Blockchain-based property registries may help lift poor people out of poverty

June 28 2018, by Nir Kshetri

Many developing countries don't have a working system of tracking property rights, and what they do have can be fragile and incomplete. In Haiti, for instance, a large earthquake in 2010 destroyed all the municipal buildings that stored documents confirming many small farmers' ownership of the land they worked. Even years later, many farmers didn't have proof that they were landowners. People are still fighting over their land.

This sort of problem – caused by natural disasters or not – is widespread, causing financial hardship for families in the developing world. Without an official, enforceable legal title to their property, people can't resolve disputes over who can use which land for what – like who can farm where. They also can't borrow against their existing assets to invest in their homes, businesses or communities. The value of those properties, and the lost economic opportunities for owners of assets without formal documentation, has been estimated at US$20 trillion worldwide.

From researching blockchains and cryptocurrencies for the past three years, I have become convinced that these technologies have the potential to fight root causes of poverty – including by securely recording property ownership.

I'm far from alone: Blockchain-based land registries have started up in Bermuda, Brazil, Georgia, Ghana, Honduras, India, Russia and Rwanda. The problems these efforts are addressing are significant.

Current challenges in land registries

Across the world, land registries are inefficient and unreliable – or even downright corrupt. In Honduras, some government officials altered the country's land ownership database, [stealing property for themselves – including beachfront getaways](#).

In many African countries, more than [90 percent of rural land is not registered](#). In Ghana, [78 percent of land is unregistered](#), and the country's courts have a long backlog of [land dispute cases](#).

In India, millions of rural families [lack legal ownership of the land they live and work on](#). The lack of secure land ownership is a [bigger cause of poverty](#) in the country than the caste system or a high illiteracy rate.

Brazil has no single centralized land registry. Instead, about [3,400 private agents – called "cartorios" – register and check land ownership](#). The system is confusing, with many different documents created in different historical periods. Most land documents [lack specific geographic references](#) on property boundaries. Little wonder, then, that the system is plagued by [corruption and double allocations](#) – two formal documents each saying someone else owns a piece of land.

These fragile and incomplete [property rights](#) systems in the developing world can affect the entire planet. In Brazil's Amazon rainforest, illicit land grabbers forge deeds and use violence and bribery to [falsely claim ownership of property](#), often under fake names, which the locals call ["fantasmas," or "ghosts."](#) Then they [clear-cut the rainforest](#), which has [serious environmental effects](#). Having ["improved" the land by converting it to pasture](#), these land thieves then are [eligible to register as the formal owners of the land they stole](#). This cycle has repeated for years, contributing to widespread Amazon deforestation.

How blockchain-based land registries work

Using a blockchain system to record transactions could help solve these problems. A blockchain is a secure database that's stored in a distributed – but connected – set of computers around the internet. It's not susceptible to tampering, and every addition to the database must be [digitally signed](), making clear who's changing what and when. So instead of a system with multiple conflicting documents, some of which may have been forged or altered, there's only one record with a clear history of modifications, including who did what when.

Blockchain transactions can include all kinds of information, including geographic boundaries or serial numbers and an owner's identity. In Ghana, for instance, the nonprofit Bitland runs a [blockchain-based land registry system]() with a written description of each parcel of land as well as GPS coordinates of boundary points and satellite photos of the area.

A collaboration between a U.S.-based blockchain startup and a Brazilian real estate registry has created a record-keeping system for land in the [southern coastal municipalities of Pelotas and Morro Redondo](). Its blockchain database contains details like the property's address, the owner's name and contact information, zoning rules and a unique identification number for the property itself.

Blockchain can provide other advantages too. For instance, when transferring land in the republic of Georgia, the buyer and the seller go to a public registry house and pay a fee between $50 and $200. Moving this process onto a blockchain [could drop the costs to no more than 10 cents]().

Remaining challenges

Just starting a blockchain-based database isn't enough to solve these problems, though. Data must be accurate when it's entered, and records must include enough information to be authoritative about the properties they're referring to. A new technological system won't fix much in countries where it's hard to determine the legitimate owner in the first place. Also, bureaucrats may object to new record-keeping systems that reduce their power, status and privileges.

However, in places where governments or others who create the systems are viewed as fair and impartial and run a transparent process, blockchain-based land registry systems could give many of the world's poorest people their first real asset. Once they have straightened out complex, corrupt and contradictory registry systems, people can safely invest in, borrow against and truly improve their properties, helping lift themselves out of poverty.

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