

# Economists find improved electricity storage leads to innovation, efficiency

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Research recently published in the *European Economic Review* shows that improved electrical storage technology spurs innovation in both renewables and fossil fuels electricity production.

The paper, "From [fossil fuels](#) to renewables: The role of electricity storage," also offers evidence that better storage technology boosts the efficiency of the entire electricity sector. However, it calls into question the assumption that improved storage alone can lead to reduced carbon emissions by boosting renewable energy innovation.

The study, by Itziar Lazkano of the University of Wisconsin-Milwaukee, Linda Nøstbakken of the Norwegian School of Economics, and Martino Pelli of the Université de Sherbrooke, looked at more than 50 years of patent data from 70 countries to reach their conclusion.

"We looked at companies that had been granted patents in electricity generation technologies and determined the probability that they would apply for future patents," Lazkano said. "We found that having a patent in storage technology made companies more likely to apply for another patent, either in [renewable electricity generation](#) technology or in efficiency-improving technology in fossil fuels."

Lazkano notes that the findings indicate that improved energy storage, while addressing a basic problem of renewable energy, does not necessarily spur the replacement of fossil fuels by renewable sources, as many had thought.

"One of the big challenges of renewable energy has been intermittency – for example, that the generation of power from wind and solar varies with current weather conditions – and improvements to energy storage directly address that," Lazkano said. "In addition, [fossil fuel plants](#) benefit from better storage technology as they are able to supply electricity without incurring high ramping costs."

Lazkano says that fossil fuel plants, particularly coal-fired plants, must pay a significant cost when ramping up production to meet peak demands. By storing energy, those plants can dampen the swings in

production and mitigate the ramping costs.

"This means that the mere existence of [storage technology](#), which benefits both renewable and fossil fuel power generation, doesn't necessarily lead to lower carbon emissions from [electricity generation](#)."

Because improved energy storage isn't necessarily a silver bullet for reducing [carbon emissions](#), the authors say policy measures are needed to increase the use of [renewable energy](#) and prevent increased use of "dirtier" fuels such as coal. However, they note that storage offers electricity system operators better ways to combine conventional and renewable electricity.

"(E)lectricity storage can enhance energy security and reduce blackouts by increasing the flexibility of electricity markets," they write.

**More information:** Itziar Lazkano et al. From fossil fuels to renewables: The role of electricity storage, *European Economic Review* (2017). [DOI: 10.1016/j.euroecorev.2017.03.013](https://doi.org/10.1016/j.euroecorev.2017.03.013)

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