# Article information:

Evaluating emerging long-duration energy storage technologies - ScienceDirect  
<https://www.sciencedirect.com/science/article/pii/S1364032122001630?casa_token=rDE9V3En_NYAAAAA%3Aoe4WtCHLEtcVfi30M33mVPiHZsYg3vmfhc7eNEgRlcwiDzmW87wj8H01N7NFeraPmdH1YXhB2g>

# Article summary:

1. Long-duration energy storage (LDES) is crucial for the transition to low-carbon technologies in the energy sector.

2. LDES technologies differ significantly from short-duration energy storage technologies and include a diverse set of competitive players, ranging from traditional pumped storage hydropower to emerging startups.

3. Metrics such as land-use footprint and equivalent efficiency based on idle losses are important considerations when evaluating LDES technologies for different use cases and locations.

# Article rating:

Appears moderately imbalanced: The article provides some useful information, but is missing several important points or pieces of evidence that would be required to present the discussed topics in a balanced and reliable way. You are encouraged to seek a more balanced perspective on the presented issues by exploring the provided research topics and looking at different information sources.

# Article analysis:

The article "Evaluating emerging long-duration energy storage technologies" provides a comprehensive review of commercially mature or under-commercialization long-duration energy storage (LDES) technologies. The authors compare the modularity, long-term energy storage capability, and average capital cost of these technologies with varied durations. They also develop additional metrics of comparison, including land-use footprint and equivalent efficiency based on idle losses.

The article is well-researched and provides valuable insights into the current state of LDES technologies. However, there are some potential biases and missing points of consideration that need to be addressed.

One potential bias is the focus on commercially mature or under-commercialization LDES technologies. This may exclude emerging technologies that have not yet reached commercialization but could have significant potential in the future. Additionally, the authors' close collaboration with investors and startups who commercialize these emerging technologies may introduce a promotional bias towards these technologies.

Another potential bias is the lack of discussion on the environmental impact of LDES technologies. While the article briefly mentions land-use footprint as a metric for comparison, it does not delve into other environmental impacts such as resource depletion or pollution from manufacturing processes.

The article also lacks exploration of counterarguments against LDES technologies. For example, critics argue that relying on large-scale energy storage solutions may perpetuate centralized power systems rather than promoting decentralized renewable energy systems.

Furthermore, while the article acknowledges the urgent need for low-carbon energy solutions to mitigate climate change, it does not address possible risks associated with LDES technologies. For example, large-scale deployment of certain LDES technologies such as pumped hydro storage may have negative impacts on local ecosystems and communities.

Overall, while "Evaluating emerging long-duration energy storage technologies" provides valuable insights into current LDES technology options, it would benefit from addressing potential biases and considering counterarguments and environmental impacts more thoroughly.

# Topics for further research:

* Environmental impact of long-duration energy storage technologies
* Emerging long-duration energy storage technologies
* Decentralized renewable energy systems vs. centralized power systems
* Risks associated with large-scale deployment of energy storage technologies
* Resource depletion and pollution from manufacturing processes of energy storage technologies
* Community and ecosystem impacts of pumped hydro storage

# Report location:

<https://www.fullpicture.app/item/2db382df17a4c3e78991a610346c9161>