Invited Review Report on wes-2021-118
Anonymous Referee #1

Referee comment on "Acceptance of wind energy – Theoretical concepts, empirical drivers and some open questions" by Michael Ruddat, Wind Energ. Sci. Discuss., https://doi.org/10.5194/wes-2021-118-RC1, 2022

Review Wind Energy Science

Pre-print “Acceptance of wind energy – Theoretical concepts, empirical drivers and some open questions

This submission is a review article, and it claims to cover “central theoretical concepts as well as qualitative and quantitative empirical findings of social science research concerning the acceptance of wind energy in Germany and elsewhere”.

Although the MS (manuscript) says the “concept of acceptance is complex as well as multidimensional” (l.338), its treatment in this review seems to be almost flattened to one dimension. In the conceptual treatment, essentially different concepts are treated as if they were similar, or otherwise used interchangeably (without notice, and with no explanation).

As such, the review contains a lot of relevant observations that might be interesting for readers with other disciplinary backgrounds, e.g. for WES. So, it could be potentially valuable, but it is conceptually badly organized, generating substantial confusion. As a result, there is on the one hand only a very limited understanding of the problem, on the other hand the MS contains a broad claim to cover ‘acceptance’. Social acceptance is not a static phenomenon (a perception or attitude), but a dynamic process; above all, it is social, not just public; and it covers various areas of wind energy deployment and application.

Overall, beside from the valuable observations, there is real work to be done before this papers represents a clear, comprehensive view on the acceptance issues around wind energy.

1. In the intro, the key problematic issue of this review immediately comes to the fore.
Most problems for further deployment of wind, as described in this review, concern structural and institutional system characteristics. Transforming those seems to be the key to wind energy, so the transformation of the energy system and adjacent domains (e.g., land use planning) should be considered. Nevertheless, it is it's worded completely in reverse: "wind energy is of major importance for the success of the energy system transformation". This reveals how this review currently lacks a clear conceptual approach to both the concept of acceptance and the object of the acceptance process. The energy system/power supply system is a social-technical system (see all literature on these transformations/transition; e.g. Geels among many others), and its major required transformations are also socio-technical. The acceptance issues concerns all such socio-technical changes, that is social changes combined with technology changes.

2. Within the same paragraph, the object of acceptance (wind energy) seems to change without notice: (line 30) "All in all, acceptance of wind energy projects seems to be of crucial importance." This raises three fundamental questions:
- Are the acceptance object 'wind energy' and 'wind energy projects' the same?
- If not, is there a relation, and if there is (yes, but a weak one) a relation, what is it?
- And if we deal with acceptance processes of projects, do we cover the issue of acceptance of wind energy?

Unfortunately, for the current state of the MS, the answer to all 3 questions obviously is 'no'. All literature is illustrating the huge difference between the two, which is much more than the assumed 'gap' that is mentioned; in fact acceptance of a RE source/technology is only weakly correlated to acceptance of projects in which RE is implemented. And this relation is complex, variable, and depending upon many different elements of acceptance of RE innovation.

3. Illustrating the difference indicated in (2), very relevant for this MS is, e.g., the entire section on trust. It is hardly about 'wind', but all the more about projects (trust in developers; confidence in or perceptions of fairness; both not are not attributes of 'wind'). The hidden relevance of the object is also apparent, for example, from a sudden, unexplained switch to the concept (is it really a concept?) "utility scale" wind (267) "Utility" is an indication of a kind of actor/developer (says little about 'scale'), and even then rather fuzzy (private commercial? or public/state). Presumably very different from an initiative rooted in the community (common, corporate, local, etc.) that could operate on the same scale, but immediately entails a different picture of risk/benefits (and of trust). As it stands, the essential question of owner/initiator/operator is tucked away in one paragraph (line 316 and following), but this characteristic of the project is probably just as important as the fact that the project is about wind (could also cet. par. could have been solar, geothermal, hydro etc.).

4. Hence, beside the issue of acceptance of what (the acceptance object) the most prominent issue is the acceptance by whom? The MS introduces 2 ‘theories’ that are entirely different, in fact are targeting totally different things. The ‘theory’ of Wustenh. et al is an only an elaboration of a concept, so in fact describing a domain of academic research and in fact inviting several theories for explaining different elements and processes in SA of RE innovation. Applied theories in SA (e.g., for example focusing on the land use dimension only: Busse and Siebert, LandUsePol, tab2) are so far mostly fundamentally single discipline and all focus on one specific layer of social acceptance. In real life, the acceptance is about a variety and complexity of systems (an example of that could be CPR theory on the exploitation and use of natural resources, and renewables are natural resources; see Ostrom); It is about poly-centricity and multi-level governance, self-governance, adaptive governance, and institutional flexibility.
5. Without informing the reader, this MS remains limited to one specific layer, the acceptance by the public, suggesting this covers acceptance in society (a tragic misconception). Furthermore, it is confusing public acceptance of ‘wind energy’ (which is one element of socio-political acc.) and acceptance by local residents (which is mainly community acceptance, but also market acceptance in case of community initiatives and consumption of wind generated power). The latter even without really structurally considering the layers of market and socio-political acceptance, that both are complex and full of elements that are acceptance objects in itself.

6. Acceptance of wind energy is a set of processes in society, not simply a position taken by individuals. See W. et al., but also more recent further elaborations of the concept of SA of renewables’ innovation. For example, Sovacool e.a., and most recently an overview by Gaede & Rowlands, with a critical discussion following (EnergyResSocSci 2018/9). Like in this MS, in many studies social acceptance is still translated immediately into acceptance of individuals, and more particularly individuals in the public. The authors seems to take the very limited view of Upham ea as a starting point, with heavy consequences. First, instead of acceptance as originally defined as a decision-making process, developing over time, with mutually affecting actors, and also on different levels or dimension (as elaborated by Wüstenhagen et al and the mentioned literature), it is by Upham reduced to a one-dimensional response by individuals only. Anything else is massaged away: the dynamics, the influence of organizations (private, commercial, authorities etc.). The most important acceptance objects are fully out of sight: decisions about the institutional conditions (mainly within the W’s domain of socio-political acceptance; see (7) below). In Upham’s narrow view these are ‘acceptance context’, which is a tragic mistake. Unfortunately, this MS also shifts very quickly, without further explanation, to the discussion of public acceptance, rather than acceptance by the society. However, mostly other actors are paramount in the acceptance process, and their actions are definitely often not reflecting the positions taken by the public (some SA studies, by the way highlight the existence of many different publics!). E.g., in the example of acceptance of nuclear the authors explicitly the remark on acceptance to the public (262), as otherwise the remark is incorrect. Socio-political acceptance of nuclear is high in some countries (France recently announced re-regeneration and expansion; market acceptance too, as some energy companies are willing to invest [that is, if governments are covering the risks]), etc.

7. For wind, however, the most prominent social acceptance (as defined in Wustenhagen e.a.) issues remain undiscussed. For example, in Germany currently the rapid development of wind deployment has imploded, due to the introduction of ‘tenders’ and ‘auctions. We neither read anything about the acceptance of these key instruments (with heavy negative consequences for deployment), nor about the devastating consequences for other dimensions of acceptance (e.g., see Grashof 2019; 2021: “Wind projects developed by the local community were found to be most beneficial for local acceptance, but appear to face the highest challenges in auctions”). Comparable to for example a similar phenomenon in DK; see Kirkegaard et al. JEnvPolicyPlanning 2021.

8. The remarkable shifts in the policy frame in D and DK are examples of a major acceptance issue, so an important acceptance object. It certainly is not simply ‘context’, but a set of key decisions in W’s socio-political acceptance dimension. The following conclusion, therefore, in section 4 falls completely short:

“...acceptance object, subject and context, respectively, have to be distinguished. With respect to wind energy, this means differentiating between for example socio-political, market and community acceptance, respectively, on the object dimension (Wüstenhagen et al. 2007).” However, the 3 dimensions of W. et al. are NOT objects. All objects relevant
for wind deployment are present in all 3 dimensions; similarly the public, stakeholders and residents “on the subject dimension” operate in different roles and appearances, also in all 3 dimensions. Moreover, indeed countries may have different cultural background, but the decisions about the institutional frames of RE implementation (legislation, market structure, land-use regimes etc.) and the role of wind and RE projects, are the most prominent acceptance objects; it is not ‘context’.

9. The development of RE is many countries is often delayed, suffering from institutional barriers (lock-ins that are not addressed) and setbacks (institutional choices that create new obstacles). So, the remark that socio-political acceptance is high is very questionable, looking at the inertia in fundamental adaptations of policies, land-use and property regimes, and market-structures. So is the view that problems only ‘arise’ at the local level for projects, because the local problems, as described in the review, mainly arise as a result of the characteristics of projects that are initiated: problematic initiators and owners (distrust issue), the distribution of benefits issue, decision-making on land-use (e.g. the dominance of top-down siting, planning, and regulation), procedural justice issues, etc. Most of the elements in projects that are problematic for community acceptance, and for market acceptance, are determined by institutional frames. So they emerge from problematic socio-political and market acceptance dimensions.

Conclusion:

Overall, this MS could become a valuable contribution, however only after some serious revisions. Following adaptations are needed.

(a) The main challenge for this review is to introduce conceptual clarity, necessary for a good judgement of all the factors that are discussed later. This is about a clear distinction between the object of ‘wind energy’ (as a source, or technology), and the object of decision-making about projects in which wind is only one of the main characteristics; beside that also developer, landscape (which is also an important attribute of a project, as alternative sites generate different landscape impact; see on the land use aspect for example two special issues of Landscape Research); other institutional frames (power supply; financial system, structure of governance etc.). However, this key issue may be repaired without completely reshuffling the article, but by disentangling the objects, and then implementing those conceptual picket posts consistently all over the paper.

(B) The issues that we face with the conceptual fuzziness of the introduction in mind: why is acceptance in section 2 approached by a flat psychologic approach, by focusing on individual in the public? As the discussion in the paper now claims to be about acceptance, it is only reflecting the perceptions, attitudes and potential resistance of individuals in the public. Therefore, the wide claim of discussing ‘acceptance’ should be tuned down towards acceptance by individual members of the public only. Furthermore, it should also be clarified that this may be a relevant element of social acceptance, but only a small part of it. Public acceptance is not a proxy for social acceptance. Most actors and their roles in the process remain undiscussed, so this cannot be considered a review of social acceptance of wind.

Miscellaneous:

Looking at visual impact, there is the phrase” that even noise is less important”. Here is a
reference to noise research by Eja Pedersen. Indeed, her research on noise annoyance is the most comprehensive so far. However, she did not reveal that noise is not important. Her investigations (done after the P & Persson-Waye paper) showed that noise annoyance is more strongly determined by visual assessment and (indirectly) project assessment than by objective sound pressure (e.g. Pedersen Larsman JEnvPsych 2008). Even more important: visual assessment/perception is not simply ‘visibility’, but a subjective assessment of the visual impact of the landscape change, the most important element in acceptance of land-use change for RE; also see some papers in LandscapeRes) This does not mean that noise is unimportant, (on the contrary, taking the noise issue serious is crucial in acceptance processes), only that on the individual level the subjective perception of annoyance in amplifying the effect of visual landscape assessment.

Aitken is ‘she’ (text 236).