Chapter 7
Ensuring Transparency in Carbon Markets With Blockchain Technology

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ABSTRACT

Carbon markets, which enable the trading of emission reductions and incentivize companies to reduce their carbon footprint, are a vital weapon in the fight against climate change. However, problems like fraud and double counting have dogged previous carbon markets. Blockchain technology presents a viable means of boosting trust and transparency in emissions trading, a crucial part of carbon markets. Blockchain can solve problems like a lack of accountability and transparency that have hindered the efficiency of carbon markets by offering a decentralized, safe

platform for monitoring and confirming emissions data. This integration might make trading carbon credits easier, encouraging companies to adopt sustainable practices and aiding in the shift to a low-carbon economy. This chapter contributes to initiatives to mitigate climate change by highlighting the potential and challenges for blockchain adoption in carbon markets, underscoring the necessity of global cooperation, legal frameworks, and technological advancements to reap the full rewards of this game-changing technology

1. INTRODUCTION

Over the years, carbon markets - which were created to reduce greenhouse gas emissions by trading carbon credits - have faced a number of difficulties, such as problems with transparency, operational inefficiencies, and fraud vulnerability. These issues frequently compromise the efficiency of carbon markets, making it challenging to attain the intended environmental results. Blockchain technology offers encouraging answers to these enduring problems. A decentralized, unchangeable ledger provided by blockchain technology can guarantee the integrity and openness of carbon transactions. Blockchain lowers the possibility of fraud, double counting, and illegal changes by securely and impenetrably recording each transaction, which increases market players' trust. Blockchain technology may be able to solve the core issues that carbon markets are facing, opening the door for more sustainable and successful methods of mitigating climate change. In light of the urgent need to address climate change, carbon markets have emerged as a crucial tool for reducing global greenhouse gas emissions.

Carbon markets are exchange platforms where carbon credits can be purchased and sold. By buying carbon credits from organizations that eliminate or reduce greenhouse gas emissions, businesses and individuals can use carbon markets to make up for their greenhouse gas emissions. Transparency is essential for tracking carbon emissions and the trades that go along with them (Kollmuss et al., 2008). Accuracy and security are also necessary. Organizations are using blockchain technology's traceability features to guarantee regulatory compliance. Blockchain technology offers a safe, unchangeable ledger that can record every transaction's entire history. It also guarantees that there isn't any fraudulent or double-counting. This makes it simple for governments, corporations, and individuals to confirm the legitimacy of emissions swaps. After that, they can also keep an eye on whether they are following the rules and regulations. Carbon credit transactions reduce the possibility of fraud and double counting (Nakamoto, 2008). Furthermore, carbon credit settlement and verification can be automated with smart contracts (Saberi et al., 2019).

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