

Wind Energ. Sci. Discuss., referee comment RC1
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Comment on wes-2022-37

Pietro Bortolotti (Referee)

Referee comment on "The eco-conscious wind turbine: design beyond purely economic metrics" by Helena Canet et al., Wind Energ. Sci. Discuss.,
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This is a great paper that certainly deserves publication in WES. I'd like to congratulate the authors for their hard work and I only have a couple minor comments to further improve their article:

Section 2.1: there are several more LCOE+ metrics in literature than the ones that you report here. I miss why you chose LVOE and NVOE opposed to others, for example PLCOE, which is recommended by Mai et al, 2021.

Sections 3.2 and 3.4 should be expanded. I understand that you are scaling masses and costs solely from rotor diameter and hub height. Your inputs must also include fixed quantities such as rated power and max tip speed (?), which help estimate gearbox and generator torque. A couple extra sentences would help. Also, to show the validity of the assumptions, you should report masses and costs for the baseline WT and show that the absolute values match reasonably well with literature, for example with turbine capital cost numbers provided in <https://www.nrel.gov/docs/fy22osti/81209.pdf>

Page 12, line 322: "A representative scenario of 50% incineration and 50% landfilling is assumed here, as described in Vestas (2011, 2013a, b)." This is surprising to me, I thought that the vast majority of blades ended up in landfills. I looked at some references, for example <https://doi.org/10.1016/j.rser.2021.111847> and <https://doi.org/10.1177/1048291116676098>, and I struggle to find hard numbers. Probably, percentages change from country to country. This said, the references that you provide also don't seem very solid. Some extra literature and possibly a couple more sentences are recommended to support your assumption.

Figure 9: why is the y axis so tiny? I cannot interpret this plot: I do not see the drop in price with wind speed and I don't understand what the red markers represent (is it a box-whisker plot?). The caption doesn't help me much either.

