

# Review of: "Water-Energy Nexus in Power Systems: A Review"

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**Potential competing interests:** No potential competing interests to declare.

The review paper titled "Water-Energy Nexus in Power Systems: A Review" discusses the intricate relationship between water and energy resources, emphasizing the essential role of water in power generation and the significant energy required for water treatment and distribution. The review underscores the impact of climate change on the water-energy nexus and advocates for interdisciplinary, integrated approaches to manage this relationship effectively and efficiently. The document highlights the need for sustainable solutions to balance the demands of water and energy resources, emphasizing energy-efficient technologies, reduced water consumption, and alternative water sources such as recycled water and desalination. It also emphasizes the importance of implementing an integrated approach to water and energy management to promote sustainable energy planning, improve water management, and enhance the resilience of communities and ecosystems.

While the coverage using case studies is appreciable, certain lacunae need to be addressed before the paper can be published. The queries of the reviewer are enlisted section-wise.

II. The Portugal study model compares two models; however, the conclusion of the comparison is not drawn in the discussion. The advantages and disadvantages of a centralized/decentralized scheme are not elaborated, and hence the discussion remains inconclusive.

III. Social and Environmental Impacts: The section is extremely generalized, and established facts are stated. Several indices are introduced, and no attempt is made to connect the same to the central theme of the paper. For example, WEF index values are stated without mentioning the source.

IV. Methods of investigating the water-energy nexus: Some plots and graphs may be incorporated to explain how optimization modelling can be applied to analyse the water-energy nexus and provide solutions for minimizing costs or maximizing benefits.

V. Policies: The International Policy section mentions the importance of SDGs; however, the inclusion of a critical and constructive review with respect to the water-energy nexus of at least one paragraph needs to be included.

The policies mentioned can be more specific, and the authors must provide some insights as to what they set out to achieve and actually how much they have succeeded. Overall, the discussion remains somewhat generalized, appearing to be lacking specificity with respect to water-energy nexus policies.

General Comments: The grammar and sentence construction need to be reworked as many times the import of the statements becomes incomprehensible. The manuscript should be proofread for removal of all typographical errors and inconsistencies. Several sentences are excruciatingly long and lack clarity. The word "nexus" has been overused and sounds repetitive. The references have not been incorporated properly, with the numbers and bibliographical order apparently wrong.