Zwickl-Bernhard, Sebastian

Von: em.apen.12.7565ad.5d47554a@editorialmanager.com im Auftrag von J. Yan <em@editorialmanager.com>
Gesendet: Mittwoch, 18. August 2021 12:32
An: Zwickl-Bernhard, Sebastian
Betreff: Your Submission
Anlagen: Articles.pdf

CC: chenb@bnu.edu.cn

Manuscript Number: APEN-D-21-04954

Green hydrogen from hydropower: A non-cooperative open-source modeling approach assessing the profitability gap and future business cases

Dear Mr. Zwickl-Bernhard,

I regret to inform you that the editors/reviewers of your manuscript have advised against publication, and I must therefore reject it.

For your guidance, the reviewers' comments are included below.

Please contact the journal mailbox "appliedenergy@elsevier.com" if in case of any issues or queries about the missing attachments or reviewer comments.

Thank you for giving us the opportunity to consider your work.

Please proceed to the following link to update your personal classifications and keywords, if necessary:
https://www.editorialmanager.com/apen/l.asp?i=2660201&l=S3OY3XKN

Yours sincerely,

J. Yan, PhD
Editor-In-Chief
Applied Energy

Editor and Reviewer comments:

Reviewer #1: Manuscript title:
Green hydrogen from hydropower: A non-cooperative open-source modeling approach assessing the profitability gap and future business cases

My major concerns are given as:
* The journal's guide for authors is not completely considered in this work. For example, in the highlight section, 'Highlights' should be included 3 to 5 bullet points (maximum 85 characters, including spaces, per bullet point). However, the authors have not followed the mentioned guidelines.
* The abstract is too long. The abstract should state briefly the purpose of the research, the principal results and major conclusions. Please revise it accordingly. Also, please remove the future work part from the abstract.
* Please clearly specify what are the differences between green hydrogen production from hydropower and other sources.
* Which factors are considered in the investigation of the business for green hydrogen production? Is the efficiency of the hydrogen-based process are also considered? Please completely specify the effective factors.

* Which other market players are considered in determining the trade-offs? How other market players can affect the market price determination and hydropower plant owner's decision? Please more elaborate on these issues.
* How optimal allocation of hydropower resources is performed in this work? Why optimally allocation of hydropower resources can significantly affect the results?
* Please clearly list the research gaps and contributions of this work in the introduction section.
* Why the operational constraints of the hydropower plants and electricity network's constraints are not considered in mathematically modeling of the problem? The problem formulation part seems to be not complete.
* Why the role of the other types of renewable energy resources is not intended in the studied system? Can their outputs not be used for hydrogen production?
* Please provide a figure for the studied test system.
* Please revise the conclusion section as it is too long in the current format. Please bring only the main achievements and results of this work in the conclusion section.

Reviewer #3: Dear Author,

Please find attached my report for this manuscript.

My opinion is that it should be revised.

Cordially,

More information and support

You will find information relevant for you as an author on Elsevier's Author Hub:
https://www.elsevier.com/authors
FAQ: How can I reset a forgotten password?
https://service.elsevier.com/app/answers/detail/a_id/28452/supporthub/publishing/
For further assistance, please visit our customer service site:
https://service.elsevier.com/app/home/supporthub/publishing/
Here you can search for solutions on a range of topics, find answers to frequently asked questions, and learn more about Editorial Manager via interactive tutorials. You can also talk 24/7 to our customer support team by phone and 24/7 by live chat and email #AU_APEN#

To ensure this email reaches the intended recipient, please do not delete the above code

Report on

Green hydrogen from hydropower: A non-cooperative open-source modeling approach assessing the profitability gap and future business cases

August 17, 2021

This manuscript studies a trade-off for a run-of-river hydropower plant owner between the currently prevailing business model of wholesale electricity trading and, alternatively, production of green hydrogen. Non-cooperative game is used to solve a bi-level optimization problem.

Here are my comments/questions:

- **GENERAL COMMENTS**:
- Highlights must have 3 to 5 bullet points (maximum 85 characters, including spaces, per bullet point).
- The originality of the paper needs to be further clarified. It is of importance to have sufficient results to justify the novelty of a high quality journal paper. An updated and complete literature review should be conducted to present the state-of-the-art and knowledge gaps of the research with strong relevance to the topic of the paper. For each contribution, please show the novelties.
- **GENERAL COMMENTS**:
- Put a nomenclature in the beginning. It is not clear to identify what are decision variables and what are parameters. Table at page 22 from reference [1], can be used as an **example** to show clearly the variables and the parameters. Do not forgive to put the units. Do not need to cite this paper.
- **SPECIFIC COMMENTS/QUESTIONS**:
- There are some papers discussing about techno-economic assessment of H2 with hydropower. In my fast search, I found `10.1016/j.energy.2016.08.101`, `https://doi.org/10.1016/j.ecmx.2021.100081` and `https://doi.org/10.1016/j.enconman.2020.113649`. I think you literature review section should specify your contribution against each paper in details to really show the originality or the novelty or your proposal.
- What is the emission factor (α^{con})? As asked before, in the nomenclature, please, put units for everything.
- What is the energy density factor (β^{con})? Is it a percentage of loss in the quantity of conventional fuel used?
- Page 13: "ensures unit comparability for conventional fuels and hydrogen". I do not understand this.
- Can you rewrite (11) - (13) as expressions under math. programming format?
- Can you make explicit how the objective function 24 was derived?
- About results: Are results different from the ones in the literature?

References

[1] Jakub Jurasz and Bartlomiej Ciapała. Integrating photovoltaics into energy systems by using a run-off-river power plant with pondage to smooth energy exchange with the power gird. Applied Energy, 198:21–35, 2017.