

# Energy storage is the digital economy





## Overview

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We depict the landscape of convergence between digital and energy storage technologies based on a patent co-classification analysis and investigate the impact of the digital transformation on energy storage innovation through a firm-level empirical analysis.

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The report examines the impact of digital technologies on energy demand sectors, looks at how energy suppliers can use digital tools to improve operations, and explores the transformational potential of digitalisation to help create a highly interconnected energy system.

The research in this paper provides a theoretical basis for promoting renewable energy development and a reference and guidance for countries to realize sustainable development in the context of the digital economy.

The development of the energy economy can be better promoted by focusing on the coordinated regional layout of the digital economy development, building a reliable energy commodity trading platform, and expediting the optimization and upgrading of the industrial structure.

The article considers the digital advantages that have arisen for the energy industry in the current conditions, as well as objectives that the authors highlighted as a necessary condition for the digital transformation of the energy industry. Does the development of the digital economy affect the energy economy?

This paper believes that the upgrading of the industrial structure can strengthen the role of the digital economy on the development of the energy economy, and it is necessary to verify the regulatory effect of the development of the digital economy on the development of the energy economy from an empirical perspective.



What is the relationship between energy storage and digitalization?

The internal coordination between energy storage and digitalization is advocated. Booming digital technologies have brought profound changes to the energy sector. Digitalization in energy storage technology facilitate new opportunities toward modernized low-carbon energy systems.

Does digital strategy influence energy storage innovation?

Our findings suggest that firms' digital strategies, especially digitization and IoT strategy, have a positive impact on energy storage innovation, indicating a promising coordinated development between digital and energy storage technologies.

Does digital energy storage technology improve system operation and maintenance?

It is also related to previous evidence on the significance of digital energy storage technology in enhancing system operation and maintenance [1, 55], which implies the global efforts towards the development of digital and intelligent energy-storage systems.

Why do we need a digital economy?

Possible reasons are: on the one hand, the technologies and business models of hydropower, solar energy, and wind energy are relatively mature. The digital economy provides a platform for technological innovation and development in hydropower, solar, wind, and biomass.

Does the digital economy promote the development of China's Energy Economy?

The results indicate that the digital economy has pronouncedly promoted the development of China's energy economy, and the development of the digital economy can have an effect on the rationalization of the industrial structure and then affect the development of the energy economy, and there is an intermediary effect.



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### Revealing the multiple impact mechanism of digital economy

The digital economy (DE) is a crucial support for renewable energy (RE) projects in China, aiding efforts to reduce dependence on fossil fuels. Our study o

### Leveraging the power of artificial intelligence toward the energy

In recent years, the rapid development of artificial intelligence (AI) has sparked academic interest in its economic and environmental impacts. Against the backdrop of global ...



### [China is betting big on energy storage as AI drives ...](#)

China has unveiled plans to boost its energy storage sector as it strives to shore up its energy security and cope with a surge in power demand ...

### [Frontiers . Effects of Digitalization on Energy ...](#)

The rapid development of digitalization has brought disruptive changes to the economy and life. The effect of digitization on energy efficiency ...



[Top 10: Energy Storage Technologies , Energy Magazine](#)

The top energy storage technologies include pumped storage hydroelectricity, lithium-ion batteries, lead-acid batteries and thermal energy ...



[China to supercharge energy-storage tech with world ...](#)

2 ???· New plan calls for expansion of energy-storage applications, including more projects in desert areas and at retired coal-fired power plant sites.



**The emerging driving force of energy consumption in China: Does digital**

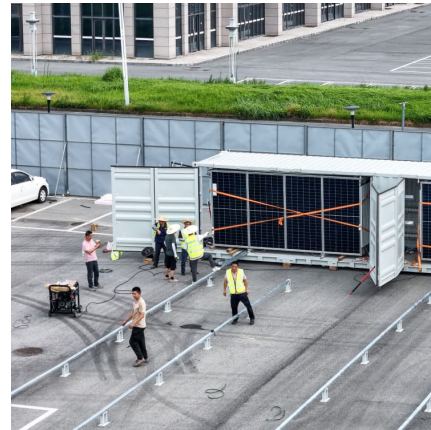
Due to the benefits brought by progress in digital technology, the digital economy is profoundly changing the production and lifestyles of human beings, thus promoting the dual ...





### Evaluating the energy efficiency-enhancing potential of the digital

We rely on a panel of 285 Chinese cities for the period 2010-2019 and a so-called slacks-based efficiency measure incorporating socially undesirable outputs to obtain ...

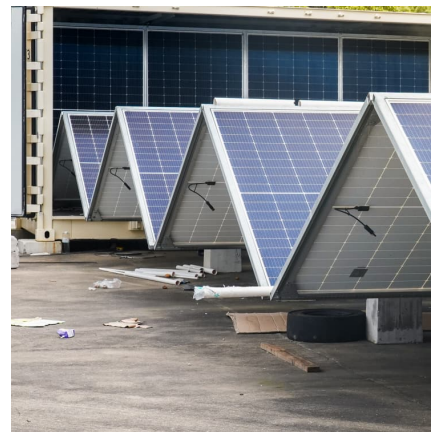


### Energy storage plus digital economy

With AI, these microgrids can enhance distributed renewable energy by autonomously managing local energy production, storage, and distribution, tailored to local conditions without constant ...

### [Does Digital Economy Successfully Drive Down the ...](#)

This study assesses China's digital economy based on regional data experience and constructs a non-linear dynamic threshold model that ...



### Green tech for clean energy: Innovations powering tomorrow

Green tech for clean energy: Integrating renewable energy technologies for reliable, affordable power Green tech for clean energy is not a distant dream but a practical framework powering ...



### Smarter and cleaner: How does energy digitalization affect carbon

In the era of the digital economy, digitalization has demonstrated significant potential for carbon reduction by promoting the optimization of industrial structures, facilitating ...



### EERE Technical Report Template

This includes digital components in all systems within the ESIB, namely those systems operated by asset owners across different energy subsectors (e.g., electricity, oil and natural gas, and ...

### The energy intensity reduction effect of developing digital economy

This study develops an endogenous growth model to examine the energy intensity reduction effect of digital economy development, and its influencing me...





### **How does digital economy development affect renewable energy ...**

The digital economy, known for its permeability and platformization, reduces information asymmetry, lowers production costs, and optimizes resource distribution, ...

### **Battery energy storage systems (BESSs) and the economy ...**

The energy storage technology is in transition and the cost of energy storage is decreasing. Therefore, it is important to have an overall understanding of energy storage ...



### **The impact of digital economy on carbon emissions: Insights from ...**

This study investigates the impact of digital economy on carbon emissions and energy transition, focusing on G-20 countries and Chinese cities from 2008 to 2021. Using data ...

### [Impact of Digital Economy on Energy Supply Chain ...](#)

The global industrial chain and energy supply chain are being reconfigured at an accelerated pace, and the uncertainty of China's energy ...



### **Digitalization and energy: How could digital economy eliminate energy**

Besides, the energy poverty reduction impact of digital economy is mainly reflected in affordability and efficiency of energy, and cleanliness of energy consumption. ...



### Does the Digital Economy Promote Renewable Energy...

However, few studies have examined the impact of the digital economy on renewable energy from a global perspective and explored the transmission mechanisms. ...



### **Smart Tech, Green Power: Harnessing Clean and Efficient Energy ...**

If the digital economy grows on a fossil-fueled foundation, it will weaken environmental gains made elsewhere, from electric vehicles to renewable power. But if ...





### **Greening China s digital economy: exploring the contribution ...**

One particular emerging economy, China, stands out within the digital economy, as it contains a number of the world's hyper-scale data centers.



### **PIF , PIF and Macquarie Asset Management sign an MoU to ...**

The Memorandum of Understanding aims to drive collaboration in the infrastructure and energy transition sectors, including priority areas such as digital ...

### **China is betting big on energy storage as AI drives surge in power**

China has unveiled plans to boost its energy storage sector as it strives to shore up its energy security and cope with a surge in power demand from emerging industries such ...



### **The role of energy storage tech in the energy transition**

Energy storage creates a buffer in the power system that can absorb any excess energy in periods when renewables produce more than is ...



### **Impacts of digital technology on energy sustainability: China case**

The results showed that China's digital technology level has improved significantly since 2002. This has effectively promoted sustainable energy development, as ...



### **New Evidence in Sustainable Development: Does Digital ...**

In the context of global digitization and sustainable development development, the interplay between digital infrastructure (DI) and energy utilization efficiency (EUE) has ...

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