

Energy Internet Investment Value Assessment



Overview

A novelty evaluation of the impact of digitalization on energy internet. Annual data from 2010 to 2019 is selected to assess the value creation of digitalization.

Key Takeaways

Investing in the Energy Internet offers significant economic, environmental, and social returns, with digital technology investment being a key driver of efficiency, clean energy adoption, and socio-economic development.

Economic Value

Digital technology investment in the Energy Internet enhances energy utilization efficiency, asset utilization, and market allocation efficiency, which translates into measurable economic benefits. System dynamics simulations indicate that high digital investment can generate substantial employment, with estimates of 0.72 million jobs annually in China by 2025. Additionally, improved energy efficiency in industrial sectors reduces operational costs and supports sustainable economic growth. Comprehensive value evaluation models show that under high-input digital scenarios, the overall value creation of the Energy Internet can increase by over 5% compared to business-as-usual scenarios.

Environmental Value



The Energy Internet promotes large-scale integration of clean energy sources, increasing installed capacity and reducing carbon emissions. For example, simulations suggest that digital investment could raise clean energy capacity to 1.76 billion kilowatts and reduce CO₂ emissions by 5.7 billion tons . By optimizing energy transmission and consumption through smart grids and digital monitoring, the Energy Internet reduces reliance on fossil fuels, mitigates pollution, and supports climate goals such as carbon neutrality and low-carbon transformation .

Social Value

Beyond economic and environmental benefits, Energy Internet investments contribute to social development. Enhanced energy access, improved reliability, and intelligent energy management systems increase societal welfare. Studies indicate that the Energy Internet fosters mutual promotion between energy infrastructure and socio-economic development, supporting regional growth and equitable energy distribution .

Risk and Regulatory Considerations

Investment in Energy Internet infrastructure involves technical, financial, and regulatory risks. European analyses highlight the importance of regulatory frameworks and incentive mechanisms to ensure that high-value projects are implemented efficiently. Proper risk assessment, benchmarking, and project-specific incentives are critical to avoid underinvestment and ensure that investments deliver maximum societal value .

Strategic Implications

- **Digital Technology Focus:** Prioritizing digital technology investment maximizes comprehensive benefits across economic, environmental, and social dimensions .
- **Scenario Planning:** Evaluating high-input versus low-input digital investment scenarios helps optimize resource allocation and avoid diminishing returns .
- **Policy Alignment:** Aligning investments with national or regional energy policies, such as carbon reduction targets and smart grid development, enhances long-term value .

Conclusion

Energy Internet investments, particularly those emphasizing digital technology, provide high-value returns by improving energy efficiency, enabling clean energy integration, reducing emissions, and supporting socio-economic development. Effective risk management and regulatory alignment are essential to ensure that these investments achieve their full potential and contribute to sustainable energy transformation.

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