

Energy storage for grid stability pretoria

Developing national and municipal plans to deploy energy storage would ease South Africa's electricity crisis and reduce load shedding, finds a new report by International Institute for Sustainable Development (IISD).

According to the study, Watts In Store: Explainer on how energy storage can help South Africa's electricity crisis (Part 1), technologies such as grid batteries and pumped hydro can balance electricity supply and demand, improve grid stability and boost energy providers' financial returns.

South Africa experienced more power cuts in the first half of 2023 than in all of 2022, and finding a solution to load shedding is a national priority, noted the report. The deployment of grid-scale energy storage, which adds resilience and flexibility to the power system, "can contribute to optimising the use of existing power generation and maximising the use of the existing grid".

Yet while the nation was estimated as the world's sixth-largest residential energy storage market in 2020, deployment of new grid storage, especially batteries, is only just beginning -- and at a much slower pace than required.

"While deployment of batteries at commercial, industrial, and residential sites is accelerating, the rollout is happening in an uncoordinated manner, primarily as a self-funded response to worsening load shedding", said Richard Halsey, policy advisor at IISD and the lead author of the report. "South Africa needs national and municipal grid storage strategies, which will provide a positive signal to the energy storage industry that it can safely develop supply chains", Halsey added.

IISD researchers identified seven benefits of energy storage that are particularly important for South Africa's power system. Among those with immediate effect, adding batteries to consumer-located generators can lower demand for Eskom power. At the same time, existing pumped hydro can reduce the need for load shedding when power consumption is at its peak.

In the long term, energy storage can complement the variability of utility-scale renewable energy, optimise the use of congested grids, contribute to better existing power plants use, and could be a cost-effective alternative to immediate grid expansion. It can also enhance the just energy transition -- by improving the public supply of electricity which directly benefits all electricity users.

Grid batteries have recently seen rapid growth worldwide, thanks to an 80 per cent drop in the cost of lithium-ion batteries in the last decade, noted the report. Their ability to bolster electricity security is already evident in regions around the world.



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In South Australia, for example, investment in renewables and storage means the region has not experienced load shedding since 2018 -- despite shedding seven million hours of electricity in the four years prior. More recently, solar and storage have helped to keep the lights on in Texas during its record-breaking heatwave last month.

The IISD report reiterates that deploying grid batteries can be much faster and offer more services than other grid storage technologies, such as pumped hydro. They can therefore be a powerful and rapid solution to South Africa's current crisis.

With the current electricity crisis requiring fast and effective measures, grid batteries can be an important part of the solution, Halsey says. That doesn't mean pumped hydro is not needed, as it can provide longer-duration storage and should be considered a complementary technology.

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