Land Management in Ghana using Blockchain

<https://medium.com/@TroyWiiBot/can-blockchain-technology-be-the-solution-to-the-land-ownership-problem-in-developing-nations-9a001de69c5a>

<https://thespindle.org/2017/12/20/blockchain-solution-land-rights-related-conflicts/>

<http://theconversation.com/blockchain-based-property-registries-may-help-lift-poor-people-out-of-poverty-98796>

<https://www.undp.org/content/undp/en/home/blog/2018/Using-blockchain-to-make-land-registry-more-reliable-in-India.html>

<https://www.reuters.com/article/us-africa-landrights-blockchain/african-startups-bet-on-blockchain-to-tackle-land-fraud-idUSKCN1G00YK>

 Technology often does not offer solutions in complex social and political contexts, yet it can provide an infrastructure for solving problems.

blockchain can be an infrastructure to these issues, but not a solution.

With Blockchain you don’t necessarily have to trust the other party. The system itself is trust.

Blockchain can be used as a notarization system

* When the rightful owners of a property in developing nations are identified, the asset can be out into the system. With the BC infrastructure, a block could hold the information required for legal ownership in a Smart Contract inside.
* This transaction is known as the Genesis Output.
* When the ownership is transferred, the new owner is recorded under the same transaction chain, while the initial owner relinquishes his rights.
* The ownership can be verified using a digital signature.
* If someone wants to know if they are getting a legal transaction, they just have to follow the trail of transactions of this this real property to Genesis output.
* So instead of multiple conflicting documents for a single piece of land, there is will one record with a clear history of modifications, including who did what and when.
* Blockchain transactions can include all kinds of information, including geographic information, serial numbers and an owner’s identity.
* In Ghana, “Bitland”- a non-profit organization runs a Blockchain based Land registry system with a written description of each parcel of land as well as the GPS coordinates of boundary points and satellite photos of the area.
* The BC can also include information like the property’s address, owner’s name and contact information, zoning rules and some unique identification number for the property itself.

Why use Blockchain?

* Immutable history – No one can ever doubt the authenticity of the records stored.
* The records are permanently linked with one another – No one can ever tamper with or forge a record.
* The records can be seen by any party at any time – It is powerful and validating.
* Using BC creates a single source of truth of the ownership status and the history of the property.
* The buyer will be assured that the land being bought is the correct plot and the seller is unequivocally the owner, reducing the potential for disputes, as well as the costs and time involved for any given transaction.
* BC will capture and permanently record each transaction throughout the sale of a property and hence can achieve near real-time traceability and transparency into the state of the property.

One example of how BC is used in Land Registry system in India:

* For example, envision two citizens in the state of Haryana state — a buyer and seller — who have negotiated the sale of a house and wish to now register their sale deed with the local authorities. They would proceed to the government services offices as they normally would to register the sale deed, which they have in their possession.
* The government office will then enter the sale deed into their system, one that is now powered by the blockchain technology. This blockchain-enhanced system then takes over and registers the sale deed in the presence of the buyer and seller. It will also process the sign-offs by both the buyer and seller and push the transaction to the approval stage. After the transaction is approved, an automatic transfer of ownership is completed. And importantly, the system will also be able to handle land titles with multiple owners.
* From the administrator’s perspective, there are significant transparency, accuracy and efficiency gains to be had. They will now be able to view and monitor the state of the property and sale deed in near real-time, as well as have instant access to a complete and permanent transactional history for each property and sale deed.
* The beauty of this system is that citizens engaged in buying and selling property will neither require any blockchain accounts or wallets nor will they experience a change in the way they currently interact with the land registry. The blockchain engine simply works quietly but powerfully in the background. The solution will also increase citizens’ confidence in the government and make the overall customer experience less cumbersome. Most importantly it will enhance data security and ensure authenticity of land records.

MISC:

* Bitland does conflict resolution off chain.
* Bitland’s surveyors interview farmers, their neighbors and chiefs to agree on each land’s boundaries.

Bitland Whitepaper:

Main Goal:

1. Digitize land titles
2. Update the paper-based data storage into digital format.
3. Consolidate new land registries against old registries.

* Serves as a bridge between the people needing to register the titles and the officials that currently hold the access to a physical database.
* It has a work group involving a representative from the Government and a local representative
* Bitland is establishing its own network around different communities in Ghana to ensure internet access to the residents. It also has a 4-year implementation plan that looks to start with a local wi-fi network for the pilot communities, then establish metropolitan access networks which would give greater Ghana constant access to the Bitland network.
* They use decentralized data storage and traditional server warehouses for back-up.
* The first iteration of the project uses MIT Graphene encryption for any data that is being transmitted across the network or stored.
* The system runs regular integration checks to ensure there have been no changes to the data. This is crucial for ensuring the land titles are not registered to more than one owner. It also prevents any person from modifying without taking responsibility. This will prevent any fraudulent activities and any official working against the interest of the government for personal gain will be exposed through digital footprints.