Review of: "Increasing Renewables and Building Retrofit in a Coal-Based Cogeneration District Heating System"

Alberto Picardo[1]

1 Universidad de Sevilla

Potential competing interests: No potential competing interests to declare.

The paper studies how coal-dependent district heating systems can change their configuration to become more flexible in terms of allowing more renewable energy integration, more sustainable in terms of primary energy savings, and more environmentally friendly in terms of CO2 emission decrease while designing an energy system with better performance. The article is interesting, but it can be improved in the following aspects.

0. - GENERAL ITEMS: Review the text; there are minor spelling errors. Additionally, the nomenclature (e.g., CO2) needs to be checked.

1.- The introduction is comprehensive and well-structured.

2.- In the methodology section, it is necessary to justify:
2.1) Why the reference year is 2018? Provide a clear justification for choosing the reference year as 2018. Explain the relevance of this specific year in terms of data availability, policy changes, or any other factors influencing the choice.
2.2.)While the EnergyPLAN model is mentioned, consider providing a brief overview of its key features and functionalities.
2.3) Clearly justify the chosen values for parameters such as the capacity factor for wind, the minimum capacity of central power plants, and others. Explain how these values were determined and their significance in the context of the study.
2.4) Provide additional details on the integration of climate data, particularly how Meteonorm was used and why it was chosen as the source.

3. CASE STUDY.

3.1.) Why the capacity factors for wind and PV were estimated at 25% and 18%, respectively? Mention any factors influencing these estimates, such as geographic considerations or technological constraints.
3.2.) Expand the description of the existing district heating system based on coal with a 140MW capacity to provide a more comprehensive overview. Consider including details such as: infraestructure (key components, primary heating plant, distribution network, any substations?); capacity utilization, fuel source, geographic coverage, operational characteristics)

4. Sections 4 and 5 are complete. However, since the study revolves around sustainability and emission reduction, authors could emphasize the environmental aspects more and illustrate how the proposed approach contributes to mitigating climate change.