Bitcoin, conservation & ecotourism in Africa

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Like the grasslands of the Serengeti, Bitcoin is a decentralized network of value

1. A new ecosystem of money

The Serengeti, a vast expanse of grasslands and savanna stretching across the border of Tanzania and Kenya, is renowned for its breathtaking landscapes and the annual migration of millions of wildebeest and zebra across its plains. Beneath the spectacle of the Serengeti's wildlife migrations lies the true foundation of this ecosystem: the vast, interconnected network of resilient grasses that silently sustain this abundance of life. Among these vital grasses, the remarkable finger grass (*Digitaria*) extends its influence far beyond what meets the eye, as its clonal nature allows it to spread through underground rhizomes and surface runners, creating an expansive, interconnected colony of genetically identical plants that share water, nutrients, and information across what appears to be separate tufts but is actually one resilient, decentralized organism. This provides an excellent natural parallel to a decentralized money network that has revolutionized our concept of financial systems: Bitcoin.

Bitcoin is a decentralized digital currency that allows for peer-to-peer transactions without the need for a central authority or intermediary. Like finger grass, the Bitcoin network consist of a decentralized network of nodes. These nodes keep an identical copy of a digital public ledger of all Bitcoin transactions (the blockchain) and they validate new transactions. It is, in fact, the largest decentralized computer network in the world! By promoting decentralization, Bitcoin eliminates reliance on banks and governments, significantly reducing the risks of corruption, manipulation and censorship of financial transactions. Bitcoin enables secure, permissionless, borderless transactions which can be processed relatively quickly and cheaply compared to traditional banking methods, particularly for international payments.

The Bitcoin digital currency tokens fulfill the three roles of money, as a 1) store of value, 2) medium of exchange, and 3) unit of account, totally independent of any government-issued currency (called “fiat”). One Bitcoin can be divided into 100 million satoshis, so fractions of a Bitcoin can be transacted or owned. Unlike government-issued currencies, the final supply of Bitcoin is capped and unchangeable, and Bitcoin is thus a hedge against inflation. Ultimately, Bitcoin empowers users with self-sovereignty, allowing them to manage their wealth independently. Bitcoin not only presents an alternative to conventional finance but also redefines the way individuals interact with money in the digital age. Bitcoin provides an alternative financial system accessible to anyone with an internet connection, allowing both sophisticated and unbanked users alike to participate equally in the global economy. It is indeed a whole new ecosystem of money.

2. Bitcoin and conservation

Two major threats to conservation in Africa relate to money. Firstly, a shortage of funding often hamstrings effective conservation programs. Corruption and inefficiency aside, a lack of sufficient finances often hampers key conservation activities such as infrastructure maintenance, anti-poaching patrols, purchasing new equipment, ecosystem restoration, research and monitoring, and community outreach. Conservation is a costly endeavor. When conservation budgets are frozen or increased insufficiently, inflation ensures that less and less gets spent on conservation in real terms. Species and ecosystems pay the price. Numerous conservation charities have emerged to fill the funding gap in African conservation, but many of these, especially smaller entities, face challenges in raising enough funding and in preserving the purchasing-power of the funds they raise due to inflation, before they are disbursed.

Secondly, local human pressures on conservation areas from adjacent communities, such as poaching, theft of fencing, ecosystem degradation, and even agricultural

encroachment into protected areas, are driven, at least in part, by poverty. For communities living in poverty, the insidious effects inflation, poor access to markets, poor access to banking services, and poor access to amenities such as electricity, create barriers to households climbing out of poverty. These pressures faced by poor rural households drive unsustainable livelihood activities such as over-harvesting fuelwood for cooking, making charcoal to generate income, poaching wildlife for the pot or for profit, and clearing more land for low-productivity rain-fed agriculture. Once again, species and ecosystems pay the price.

Bitcoin can, and is, playing a role in addressing these conservation challenges in a number of ways. The first is the increasing number of conservation charities that accept donations in Bitcoin. For the one making the donation, paying in Bitcoin is usually cheaper and quicker than paying by credit card or bank transfer, especially if it is an international payment. For the charity, receiving donations in dis-inflationary Bitcoin can help preserve the purchasing-power of donations until they have accumulated sufficient to disburse. It also gives them access to a niche source of funding; Bitcoin enthusiasts who prefer spending in Bitcoin than in government currency as a matter of principle, and an increasing number of whom are becoming very wealthy due to the substantial price appreciation of the Bitcoin they hold. One example of a Bitcoin conservation charity is the *Izindlovu Fund* which is dedicated to supporting local field projects in South Africa that focus on wildlife conservation. They raise funds for field projects including the Black Mambas all-female anti-poaching unit, elephant conservation, rhino conservation, and environmental and wildlife education in rural schools. Their Bitcoin for Wildlife Conservation project focuses specifically on assisting conservation projects to embrace Bitcoin donations.

Second is the emergence of community-based initiatives aimed at fostering Bitcoin circular economies in impoverished rural communities that enable people to earn, spend, and save in Bitcoin. This gives them financial freedom from expensive or non-existent banks and gives them the ability to own money that is not eroded by inflation. An example of such an initiative is *Satoshi's Safaris*. It is an initiative with a mission to share with the conservation community how Bitcoin can bring economic freedom to wildlife landscapes. They believe that Bitcoin can drive wealth accumulation in the communities living at the conservation interface, lower their time preference, increase

their livelihood options, and cultivate an appreciation for nature. They run their own projects, showcase local guides and tourism operators, and offer wildlife adventures where they demonstrate what is possible with Bitcoin.

The third is a set of benefits from Bitcoin mining; the process of validating and recording transactions on the Bitcoin blockchain by computers competing to solve complex mathematical puzzles, which in turn releases new bitcoins as a reward for the miners' computational efforts. The banks of specialized high-speed computers employed by commercial Bitcoin miners consume a lot of electricity. Miners therefore seek the cheapest reliable source of electricity. Because all they need is a Starlink internet connection, they can set up in remote locations, which enables them to tap into cheap or stranded renewable energy sources such as hydroelectric, geothermal, and landfill gas in sites that are too remote to be economically viable for traditional electricity infrastructure or use-cases.


Source: The Economist/AFP

Virunga National Park in the Democratic Republic of the Congo, is a remarkable example of a direct conservation benefit from Bitcoin mining. In 2020, it became the world's first national park to operate a Bitcoin mine, powered by a hydroelectric power plant in the park. This partnership between the *Virunga National Park and Big Block Green Services* has significantly boosted the park's revenue; in some months of 2021, Bitcoin revenue nearly offset tourism revenue losses from COVID-19 lockdowns. An interesting indirect spin-off from mining is exemplified by Kenyan Bitcoin mining company, *Gridless Compute*. Gridless operates compact Bitcoin mining data centers in rural regions in four African countries, each powered by small-scale renewable energy sources. These mining facilities generate income that is divided between Gridless and the national energy providers. Gridless works with power producers to keep the power price affordable. Now, over 1,800 households in Bondo, Malawi, who live far from the national grid, have access to affordable electricity, thanks to Bitcoin. It will be interesting to monitor the effects of electrification on fuelwood consumption and entrepreneurial activities in these remote rural communities over the coming years.

3. Bitcoin and ecotourism


Source: Safari Guru

In late 2024, South African company *BitWild Safaris*, set out to locate ecotourism lodges and camps across Africa that accept Bitcoin, with a view to promoting these safari destinations to the Bitcoiner community. What we found after trawling the internet for many hours was astonishing...nothing! By word of mouth, we managed to track down a paltry two camps in South Africa. What a missed opportunity! We decided instead to focus on travel companies specializing in planning, arranging and booking safaris for clients. Here we were more successful. Even then, we only found six Bitcoin-friendly safari companies. These ranged from bespoke luxury safari companies operating across Africa, such as *Safari Guru*, to niche operators such as *Gorilla Sats*, a Ugandan company that specializes in gorilla trekking and other local adventure tours. You can learn more about these and other Bitcoin-accepting safari companies at our website: *https://bitwild.co.za/embark*.

Bitcoin provides both tour operators and lodges with a number of advantages akin to those discussed under conservation charities in section 2. First is access to a niche market of clients who prefer to pay in Bitcoin. These range from those who simply want the convenience and low cost of international payments by Bitcoin, to "Bitcoiners" aiming to live on the "Bitcoin standard" – earning, saving and spending in Bitcoin – for philosophical reasons. This growing body of potential clients includes increasing numbers of very wealthy individuals. Accepting Bitcoin also gives access to clients from countries for whom paying via conventional banking channels is a challenge, such as Russia. In the highly competitive ecotourism industry, accepting Bitcoin will become an increasingly important differentiator, especially in these early days of Bitcoin adoption. Longer term, accepting Bitcoin as a payment option will become the norm, rather than the exception. It is inevitable. There is thus an early-mover advantage in starting to accept Bitcoin now. There is also the benefit of having the option to hold onto the Bitcoin you receive instead of exchanging it for fiat currency. A growing number of companies around the world are accumulating Bitcoin on their balance sheet as a Bitcoin strategic reserve. Despite the short-term volatility in the Bitcoin price, most people who have held onto their Bitcoin for any five-year period since its inception have seen substantial gains.

4. How to become a Bitcoin-friendly business or charity

If you have read this far, you are at least curious, if not a little skeptical. The next three sections hopefully answer questions you might have. This section outlines what we think are important steps and resources for becoming a Bitcoin-friendly ecotourism business or conservation charity:

1) *Learn* as much as you can about Bitcoin, including what sets it apart from all other "crypto". A good place to start is sections 5 and 6 of this article which summarize key information from the BitWild Safaris website at *https://bitwild.co.za/proof-of-work.* A useful primer for the African context is *Bitcoin: Africa's Guide to Freedom Money.* To delve deeper, very useful video resources can be found at *https://satoshissafaris.com/#page-1*, *What's the problem?*, *Welcome to Bitcoin*, and *https://www.hope.com/.* This tip comes with a warning: once you go down the Bitcoin rabbit-hole, you will never turn back!

2) Set up a *Bitcoin payment system*. We don't have space here to go into this in detail, but essentially, what you need is to receive Bitcoin payments to a Bitcoin wallet by sharing your Bitcoin address as an alphanumeric string or a QR code, be it by invoice, via your website, or at a physical point-of-sale. This will require a Bitcoin software wallet at the very least and could include addition services provided by a third party. You will need to be able to accept Bitcoin on-chain for big payments and on the Lighting Network for small amounts. We will explain this in more detail and will outline and compare various options in another article, but a few examples of payment services and resources with varying degrees of complexity, feature-richness, and self-sovereignty include *BitPay*, *Coinbase Commerce*, *Lightning Checkout*, *Blink wallet*, *Aqua wallet*, and *BTCPay Server*.

3) *Train your staff*, not only in the technical aspects of how to accept Bitcoin payments, but also about the facts and philosophy behind Bitcoin. Start with your financial administration and front-desk staff, but slowly extend to all customer-facing staff, and then the rest. This will give your business an air of authenticity which will be noticed and appreciated by Bitcoiner clients. We encourage lodges to help staff to install a free Bitcoin Lightning wallet, such as Blink, onto their smart phone so that they can receive tips in Bitcoin. Learn what apps, platforms and merchants are available for paying for every-day expenses with Bitcoin in the countries being visited by your clients, such as the *Tando* app in Kenya and *PicknPay* grocery stores in South Africa, to be able to advise your clients. We cover the most common of these on our website at *https://bitwild.co.za/exchange/*.

4) *Advertise* that you accept Bitcoin payments. The Bitcoin logo is protected by a Creative Commons license, and can be used freely on your website, you front desk, pay-point etc. We encourage businesses to explain their Bitcoin payment process to clients on their website. First prize is having a web page dedicated to this, as well as briefly explaining Bitcoin and why you accept it for payment.

5) Get some *skin in the game*. Start accumulating the Bitcoin that you don't need to spend or exchange for fiat to pay the bills. Continue to learn about Bitcoin.

6) Two *practical considerations* you should be aware of are *price volatility* and *tax*. In the short term, the Bitcoin price is *volatile*. In the longer term, the price keeps increasing, with an average Compounded Annual Growth Rate (CAGR) since its inception of over 50%, albeit with some substantial bear markets on the way. If you or your business can't handle the volatility, but you don't want to withdraw all your Bitcoin income as cash, Bitcoin wallets such as Aqua or Blink enable you to peg your Bitcoin to the USD Dollar price e.g. by exchanging your Bitcoin for a stablecoin such as USDT. This would result in you missing out on substantial price gains in bull markets, so you might want to hold onto at least some Bitcoin while you learn the ropes. But do what you need to do to sleep well at night! Concerning *tax* and your Bitcoin earnings, we can't give specific advice because cryptocurrency tax laws vary between countries. Some treat it as income and you need to report the fiat cash value of the Bitcoin income when it was received, as part of your income tax return. Others treat it as a capital gain, in which case the capital gains tax is calculated based on the difference between the price when you received the Bitcoin and the end of the tax reporting period. We advise you to consult a tax advisor.

5. How does Bitcoin work?

In this section, we "get into the weeds" on Bitcoin. It was created in 2009 by an individual or group of individuals using the pseudonym Satoshi Nakamoto as a response to the shortcomings of traditional financial systems, particularly in the wake of the Great Financial Crisis and subsequent bank bailouts of 2008 that were precipitated by reckless lending by banks. At the heart of this new payment system is the Bitcoin network of voluntary participants, which serves as a decentralized global infrastructure composed of two key components: nodes and miners. Nodes are computers that maintain a complete copy of the blockchain – a public ledger of every transaction on the network – as well as validating transactions and enforcing the protocol rules. Miners are participants in the Bitcoin network who use powerful computational hardware to solve complex mathematical problems as part of the process of validating and confirming transactions on the blockchain through a

consensus mechanism called Proof-of-Work. This process, known as mining, is essential for maintaining the security and integrity of the Bitcoin network. In addition to adding new blocks of validated transactions to the blockchain, this process also creates new Bitcoins and rewards miners for their efforts in maintaining the network's integrity.

A Bitcoin transaction between two participants occurs when the participants create and broadcast it to the network; these transactions are then verified by nodes and recorded on the blockchain by miners, which ensures every participant has a consistent view of the Bitcoin blockchain and supply. Bitcoin's blockchain is thus a public and immutable record of all transactions, thereby eliminating the need for trust in third-party institutions. The advent of Bitcoin Lightning further enhances this digital currency's functionality, providing a faster and cheaper way to transfer small amounts of Bitcoin via a Layer-2 network built atop the main blockchain.

The Bitcoin protocol, a set of rules implemented through open-source software, governs how transactions are processed and recorded, ensuring the system operates smoothly and securely. Central to this protocol is the use of cryptographic techniques, including public key cryptography, which secures transactions by allowing only rightful owners access to their Bitcoin holdings through a unique combination of public and private keys stored in a Bitcoin wallet. This wallet functions similarly to a bank account, although users maintain full control over their security. Written into the protocol code is fixed supply limit of 21 million coins, which introduces a deflationary aspect, potentially preserving value against inflationary fiat currencies which have unlimited supply due to governments and banks creating money out of thin air by issuing debt. The Bitcoin protocol code can only be changed by consensus among the thousands of nodes and miners. The protocol and network are not owned or managed by an individual or organization.

6. Common Bitcoin myths

1 *It is mainly used for terrorism, child porn, and money laundering*: Like any money or open protocol (such as the internet), Bitcoin can be used by anyone for both good and bad purposes. While some illicit activities are conducted using Bitcoin, studies have shown that the percentage of Bitcoin transactions linked to illegal activities has been consistently declining and make up a very small fraction of all Bitcoin transactions. The US Dollar is by far the most used currency in international crime.

2 *It is a Ponzi scheme*: A Ponzi scheme is a fraudulent investment pyramid scheme where early investors are paid off with the money from later investors, creating an illusion of high returns. Bitcoin's decentralized nature, its value based on

market forces, and its transparency through the blockchain make it fundamentally different from a Ponzi scheme.

3 *It is not backed by anything*: Well firstly, no modern currency is backed by anything, hence the use of the term "fiat" – by decree – to refer to modern currencies that are issued by governments. The US Dollar ceased to be backed in value by gold in 1971, and now all other currencies are valued relative to the Dollar, so the whole global financial system is a house of cards. Secondly, Bitcoin is backed by an immense, decentralized computing network that leverages a massive virtual wall of cryptographic computation power and electrical energy.

4 *It is bad for the environment*: Bitcoin's Proof-of-Work consensus mechanism requires powerful computers to solve complex mathematical problems. These computers use massive amounts of electricity to perform the calculations. However, over 50% of the energy used by miners is renewable energy, which is the highest of any industry. Bitcoin mining enables the productive use of stranded renewable energy and is even supporting conservation in Africa.

5 *Bitcoin is the same as any other cryptocurrency*: Bitcoin was the very first cryptocurrency to be developed. Thousands have since been created to either mimic Bitcoin or to serve other purposes, but Bitcoin is unique for several reasons.

5.1 It is the oldest and largest cryptocurrency both in terms of the size of the network and the market capitalization of the currency. It has the first-mover advantage with the widest adoption. Its wide user base and network create a self-reinforcing cycle called the "network effect".

5.2 Unlike every other cryptocurrency, Bitcoin is not run by a company, foundation, or a small user community. It has an unknown founder who has no control over it. It is just about the only truly decentralized cryptocurrency on earth.

5.3 The maximum number of Bitcoin that can ever be created – 21 million – is hard-wired in the protocol code and can't be changed. In doing so Satoshi Nakamoto invented digital scarcity that is counter to the inflationary outcome of limitless money "printing" by governments and banks. Very few cryptocurrencies have a capped supply, and those that do, could have the supply cap changed relatively easily.

5.4 The Proof-of-Work consensus mechanism used by Bitcoin is a more secure and decentralized consensus algorithm than others such a Proof-of-Stake, as it provides a robust security framework, incentivizes security measures, and fosters a competitive market among miners.

BitWild Safaris
https://bitwild.co.za
info@bitwild.co.za

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