



"Bitcoin and Environmental Footprint: How much is Digital Gold costing the Planet?"

Progress in information technology, the evolution of the internet and the development of cryptography are driving a radical change in the global economy. The application of digital technology to everything that surrounds us, not least the financial system, is accustoming us to a continuous and increasingly strong "virtualisation" of things, even of those functions that, until a few years ago, we would have considered strictly monetary policy, namely: the creation of currency (or rather: cryptocurrency).

The famous economist Knut Wicksell, in 1913, argued that currency is "an object which is received in exchange not for its own sake, (...) not to be consumed by the one who receives it or to be used in technical production, but to be exchanged for something else". What particularly characterises money, therefore, is its acceptability, i.e. the fact that individuals are willing to sell goods and services in exchange for it. This property is not linked to the object used as a medium of exchange, but is the result of an implicit agreement that emerges in society and that is self-sustaining and strengthened over time. Therefore, if in addition to the traditional payment system, managed by central authorities, the conditions are created for a further system whereby private individuals can take over the aforementioned functions by exploiting a new and parallel binary (which in concrete terms consists of blockchain technology) it is, in theory, valid and would fulfil its purpose to the extent that it guarantees consensus and reciprocity within a group.

Cryptocurrencies, being released from the monopoly of issuance held by central banks, are in fact based on the peer-to-peer model, i.e. on a totally decentralised system that bases its meaning solely on the consent of its users. This consensus seems to have always accompanied the digital currency, particularly in its most popular form, Bitcoin, which, although 'founded on nothing', today makes it possible not only to buy anything (alas, not only within the perimeter of legality) but also, thanks to Coinbase's recent listing on the Nasdaq, to be exchanged from one wallet to another on a dedicated market.

But what would happen if at some point this consensus system broke down? News in recent days about the sustainability of Bitcoin production has shaken the market's opinion of these payment systems. The case, which has exploded over the last few weeks, was triggered by Tesla founder Elon Musk's tweet, in which he declared, backtracking on the issue, that the car manufacturer would no longer accept Bitcoins as a method of payment for cars. This was followed by the People's Bank of China blocking the mining and trading of cryptocurrencies and Hsbc banning its customers from trading shares on the bank's online platform by buying shares in MicroStrategy (known for its strong investments in Bitcoin), stating that it would not allow customers to buy or trade products linked to digital currencies.

Thus, in addition to the excessive volatility experienced by the market following this news, which has confirmed the doubts of many about the appropriateness of cryptocurrencies as a store of value - a secondary but nonetheless necessary attribute of a currency - a serious deficiency in the current system, especially of Bitcoins, is pointed out: environmental sustainability.

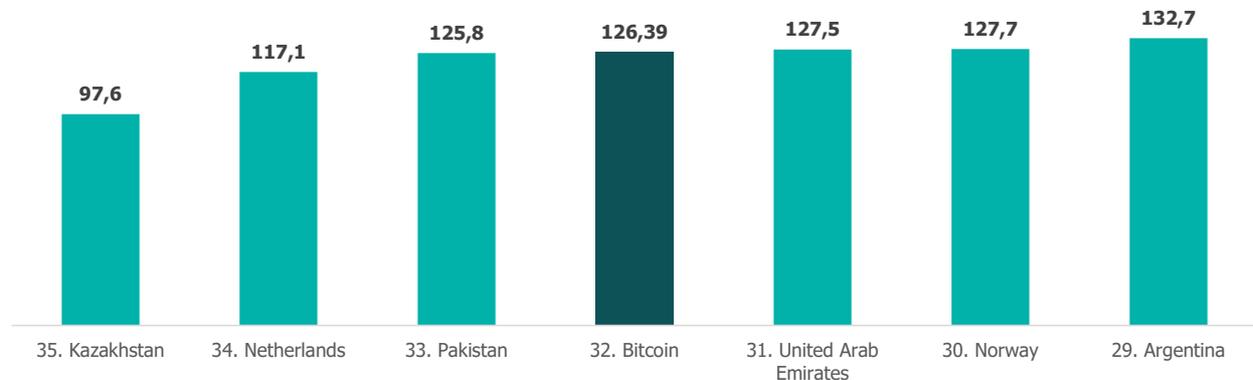
In order to put this issue in context, it is important to note that, just like gold, the supply of Bitcoins is not infinite. Bitcoins are created by tens of thousands of computers and servers working all day long on complicated calculations (which also need cooling systems in order not to overheat). The number of Bitcoins is limited and amounts to 21 million, at the end of 2020 there were 19 million 'mined' Bitcoins. The scarcity effect of the number of coins implies that their production, by those who in jargon are called miners, requires and will require increasing amounts

of energy in the competition to solve complex cryptographic problems, inevitably pushing up energy consumption. Moreover, in addition to what has already been said, it should be added that most of the production takes place or took place in China (according to some estimates we are talking about 70% of the total processing power of the Bitcoin network), a country with an economic development model strongly linked to coal.

Studies on the impact that this system has on the environment come from the University of Cambridge and the International Energy Agency. It has been estimated that in 2019 mining activities around the world will draw on energy sources at a rate of about 120 terawatt hours per year, roughly the same as a medium-sized nation. In short, the annual carbon dioxide emissions from Bitcoin mining are between 22 and 22.9 tonnes, levels equivalent to those produced by Jordan or Sri Lanka. A recent study published in Nature Communication estimates that unregulated Bitcoin mining in China will consume as much energy as Italy in 2024.

To this must necessarily be added the environmental cost of decommissioning the hardware used in mining, which is frequently replaced with newer, more efficient models. Obsolete units create around 11,500 tonnes of hazardous e-waste each year, much of which is dumped in cities in the global south.

Energy Consumption by Country (Annualized TWh)



Fonte: *BitcoinEnergyConsumption.com*, March 2021

One solution to orient the system towards sustainability could be to use only energy from renewable sources. Or if, in addition to Bitcoin, which is based on a computational method called 'proof of work', which puts miners in competition with each other by pushing them to the maximum computing power to validate the same block of transactions, preference were given to other types of cryptocurrency where this does not happen.

Certainly, at a time like the present, when the decarbonisation of the economy, ESG (Environmental, Social, Governance) and the objective of zero emissions are central themes on European and world agendas, one wonders at what price and above all to what end it is right to allow such a use of resources to the detriment of the planet, thwarting the efforts and progress required of citizens and businesses. How long, then, will it be possible to preserve the system of user consensus on which the very existence of cryptocurrencies is based?

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