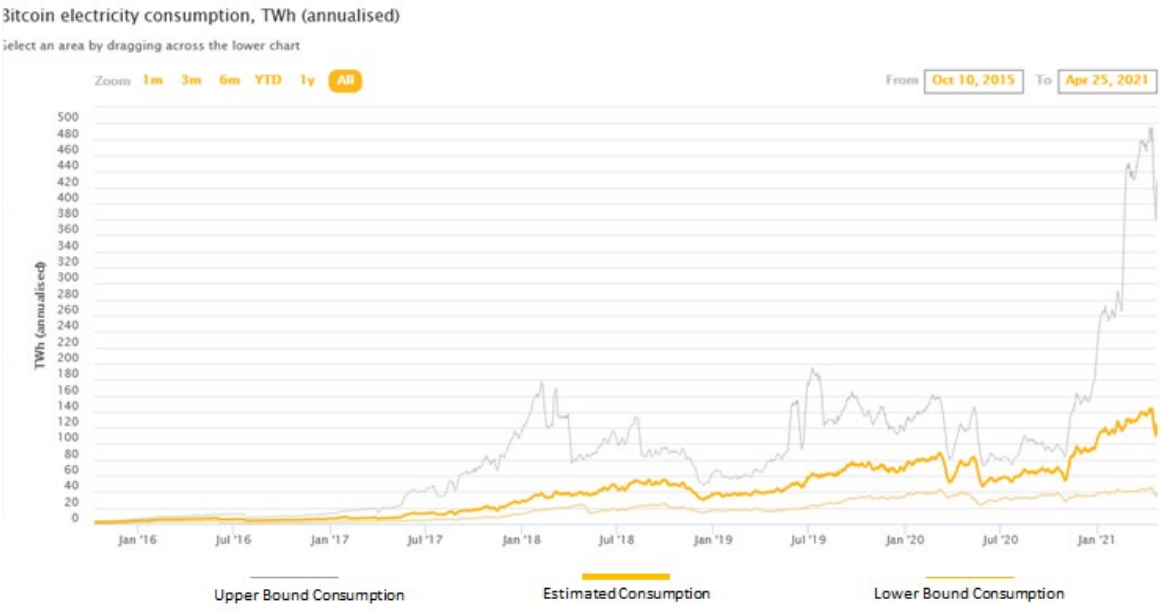
Symbiosis between Energy and Cryptomining

By **Ricardo Jiménez** | April 2021
Renergia Holdings, Ltd.

Solar Power stands at only 1.3% of all total energy supply (EIA, 2020). Contrastingly, according to the University of Cambridge's bitcoin electricity consumption index, bitcoin miners are expected to consume roughly 130 Terawatt-hours of energy (TWh), which is roughly 0.6% of global electricity consumption, or equivalent to approximately ½ of all the Solar Power supplied. It is evident that Bitcoin and the other cryptocurrencies have a voracious and growing appetite for electricity (See Graph Below). As the number of Crypto currencies continue to sprout and its appetite among investors continues to fuel its prices, the need for greater electricity sources will continue to grow. The challenge for many of these miners is to control the costs of electricity and one way of doing this is to find cheap and abundant electricity sources like that provided by Solar Energy.



Source: CBECI

In the U.S. 17% of Cryptominers are already powering their mines with Solar Energy (CBECI, 2021). Energy accounts for between 60% to 90% (depending on the location) of bitcoin mining costs and plays an extremely critical role in determining profitability for the cryptocurrency's miners (Forbes, 2016). The same article suggested that bitcoin's seigniorage (or the difference in its cost of production and overall value) will become unviable, unless the mining process becomes more energy-efficient. By its very nature Bitcoins and for that matter, any other cryptocurrency, have a specific time for hashing. Hence, the demand for power of Crypto-Miners should continue to grow as the creation of each additional unit of currency is mathematically more difficult, thereby requiring more computing power

and energy than the previous iteration. They will necessarily need to constantly add more power to keep up with the same hash rate.

Though it may not seem so, the country where you choose to mine can play a significant role in the overall cost of mining. Many South American and Asian countries have lower power consumption rates. Mining 1 Bitcoin in the USA will cost you ten times the cost in Venezuela. Many bitcoin mining businesses rely on environmentally friendly energy sources like Hydro-power and capturing natural gas leaks from oil fields. Yet, they still need to pay for this.

In 2019, the digital asset investing firm CoinShares released a study estimating up to 73% of bitcoin miners use at least some renewable energy as part of their power supply, including hydropower from China's massive dams. Cambridge researchers found renewable energy makes up 39% of miners' total energy consumption.

Cryptocurrency mining industry garnered almost $1.4 billion in February 2021 alone (Techcrunch, 2021). The sector is growing exponentially at a hash rate of 0.4527678% per day and for that it needs power. The growth potential is enormous. The number of bitcoin transactions is estimated to range from 150,000-250,000 per day - up to 90 million annual transactions. While Cryptominers look for ways to reduce their increasing OPEX they will need to bring in more computer rigs yielding to higher power consumption. It's not only about securing more energy-efficient hardware, but also about powering it with cheap and abundant energy sources like Solar Power.

The issue becomes then one of reliability. Solar energy is only available during sunny and shiny day time. Miners would need to rely on different sources for the off-peak periods considering their operations run 24x7, or even provide alternative infrastructure to local communities as a way to store and arbitrage the energy flow (A. Back, 2021). In the U.S. most Cryptominers use a mix of energy sources. Even Oil companies are now selling the gas they vent to Cryptominers. As miners continue to search for ways to improve their mining operations costs, most particularly their energy uptake costs, it is yet to see how will this affect the price of bitcoin. It is therefore inevitably to think how interrelated are the expectations for future growth of the production of new energy sources and the mining of cryptocurrencies.