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The future of hydropower in Europe: Interconnecting climate, markets and policies

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Highlights

- â€¢ Connecting the knowledges from various domains, in particular economics, engineering, policy and hydrology.
- â€¢ Giving the keys to assess the linking between hydropower, climate and electricity market.
- â€¢ Making an overall analysis.

Abstract

Hydropower is very important for electricity supply security in the European inter-connexion as well as for the economy of regions (primarily peripheral) that possess water resources. Its future may however be jeopardized by several factors: climate change, the development of new renewable energy, the creation of super and micro-grids, and progress in power storage technology. Energy and climate policy, as well as electricity market design and dynamics play a pivotal role.

This article carries out a comprehensive analysis of all these factors and discusses the future of hydropower. This discussion follows an overview of the present situation and of future drivers. The technical, environmental, economic and political aspects of the problem are analyzed with an interdisciplinary approach. The stakes as well as the uncertainties are highlighted.

The conclusion is that hydropower has a promising future, particularly in light of emerging sustainable energy policy, but that the risks should not be overlooked. Academics will find a comprehensive interdisciplinary analysis of hydropower in this article, whereas public bodies, communities and hydropower companies can identify the strategic variables that should be taken into consideration in the decision making process. The end of water concessions or authorizations is also evoked.



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Keywords

Hydropower; Climate change; Electricity markets; Energy policy

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