

Earth Syst. Dynam. Discuss., community comment CC1
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Comment on esd-2021-85

Richard Rosen

Community comment on "Exploration of a novel geoengineering solution: lighting up tropical forests at night" by Xueyuan Gao et al., Earth Syst. Dynam. Discuss., <https://doi.org/10.5194/esd-2021-85-CC1>, 2021

There are many problems with this proposed article, but let's start with the biggest ones. Line 165 states that the authors estimated the amount of energy needed to produce the light that would lead to one ton of CO₂ being removed from the atmosphere, yet they do not show their calculations. These calculations and all data that are assumed in these calculations must be provided. They should also show the total amount of energy needed to produce the light in their scenarios per year.

Secondly, they do not even mention where all this energy is going to come from, and how such a network of lamps as noted on line 306 could be constructed. How much ecological damage would that cause? How much additional energy would it take to manufacture and install such a network of lamps to yield the 200w per m-squared intensity they site? Where would all this energy come from, renewable electricity? The authors must answer all these kinds of questions and more that I have not thought of yet to make their scenario even remotely plausible. This all must be addressed in this article. Off hand, the entire scheme seems crazy, and the potential negative impacts only seem to have been partially addressed.

The authors should also address the basis for their cost estimate per ton of CO₂ removed, which is not given, if they have made a cost estimate.