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

Elena Helerea[1]

1 University "Transilvany" of Brasov

Potential competing interests: No potential competing interests to declare.

The paper should be improved.

This review paper is a support for academics, researchers, and policymakers to understand the critical role of water in power systems and the energy in water systems, and to act for the sustainable management of these resources.

But, for a better understanding by the readers of this complex objective, the article should clearly include specific research objectives.

Water-energy nexus (WEN) is not a system. It is a concept introduced almost two decades ago that reflects the interdependence between water and energy in the supply, processing, distribution, and use of water and energy. If the authors focus their investigation on WEN, then the characteristics and techniques of optimizing the link between the two resources should be revealed in the paper.

This review paper could include the term "water for energy," which refers to water used in energy systems (production, transport, and distribution of energy), and the term "energy for water," which refers to the use of energy in systems for the production, transmission, and distribution of water for use in different economic sectors. By using these terms/concepts, the systematization of current research on WEN would be more accessible to readers.

Being a review document, the methodology used in the search and retrieval of significant information on this topic, which databases were investigated, and what limitations were accepted, should be specified.

Also, the systematization of the results of current research on the water-energy nexus, given the current context of climate change and the depletion of natural water and energy resources, should be better done. Suggestive tables and figures with comparative data obtained in current research are useful.

Other suggestions:

Title: It should be improved.

Abstract: It should be better systematized.

Keywords: As a key word, “power system management” is not found in the paper.

Text

Section II

- First sentence: "The water-energy link is a complex and interconnected system ..." - should be corrected.
- Second sentence: “energy generation and conversion” ?? - Energy is not generated; energy could only be converted.
- The term "water usage" and often "water use" are applied. The same term is better to be applied in the paper.
- “Fig. 1 illustrates the cooling process for power plants” - it is not included.

Titles of sub-sections A, B, C – are not conclusive.

Subsection E – the Role of ICTs in Enhancing the Water-Energy Nexus should be better demonstrated.

Section III - Social and environmental impacts should be better disclosed.

Section IV - Methods for investigating the water-energy link are welcome, but more papers dealing with this topic should be added.

Sections V and VI are welcome and consistent. The energy transition should be added as a current pressing challenge.