Special Issue

Flexibility Solutions and Innovations for Sustainable Hydropower

Message from the Guest Editors

Dear Colleague,

The clean energy transition is driving the rapid expansion of renewable energy sources, with solar and wind reshaping power system operations and creating an unprecedented demand for flexibility. Hydropower, as the largest dispatchable renewable source, plays a central role in providing grid stability and ancillary services, while also supporting multifunctional benefits such as water supply, irrigation, drought mitigation, and flood control. This Special Issue will explore digital solutions, innovative technologies, and operational strategies that can unlock the sustainability and flexibility potential of hydropower.

We invite contributions that address technical, economic, environmental, and social dimensions of this transition, including topics such as the following:

- Digitalization for predictive maintenance, efficiency improvement, and safer operation;
- Hybridization of hydropower with other renewable energy sources;
- Enhancing flexibility and ancillary services provision;
- Environmental and social aspects of hydropower operation under changing climatic conditions;
- Policy and market frameworks for sustainable and flexible hydropower.

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Message from the Editor-in-Chief

Energies is an international, open access journal in energy engineering and research. The journal publishes original papers, review articles, technical notes, and letters. Authors are encouraged to submit manuscripts which bridge the gaps between research, development and implementation. The journal provides a forum for information on research, innovation, and demonstration in the areas of energy conversion and conservation, the optimal use of energy resources, optimization of energy processes, mitigation of environmental pollutants, and sustainable energy systems.

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