

Novel battery storage with solar power could be low-cost clean energy solution

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The costs of a type of battery storage suited to supporting the decarbonization of emerging economies have been predicted by Sheffield researchers.

Energy storage is key to decarbonizing [energy supply](#), as it means [excess energy](#) generated by renewables (i.e., wind and solar) can be stored and

then used at a time when there's less wind blowing or sun shining. Batteries are a convenient form of [energy storage](#) as they can be "plug and play" modular systems that don't require much infrastructure.

Researchers from the Brown group in the Department of Chemical and Biological Engineering have predicted the costs of a battery storage system called soluble lead flow batteries (SLFB), which are promising for use in emerging economies due to how robust they are and their expected lifetime.

The researchers looked specifically at a 24 volt system for a solar charging hub in Sierra Leone (developed by Sheffield company Mobile Power), which can provide [clean energy](#) for homes, businesses and electric vehicle charging. The paper is titled "Predicting the cost of a 24 V soluble lead flow battery optimised for PV applications" and was published in the *Journal of Power Sources*.

The researchers used a techno-economic model to define and optimize the cost/performance of the system—the first such analysis of the SLFB. They determined that a four hour duration—how long the battery can discharge its stored electricity before needing to recharge—was best, and in an optimistic scenario a total component cost of

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