

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.

Does digital strategy affect firm energy storage innovation?

It is observed that the positive impactof digital strategy on firm energy storage innovation is much more significant in the regions and industries with higher convergence between digital and energy storage technologies.

Does the digital economy affect energy transition?

The empirical outcomes are as follows. First,the national level of energy transition progressively rises along with the improvement of AI development. Second,although the direct impact of the digital economy on energy transition is negative,it plays a significantly positive moderating role in the process of AI's impact on energy transition.

What is the role of digitalization in energy storage development?

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. This study offers a technological perspective to help understand the role of digitalization in energy storage development.

Does digital transformation affect energy storage innovation?

Table 3 shows the impact of digital transformation on energy storage innovation estimated by a negative binomial model. Our findings show that digitalization strategies have a significant positive impacton technological innovation in energy storage after controlling for years and industry fixed effects.

Is the energy sector an early adopter of digital technologies?

IEA analysis attempts to answer this fundamental question. The energy sector has been an early adopter of digital technologies. In the 1970s,power utilities were digital pioneers,using emerging technologies to facilitate grid management and operation.

Consumers are primarily driven by digital economy, and the retail industry is the most concentrated and active sector [3]. The digital economy is gradually transitioning from a consumption-based industry to a manufacturing-based industry. ... The second section theoretically analyzes the effect of the digital economy on energy conservation and ...

This paper examines the impact of the digital economy on sustainable development, using panel data from cities at the prefecture level and above in China from 2011 to 2019. The results indicate: (1) The digital

economy is conducive to boosting growth, increasing employment, reducing energy consumption, and cutting emissions, thereby promoting ...

Where EGT denotes the level of green-oriented transition of energy, DIG denotes digital economy,  $i$  denotes the area and  $t$  denotes year,  $C$  is a series of control variables,  $W$  is a spatial weight matrix,  $\mu_i$  represents the random disturbance term. To reduce heteroscedasticity in the data, all variables were transformed using logarithmic scales. Furthermore, to verify ...

The energy sector may have come to the digital economy a little later than some other sectors, but it is catching up fast. Digitization - The Fourth Industrial Revolution. Often referred to as the Fourth Industrial Revolution, this digital backbone will be the crucial component of ...

As the battery energy storage industry continues to grow, circular economy principles must be factored into the product lifecycle to improve supply chain sustainability. ... services, and digital applications across a range of energy storage and renewable use cases. Energy Storage. Gridstack ; Ultrastack ... In the context of utility-scale ...

The results suggest that (1) The digital economy can significantly reduce carbon emissions. (2) Improving energy efficiency and promoting energy structure transformation are two essential mechanisms for carbon reduction in the digital economy. (3) There is heterogeneity in the impact of the digital economy on carbon emissions.

For China to reach its "dual carbon" aim, the digital economy presents both opportunities and obstacles. This paper examines the potential impact of digital economy development on regional carbon dioxide emissions, concluding that while the direct impact on regional carbon dioxide emissions through industrial structure upgrading and technological ...

Popular Digital Transformation Trends in the Energy Industry. Digital transformation in the energy sector doesn't only have to do with private companies or organizations. ... The energy sector offers many opportunities, such as climate-neutral cities, sustainability as a service, hydrogen economy, carbon capture utilization & storage (CCUS) ...

Some scholars have studied invisible carbon emissions in Chinese industries, comparing 28 industry sectors and finding differences in carbon emissions between different industries. 10 Some scholars have also analyzed the carbon emissions of industrial enterprises by investigating their energy consumption status and usage and made suggestions on how to ...

Used well, AI will accelerate the energy transition while expanding access to energy services, encouraging innovation, and ensuring a safe, resilient, and affordable clean energy system. It is time for industry players and policy makers to lay the foundations for this AI-enabled energy future, and to build a trusted and collaborative ecosystem ...

The digital energy industry, which combines digital technology with power electronics technology, is poised to witness rapid growth in the next decade, industry experts said. ... 5G and cloud computing in the process of energy collection, storage and transportation is conducive to reducing power consumption, improving energy efficiency and ...

These data indicate that the tourism industry in the digital economy has immense potential for economic growth and job creation. Based on economic growth and the growth of the tourism industry, the countries can be divided into two categories: "high growth" and "low growth" for economic growth, and "thriving tourism industry" and ...

Digital technologies hold significant potential for addressing environmental issues, such as air pollution and rising global temperatures. China is focusing on accelerating the dual transformation of industrial greening and digitization to accomplish the UN's 2030 Agenda for Sustainable Development and sustainable economic growth. By combining a two-way fixed ...

The digital economy serves as a pivotal catalyst for sustainable and eco-friendly development. This study employs a suite of advanced econometric models, including the fixed effects, mediation, threshold and moderation model, to elucidate the intricate dynamics by which the digital economy influences carbon emissions through the lens of green innovation. Building ...

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 ...

Improving the structure of energy consumption (ECS) through green finance and the digital economy is one of the main paths to achieving the goal of carbon neutrality. This paper explores the impact of green finance and the digital economy on the ECS of 30 regions in China from 2007 to 2022 using the Generalized method of moments(GMM) model, further ...

The rapid development of digital economy brings new opportunities and challenges. Based on a panel dataset of 30 provinces in China from 2011 to 2020, this paper empirically examines the direct, mediating and nonlinear effects of digital economy on energy transition. The study finds the following important conclusions. First, the digital economy is ...

Increasingly, energy and tech companies are investing in projects, partnerships and digital energy companies. For example, at the end of 2020, Sidewalk Infrastructure Partners - a venture backed by Google's parent company, Alphabet - invested USD 100 million to build a virtual power plant in California that plans to aggregate 750 000 ...

At present, research on the deep integration of the digital economy and the energy industry can be broadly

summarized into three aspects. (1) Technological breakthrough. ... (Wu et al., 2019). The mainstream technologies include new energy generation, long-distance transmission, and energy storage. The path is mainly simplified through energy ...

This study explores the impacts of environmental pollution and the digital economy on the new energy industry with panel data on 30 Chinese provinces from 2005 to 2020. Mean group regression was performed, and fully modified OLS and dynamic OLS were conducted to check the robustness of the results. The authors reached two conclusions: (1) ...

China's service industry is in a critical period of transformation to modernization, and the transformation and development of traditional service industry has become a key path to promoting the high-quality development of China's economy [].The "White Paper on the Development of China's Digital Economy (2021)" issued by the China Academy of Information ...

1 School of Economics and Trade, Hunan University, Changsha, Hunan, China; 2 School of Economics and Management, Tibet University, Lhasa, Tibet, China; Introduction: Facing the problem that it is difficult to reconcile development and carbon reduction in the energy sector, this study explores the impact mechanism of the development of energy storage industry on ...

The digital economy, known for its permeability and platformization, reduces information asymmetry, lowers production costs, and optimizes resource distribution, facilitating accelerated growth of renewable energy worldwide [5].The digital economy has become an essential engine for global economic growth and a novel impetus for innovation in industrial ...

The global industrial chain and energy supply chain are being reconfigured at an accelerated pace, and the uncertainty of China's energy supply security is growing significantly. Empowering energy supply chains through the digital economy (diec) has a positive effect on accelerating the transformation of China's energy supply structure. This paper discusses the ...

The sample studied in this paper is 285 prefecture-level and above cities in China. Due to limitations in the availability of data on the digital economy and energy consumption, the sample years for this paper are 2011-2018. Carbon emission data are extracted from the carbon emission raster dataset published by Ref. [42].

Meanwhile, the energy system also provides application scenarios for developing the digital economy. For example, smart grids and new power construction are applications of digital technology in the energy field [12, 13] addition, the core sectors of the digital economy are concentrated in highly power-intensive industries such as computer ...

The economics of energy are changing: cheaper storage is bending the electricity cost curve, giving a boost to charging stations. ... As the world economy has grown, so has demand for power. Even so, the performance of utilities has been dull. ... The power industry's digital future By Adrian Booth, Eelco de Jong, and Peter

Peters.

The pursuit of low-carbon, environmentally sustainable development has sparked a surge of interest in studying the ways in which digital technology can play a crucial role in reducing carbon emissions. Using data from 30 diverse regions in China over 12 years (2008-2019), this paper constructs a comprehensive index of digital technology development. ...

Promoting the development of the digital economy, on the one hand, can promote the rapid flow of production factors, help market players reconfigure the organizational model, and promote the energy industry to transform to a low-carbon model more rapidly (Li et al., 2021b); on the other hand, it is conducive to promoting the construction of a ...

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