

# Harnessing Blockchain for Transparent and Efficient Land Asset Value Creation in India

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## ABSTRACT

Blockchain offers a decentralized and transparent ledger system that can be utilized to streamline land transactions, property management, and the overall land registry process. By implementing blockchain, the UAE aims to improve efficiency, reduce fraud, and enhance trust in the land market. Through the use of smart contracts, blockchain can automate and enforce the terms of land transactions, ensuring that all parties involved adhere to the agreed-upon conditions. This can lead to faster and more secure property transfers, as well as increased transparency in verifying ownership and property rights. Additionally, blockchain-based platforms can facilitate fractional ownership and tokenization of real estate assets. This means that properties can be divided into smaller units and represented as digital tokens on the blockchain. Investors can then purchase and trade these tokens, providing increased liquidity and accessibility to the real estate market.

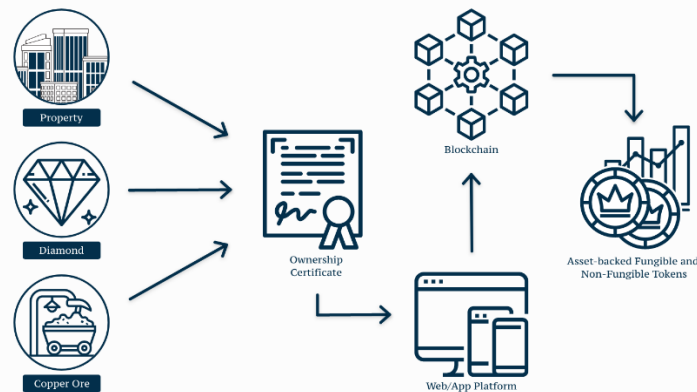
The UAE government, specifically the Dubai Land Department, has been at the forefront of exploring and implementing blockchain technology in land asset management. In 2017, they launched the Blockchain Strategy, which aims to transition all government transactions to blockchain platforms by 2020. The Dubai Land Department has also introduced the "Blockchain in Real Estate" initiative, focusing on utilizing blockchain for property-related processes. These initiatives and advancements in blockchain technology are expected to have a significant impact on land asset value creation in the UAE by increasing efficiency, reducing costs, and fostering greater trust in the real estate market.

Keywords— Tokenization, asset, Blockchain

## 1. Introduction

In the context of blockchain, real estate asset creation refers to the procedure of representing and registering physical properties as digital assets on a blockchain network. It entails tokenizing tangible assets, including residential or commercial real estate, and establishing digital representations of their value and ownership on a blockchain platform. The real estate sector seeks to increase efficiency, transparency, and accessibility while lowering the costs and hurdles connected with conventional real estate transactions by tokenizing real estate assets and utilizing blockchain technology. The adoption of blockchain in the construction of real estate assets is still a developing field, thus it's vital to keep in mind that regulatory issues and legal frameworks may vary across different jurisdictions. Real estate properties are tokenized and shown as digital assets on blockchain system. Tokenization is the process of converting a physical real estate asset, like a house or a plot of land, into digital tokens that each represent a small portion of the property's ownership. The blockchain, a decentralised and unchangeable digital ledger, then stores these tokens.

## 2. Tokenization of Real Estate Assets



### 2.1 Land tokenization using blockchain

Blockchain-based real estate asset generation is the process of digitising and expressing physical assets as one-of-a-kind digital tokens on a blockchain network. These tokens, also referred to as "security tokens" or "digital tokens," which individually stand for a portion of ownership in a certain piece of real estate. The word "tokenization" of real estate is frequently used to describe this concept.

1. Asset Identification: Tokenization of a real estate asset is chosen. Any kind of property, whether residential, commercial, or even huge construction projects, might fall under this category.
2. Legal and Regulatory Compliance: It is important to take into account the legal and regulatory environment of the area where the property is located. To guarantee that the tokenization process complies with securities laws and other applicable regulations, compliance with relevant legislation is essential.
3. Asset valuation: An appraisal or other method of valuation is used to ascertain the asset's value. With the use of this valuation, the property's ownership can be divided up into more manageable portions that will be represented by digital tokens.
4. Creation of Smart Contracts: Smart contracts are computer-coded agreements that specify the terms and conditions for the tokenization of assets. They are automated, created in code, and run when specific predetermined requirements are met. The distribution of rental income, the transfer of ownership, and profit sharing are all governed by smart contracts.
5. Tokenization and Distribution: The ownership of the property is split up into digital tokens, each of which denotes a certain share of the real estate asset. Investors that take part in the property's token sale are then issued and given these tokens.
6. investment and trading: On blockchain-based trading platforms, investors can purchase and exchange these digital tokens. Due to the ease with which investors can acquire and sell their ownership holdings, fractional ownership also increases the asset's liquidity and enables individuals to participate in real estate with less initial cash.
7. Asset Management: The advantages are shared among the token holders as the property generates money or increases in value.

### 3. Security in Tokenization

To retain confidence, safeguard investors, and stop fraudulent operations, the tokenization process must guarantee security. Although blockchain technology comes with some built-in security safeguards, more precautions must be taken to increase the overall security of the tokenization process. Here are some essential methods for ensuring security:

Cryptocurrency technology It is crucial to use a strong and proven blockchain network, like Ethereum, that employs security methods like encryption and consensus procedures (such as Proof of Work or Proof of Stake). The decentralised and tamper-proof characteristics of blockchain assist prevent unauthorised changes to transaction records and guarantee the accuracy of the tokenization procedure.

Auditing Smart Contracts: Asset tokenization is built on smart contracts thus security professionals and developers should thoroughly audit them to find any potential weaknesses. The risk of bugs or exploits that could cause financial losses or other security breaches is reduced with the use of vulnerability assessments and code audits.

#### **4. UAE model of Land Tokenization**

Abu Dhabi's Branch of Metropolitan Preparation and Districts (DPM) has sent off a blockchain application for its territory vault, expecting to build straightforwardness, security and recognizability of property records, while guaranteeing that information can be handily documented.

The DPM has collaborated with Tech Mahindra, the Indian business handling re-appropriating organization, to carry out the application. The application will store all property-related reports in the blockchain, in this manner diminishing the handling time connected with land library related exchanges. A clear and supportive regulatory environment is necessary for the implementation of land tokenization. In order to handle legal difficulties relating to property rights, ownership transfer, taxation, and investor protection, the UAE authorities would need to create and implement legislation. Even though blockchain technology is regarded as safe, cyberattacks are still a possibility. To protect the funds and personal information of investors, appropriate security measures and strong encryption techniques are required.

#### **5. Issues the Land is Confronting**

The issues in the land business normally makes individuals lease as opposed to possess property. It is viewed as a resolute, however stable venture contrasted with crypto, which is seen as fluid yet non-stable resources. We should go through the difficulties in the space and afterward, right off the bat, assess how blockchain in land can assist with discarding them.

##### **1. High gamble of misrepresentation**

Everybody realizes that the land business' most concerning issue is tricksters. In 2021 the business lost is \$350mil due to digital violations. Extortion actually stays one of those perils clients can experience on the web with the most noteworthy likelihood.

How could blockchain fix it?

Blockchain in land makes exchanges safer. It keeps all information firmly locked, and nobody can modify it. Additionally, blockchain exchange is more diligently to hack because of their decentralized nature. If any kind of forgery happens, finding the culprit is simpler.

##### **2. Excessive costs.**

Land is costly, no confidential. In April 2022, the middle deals cost of a solitary family home in the US came to 391,200 USD. In the interim, the middle pay of US residents fluctuates between 74,862 USD (age 25-34) to 97,089 USD (age 45-54).

How could blockchain fix it?

Blockchain in land, sadly, can't mystically fix the costs, however it can make the arrangement more reasonable. Normally, the commission for outsider administrations takes up around 5% of the property's costs. This is the number you could cut off with blockchain innovation.

##### **3. Credits.**

Ostensibly, credits are an issue that land faces. Ordinarily, it requires as long as three weeks to get endorsed for a home loan credit. What's more, the credit is only one stage since purchasing property is a confounded and extended process.

How might blockchain fix it?

Blockchain in land won't give out cash for purchasers, however it can accomplish something moderately comparative. With more crypto credit recommendations showing up available, it is currently conceivable to take an advance got with digital money resources. Thus, your client can purchase a house with crypto by leaving their resources as a store for a future house.

##### **4. Partial proprietorship.**

It is a way for everybody to purchase their own home basically by dividing the costs and property among various proprietors. While the arrangement appears to be wonderful in numerous ways, it has its drawbacks. For instance, a house with partial possession would be more diligently to exchange.

How could blockchain fix it?

A proprietor would need to sort out what constraint showed up with the arrangement and how they can ultimately resolve it as a rule, they would get a legal assistance. In the underlying step of purchasing a property, a few difficulties related with parting the house likewise could happen. Nonetheless, blockchain in land can make this cycle simpler since everybody in the arrangement knows their portion since they've gotten it as a small part of tokens.

The land business is confronting a few difficulties that are obstructing its development and development. However, with the assistance of blockchain technology, many of these issues can be tended to and settled. In the accompanying section, we will look at certain organizations that are as of now utilizing blockchain to change the land scene.

## **6. How India can adopt this technology in its border lands?**

India has a vast area of land, sharing borders with its neighbouring countries. It is very hectic for any government to protect its borders from the neighbouring countries who are ready for an attack at anytime. The practical measures for a country to adopt from preventing border loss is to assign military forces to the borders. Every war spends crores of rupees and life of innocent peoples at the border lands and also it disturbs the harmony and right to live in peace of citizens residing in that land. Here comes the need of land tokenization and its application in a developing country like India. Real estate tokenization can provide major benefits in borderlands to deter foreign incursion. Here are some possible steps for India to adopt real estate tokenization for this purpose:

1. **Tokenization of Borderland Assets:** India may tokenize ownership of select borderlands properties or regions that are particularly susceptible to intrusion. India may establish distinct ownership rights on the blockchain and make it transparent and unchangeable by tokenizing these assets. Given that the ownership and limits will be precisely identified and recorded on the blockchain, this could aid in discouraging attempts by other nations to invade.
2. **Decentralised Land register:** Using blockchain technology, a decentralised land register might be set up to keep accurate and current records of land ownership in borderlands. A blockchain-based land registration would provide openness and immutability, lowering the danger of bogus land claims. Traditional land records can be subject to corruption or manipulation.
3. **Smart Contracts for Borderland Agreements:** Smart contracts could be used to establish contracts between India and its neighbours for the usage and defence of particular borderlands. These contracts could be automatically performed in accordance with present criteria, assuring adherence from all sides.

### **6.1 Benefits of Land Tokenization in Indian Borders**

1. **Cross-Border Collaboration:** India and its neighbours may work together to establish or conserve tokenized cooperative projects for borderlands. Both sides can gain from enhanced openness and trust by cooperating on blockchain-based projects, which can improve relationships and reduce encroachment-related problems.
2. **Costs:** The straightforwardness related with a decentralized organization can likewise manage down costs related with land exchanges. Past the reserve funds made by removing mediators' expert expenses and commissions, there are different expenses, for example, reviews costs, enlistment charges, credit expenses, and assessments related with land. These costs even change contingent upon the domain that has purview. Like middle people, these can be diminished or even wiped out from the situation as stages computerize these cycles and make them part of the framework, Worldwide land is worth many trillions of dollars, yet is overwhelmed by the rich and huge companies. Through blockchain innovation, conceivable more individuals will actually want to get to the market where

exchanges can be made more straightforward, secure, and fair. Land exchanges may ultimately turn out to be really distributed exercises with blockchain-controlled stages doing the majority of the work.

## CONCLUSION

In conclusion, the tokenization of land assets has enormous potential to transform India's real estate market and border policy matters. This novel strategy offers many advantages by utilising blockchain technology, which can address persistent issues in the industry. Tokenizing land assets can revolutionise how real estate is purchased, traded, and managed in the nation by improving accessibility, liquidity, transparency, and security. As fractional ownership is made possible through tokenization, more investors, even those with less cash, can now invest in real estate.

By investing money in real estate developments that were previously beyond of reach for many, this democratisation of the market can promote financial inclusion and boost economic growth. While the idea of tokenizing land assets is intriguing, thorough consideration of the legal and regulatory frameworks is necessary for its successful implementation in India. To create a favourable environment for tokenization to take off, cooperation between the government, real estate investors, and blockchain technology providers is crucial.

In general, land asset tokenization has the power to transform India's real estate industry, fostering the development of a more inclusive, effective, and safe marketplace. Accepting this technology can open the door to a new era of real estate investment and management, ultimately promoting the expansion and improvement of the country's economy. Adopting land asset tokenization can be a game-changing step in reshaping India's real estate business as it navigates its route towards digital transformation.

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