

The Legal and Regulatory Gaps of Blockchain-Enabled Energy Prosumerism

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Abstract : This study aims to conduct a high-level strategic dialogue on the lack of consensus, consistency, and legal certainty regarding blockchain-based energy prosumerism so that appropriate institutional and governance structures can be put in place to address the inadequacies and gaps in the legal and regulatory framework. The drive to achieve national and global decarbonization targets is a driving force behind climate goals and policies under the Paris Agreement. In recent years, efforts to 'demonopolize' and 'decentralize' energy generation and distribution have driven the energy transition toward decentralized systems, invoking concepts such as ownership, sovereignty, and autonomy of RE sources. The emergence of individual and collective forms of prosumerism and the rapid diffusion of blockchain is expected to play a critical role in the decarbonization and democratization of energy systems. However, there is a 'regulatory void' relating to individual and collective forms of prosumerism that could prevent the rapid deployment of blockchain systems and potentially stagnate the operationalization of blockchain-enabled energy sharing and trading activities. The application of broad and facile regulatory fixes may be insufficient to address the major regulatory gaps. First, to the authors' best knowledge, the concepts and elements circumjacent to individual and collective forms of prosumerism have not been adequately described in the legal frameworks of many countries. Second, there is a lack of legal certainty regarding the creation and adaptation of business models in a highly regulated and centralized energy system, which inhibits the emergence of prosumer-driven niche markets. There are also current and prospective challenges relating to the legal status of blockchain-based platforms for facilitating energy transactions, anticipated with the diffusion of blockchain technology. With the rise of prosumerism in the energy sector, the areas of (a) network charges, (b) energy market access, (c) incentive schemes, (d) taxes and levies, and (e) licensing requirements are still uncharted territories in many countries. The uncertainties emanating from this area pose a significant hurdle to the widespread adoption of blockchain technology, a complementary technology that offers added value and competitive advantages for energy systems. The authors undertake a conceptual and theoretical investigation to elucidate the lack of consensus, consistency, and legal certainty in the study of blockchain-based prosumerism. In addition, the authors set an exploratory tone to the discussion by taking an analytically eclectic approach that builds on multiple sources and theories to delve deeper into this topic. As an interdisciplinary study, this research accounts for the convergence of regulation, technology, and the energy sector. The study primarily adopts desk research, which examines regulatory frameworks and conceptual models for crucial policies at the international level to foster an all-inclusive discussion. With their reflections and insights into the interaction of blockchain and prosumerism in the energy sector, the authors do not aim to develop definitive regulatory models or instrument designs, but to contribute to the theoretical dialogue to navigate seminal issues and explore different nuances and pathways. Given the emergence of blockchain-based energy prosumerism, identifying the challenges, gaps and fragmentation of governance regimes is key to facilitating global regulatory transitions.

Keywords : blockchain technology, energy sector, prosumer, legal and regulatory.

Conference Title : ICBBSGES 2022 : International Conference on Blockchain-Based Smart Grids and Energy Science

Conference Location : San Francisco, United States

Conference Dates : September 27-28, 2022