- From line 110: for each article, add its current status (published + citation, submitted, under preparation...)

We had the same idea, to include the status of each article, along with web links. However, we are unable to update this article after publication, so the information would quickly become

dated as each subsequent article is submitted, reviewed, and potentially published. The purpose of supplying the EAWE publications site is that it can be continuously updated.

**Citation:** <https://doi.org/10.5194/wes-2022-66-RC1>

## **Response to Referee #2**

The manuscript entitled „Grand Challenges: Wind energy research needs for a global energy transition” is meant as a letter to introduce a series of ten articles which outline in more details research challenges in wind energy. The whole initiative should promote and inspire the community of wind energy science. This letter gives an excellent introduction in the initiative and will add important informations. I support the publication.

Thank you very much. Our hope is that the article achieves the outcomes suggested here.

A few minor comments from my side:

lines 22,23 „... development, and deployment of land and offshore... “ two times development does not sound goof to me.

The comment is not clear, there are not two uses of development. Perhaps the use of “development” is not clear. We have replaced it with “manufacture” to refer to a clearly different part of the process of bringing potential solutions all the way to application.

Line 81 :“technology development, policy, public acceptance, economic, public-private partnerships“ suggest to add etc. to this list, as it seems to me that it is not a claim that this list is complete.

Agreed. Changed as recommended.

Line 91. „services, often hybrid with solar and storage, ...“

Mentioning only solar is too restrictive. Here I would add at least hydro as the third main renewable system - or more general mention other renewable energy systems (to include biogas or in future synthetic fuels, which will have an impact on grid integration) : my suggestion : ... often hybrid with storage and other renewable energy systems, ...

Although solar is already mainstream and the dominant energy partner to wind in supplying energy globally, we agree with the suggestion and have changed the wording as recommended.

Lines 99/100 this sentence: „The charter to ...“ - I do not find this sentence very good formulated (I am not a native speaker thus take this a remark.)

- The charter to the authors - I would suggest: The charter for the authors...

Thank you for the warning that this is not clear. The sentence has been revised to clarify.

- what is „tout“? Is this meant as verb, here I would suggest to add „to“- ... or to tout specific ...

You are correct that “tout” is a verb and is used here to mean “promote” with the implication that it might be in an overly persistent or self-centered way. We have changed the wording as recommended.

Line 103 : „nations“ in this list does not fit. Nations is in my interpretation no group but another category, I would suggest national governments or short governments.

Agreed. Changed as recommended.

**Citation:** <https://doi.org/10.5194/wes-2022-66-RC2>