



How Digital Gold is Quickly Becoming ESG Gold

Bitcoin has been about since 2009. And, in that time it's earned the nickname 'digital gold' due to its fixed supply and potential investment returns.

However, it appears that bitcoin's 'gold medal' status doesn't end there. In this article, we delve into the latest research, which increasingly indicates that bitcoin should be top of the ESG podium too.

Bitcoin as digital gold

Bitcoin's 'digital gold' status evolved through similarity. Like physical gold, bitcoin is scarce, decentralised, and is seen as a store of value. Scarcity in particular, is a fundamental principle in this idea of value creation.

Gold has retained its appeal as a scarce commodity as it's hard to dig up. Each year the known supply of gold above ground increases by only around 1-2%. Compare that to fiat currencies, such is the British Pound and US Dollar, and you'll see the difference. The US Dollar has increased by around 7% a year for the past 50 years.¹

Bitcoin is even more scarce than gold. It has a fixed supply of 21 million. As of April 2025, around 20 million of the 21 million bitcoin are in circulation and the number of newly created bitcoin is increasing at 0.9% a year. And this percentage will get increasingly smaller over time. It will take until 2140 for the final one million bitcoin to be 'mined' and enter circulation.

This built-in scarcity, plus its independence from governments, drives Bitcoin's appeal as a hedge against economic instability and an increasingly appealing store of value.

Both gold and Bitcoin are hard to counterfeit, durable, and not tied to any central authority. Bitcoin's blockchain ensures secure, transparent transactions, and its digital nature makes it easily transferable across borders. As a result, many view it as a better alternative to gold for preserving wealth in the digital age.

Bitcoin's potential for social good

Although it rarely makes the headlines, bitcoin holds immense potential for social good. In particular for the over 1.4 billion adults globally who remain 'unbanked'. These are those without access to core financial services like bank accounts and credit cards. Although not always, the 'unbanked' are mostly made up of women. They are poverty-stricken, less educated and live in settings that are more rural. However, over 5 billion people own mobile phones. So, whilst they may lack access to traditional banking, their phone is their opportunity allowing them to use Bitcoin without relying on banks or state-



controlled systems. For people in countries with weak currencies, political instability, or authoritarian regimes, Bitcoin can offer a route out from poverty.²

Alex Gladstein of the Human Rights Foundation frequently highlights Bitcoin's power in these contexts. He comments, "More than 4 billion people live under authoritarian regimes or in countries experiencing double or triple-digit inflation. For them, Bitcoin isn't an investment; it's a lifeline." Unfortunately, history is littered with examples of countries with currencies (e.g. Argentina's Peso) that have collapsed in value, destroying individuals' life savings. In places like Venezuela, Nigeria, or Belarus, Bitcoin enables people to store value and make payments outside of state control.

Bitcoin – environmental gold?

A lot has changed in the last couple of years and there is now more data, better quality academic research and more years of tracking the 'greening' actions of bitcoin miners. Now bitcoin mining, historically criticised for its environmental impact, is proving that it can offer significant environmental benefits.

Bitcoin mining and energy usage

Estimates on the energy used by bitcoin miners varies depending on the source but the Cambridge Centre for Alternative Finance estimates the figure at 0.2% of global energy usage. Bitcoin mining is certainly energy intensive but this doesn't make it the top energy user and, by way of context, Cambridge estimates it to be similar to the energy used to mine gold every year. Now let's look at the environmental impact bitcoin mining has on the energy system...

For bitcoin mining to be profitable, it pays to be green

In the early days of bitcoin mining, it was profitable to operate at almost any cost of energy. Bitcoin miners were not always mindful of the energy sources that they were using. However, as the industry has matured and become more competitive, a high cost of energy has become a real barrier to profitability.

To be profitable, bitcoin miners need to access the lowest cost of energy they can get and are, therefore, magnetised to cheap energy sources. It just so happens that cheap sources tend to be renewables and, in particular, places where energy would otherwise be wasted.

Daniel Batten's article on Why Bitcoin Mining is Tier-1 Climate Action³ explains that the belief that bitcoin mining has environmental benefits is now, in fact, mainstream. He notes that it is 'now supported by the scientific consensus (14 of the last 16 papers on Bitcoin and energy suggest positive environmental impacts from Bitcoin mining)', a conclusion shared by 90% of sustainability magazines who cover Bitcoin mining and even the majority (85.7%) of mainstream news coverage since 2023.⁴

According to the Bitcoin ESG Forecast, Bitcoin Mining is currently the only primary global industry powered mainly through sustainable energy (over 50% of renewable energy).



Bitcoin mining helps clean up energy waste

Wind and solar energy generation is brilliant but intermittent. As you'd expect, it produces varying amounts of energy as weather conditions change. As well as creating not enough energy, it can also create too much. So much so that, at times when there is excess energy production, the UK energy system pays wind farms to turn off (be 'curtailed'). In other words, energy is being wasted and it is costing the UK taxpayer. According to the National Grid ESO, curtailment of wind power alone cost British consumers over £800 million in 2023, as renewable generators were paid to shut down during periods of oversupply.

When building out energy sources, grids need to have enough supply to meet peak demand. Where they have energy generators with variable/uncontrollable power output, like wind and solar, they need more total supply capacity. If wind and solar are to be key components of the future energy mix then we need solutions that can flex around them, increasing their energy usage up and down to flow with renewable energy supply. Flexible energy demand makes these renewable energy sources more useful to the grid and we can use more of it to power homes and businesses, with less energy wasted.

Miners as flexible energy consumers

Those running electricity grids around the world are juggling energy supply up and down in order to meet the energy demanded at that moment. The greater the uncertainty around demand peaks, the greater need there is for them to have, at the ready, quick-response energy generators that can produce additional power as required.

However, most energy generators cannot be increased quickly and easily. For example, we can't create more light for solar power and nuclear takes 24 hours to 'power-up'. Quick-response additional power to meet 'peaks' in demand have typically been provided by gas 'peaker' plants (and to a lesser extent batteries and hydropower). The downside to this is that they are expensive to run and have high emissions.

In order to reduce the need for these gas peaker plants, one option is to identify large users of electricity who can reduce their energy demand as other users ramp up theirs, thereby reducing the overall energy demanded at these peaks. Bitcoin mining offers this flexibility as miners can adjust energy consumption in real-time, helping to stabilise the demands on the grid and the need for gas peaker plants.

In Texas, one of the top 10 global economies and a hub for bitcoin miners, they have historically used these gas peaker plants to provide short-notice additional power to help meet surges in energy demand. This winter in Texas there were extremely cold periods when demand for energy to heat homes soared beyond the norm. The bitcoin miners turned off their machines during these periods of peak demand, helping to reduce the overall demand for energy and lower the need to use gas. Brad Jones, former CEO



of ERCOT Texas' grid said that Bitcoin mining "helps us get more renewables onto our grid" but also "helps us counterbalance the intermittency of renewables".

Utilising wasted energy and supporting renewable integration

Bitcoin mining can harness surplus energy from renewable sources that might otherwise go unused, thereby enhancing the profitability of renewable energy projects and encouraging their expansion. With a known energy consumer on site every renewable energy project immediately looks more profitable and more likely to get the green light.

- Wind farms and solar farms require infrastructure to connect them into the grid. Where they are able to generate electricity, but are awaiting connection to the grid (a period that can last for years), they can sell that energy direct to 'on-site' bitcoin miners until they are ready to connect.
- Where a project (wind, solar, hydro) is expected to generate more electricity than the local community / grid needs but to set up a smaller scale site would be too costly, then bitcoin miners can become the buyer of excess energy, making projects that would not be viable, become realistic. This enables more renewable energy projects to get started.

Reducing methane emissions

Beyond supporting renewable energy, Bitcoin mining can play a role in mitigating harmful methane emissions from landfill sites (which are more potent than carbon emissions). This is done by collecting the methane from landfills, burning it to turn it into less harmful carbon dioxide (and water) and using the power generated during that process to mine bitcoin.

This way bitcoin mining can profitably reduce landfill methane emissions, addressing a significant environmental challenge where other technologies may not be economically viable.

Empowering energy development in emerging economies

As of 2023, approximately 600 million people in Africa lacked access to electricity, representing about 43% of the continent's population.⁵ In developing regions like this, Bitcoin mining can monetise previously untapped energy resources, aid in the development of infrastructure and provide access to electricity for more people around the world.

A recent BBC article highlights how Gridless, a bitcoin mining company, is doing just that. By using excess hydroelectric power in African communities to mine bitcoin, they are monetising surplus energy that would otherwise go unused. This approach not only provides economic benefits of accessible electricity for more communities but also promotes the efficient use of renewable energy resources.



By deploying mining operations in areas with abundant renewable energy, companies like Gridless help stabilise local power grids and create additional revenue streams that can be reinvested into community development.⁶

The bitcoin gold rush?

Bitcoin is a c\$2trillion dollar market, around 10% of the value of the world's gold and 0.2% of total global assets. It has taken a strong foothold but is by no means fully adopted. Its potential upside in terms of capital appreciation, if it fulfils its promise to be a globally adopted form of digital capital, is significant with many experts predicting it could dwarf gold in total value terms. In other words, this green investment could come with a significant return booster attached.

If you have any further questions or would like to learn more about bitcoin as an ESG solution please get in touch with your normal Cartwright contact. Alternatively, email Adam Gregory, our Head of Responsible Investment, at adam.gregory@Cartwright.co.uk

May 2025

¹ Source: [Why financial inclusion is the key to a thriving economy | World Economic Forum](#)

² Source: [\(10\) Why Bitcoin Mining is Tier-1 Climate Action | LinkedIn](#)

³ Source: [From Mining to Mitigation: How Bitcoin Can Support Renewable Energy... | Daniel Batten](#)

⁴ Source: [Why bitcoin is key to the future of finance and renewable energy | Daniel Batten](#)

⁵ Source: [Africa – Countries & Regions - IEA](#)

⁶ Source: [Bitcoin in the bush - crypto mining brings power to rural areas - BBC News](#)