# Review of: "How Blockchain Technology Can Address Circularity and Trace Emission in the Energy Sector"

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Potential competing interests: No potential competing interests to declare.

The paper titled "How Blockchain Technology Can Address Circularity and Trace Emission in the Energy Sector" explores the European perspective on circularity in the energy sector and proposes the use of blockchain to support it. It discusses the challenges related to the increasing need for raw materials and e-fuels, especially in the context of geopolitical and economic uncertainties. The paper emphasizes the importance of circularity in various fields, aiming to trace and recycle substances, devices, food, and products to minimize the exploitation of the planet's resources. Focusing on the energy sector, particularly energy communities, the paper identifies potential applications of blockchain technology to enhance circular practices. It provides insights into the European perspective on ecological transition, resilience, and systemic transformation in the face of climate change. Keywords include blockchain, demand response, energy communities, energy management system, and smart contract. The strengths include a comprehensive exploration of circular economy principles and relevant challenges, while potential weaknesses involve the lack of empirical data, limited discussion on drawbacks, and a somewhat Euro-centric perspective.

Strengths:
1. **Thorough Exploration of Circular Economy:** The paper provides a comprehensive overview of circular economy principles, emphasizing waste reduction, raw materials circle closure, and innovative business models, offering a solid foundation for its subsequent focus on blockchain applications.

2. **Relevance to Current Challenges:** The paper addresses critical challenges, such as strategic dependencies, supply chain vulnerabilities, and the impact of the Russia-Ukraine crisis, making it timely and pertinent to current geopolitical and economic issues.

3. **Integration of Blockchain Technology:** It effectively integrates blockchain technology into the context of circularity, discussing its potential applications in addressing challenges related to supply chain management, traceability, and circular practices.

4. **Clarity in Presentation:** The paper is well-structured, with clear sections that guide the reader through the concepts of circular economy and blockchain technology, culminating in their integration in the energy sector.

Weaknesses:
1. **Lack of Empirical Data:** While the paper presents theoretical discussions on the potential benefits of blockchain in circularity, it could be strengthened by incorporating empirical data or case studies to validate these concepts and provide

real-world examples.

2. **Limited Discussion on Drawbacks:** The paper briefly mentions energy consumption and scalability as challenges of blockchain, but it could benefit from a more in-depth exploration of these drawbacks and potential solutions to address concerns about environmental impact and system efficiency.

3. **Global Perspective:** While the paper focuses on the European perspective, it could enhance its impact by considering and comparing global scenarios, acknowledging that circular economy challenges and blockchain applications extend beyond regional boundaries.

4. **In-depth Analysis of Specific Applications:** The paper introduces several applications of blockchain in the energy sector but could delve deeper into specific use cases, detailing how blockchain can be practically implemented in energy communities and energy services delivery.

Overall, the paper offers valuable insights into the intersection of circular economy and blockchain technology, but addressing the mentioned weaknesses could further enhance its robustness and practical relevance.