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**Tutorial title**

Energizing Change

"Unlocking Blockchain's Role in Socially Implementing the Future of Energy"

**Abstract:**

In recent years, the energy sector has been compelled to transform due to environmental issues, resource depletion, and the rise of renewable energy. Within this context, blockchain technology holds the potential to enhance transparency and efficiency.

Blockchain serves as a decentralized ledger that prevents data tampering, improving the transparency of energy transactions and consumption data. This enables direct trading between consumers and producers, as well as automated transactions through smart contracts, leading to potential cost reductions.

However, the implementation of blockchain also faces challenges, including technical hurdles, regulatory frameworks, consumer understanding, and security concerns.

In this lecture, we will explore the impact of blockchain on the energy industry and propose specific approaches for improving existing systems by presenting several use cases. Our goal is to outline a path toward building a sustainable energy society, and we look forward to your participation.

Keywords:

1. Decentralized Energy Trading (Peer-to-Peer Trading)
2. Improved Grid Management and Flexibility
3. Renewable Energy Certificates (RECs) and Carbon Credits
4. Supply Chain Transparency and Efficiency
5. Automated Demand Response (DR) Programs
6. Microgrids and Community Energy Systems
7. Enhanced Security and Data Privacy
8. Electric Vehicle (EV) Integration and Charging Networks