Consultation Submission

My name is António Neves da Silva, founder and owner of an energy data management company branded MoT - Reverse the cycle. Previously I have worked 11 years for Veolia, the global leader in environmental services, where I held the managerial roles of Director of Building Energy Services for Hong Kong & South East Asia, and Vice President of Marketing for Building Energy Services at Corporate level. I hold a Post-Graduation in Sustainable Energy Systems of the MIT Portugal Program and a 5 year degree in Mechanical Engineering from Instituto Superior Tecnico of Lisbon, Portugal. I became a bitcoiner after realizing that Bitcoin as an asset was carbon positive and Bitcoin mining was the most carbon neutral industry on the planet.

Labeling Bitcoin mining as environmentally harmful would hurt Europe not Bitcoin

Labeling Bitcoin PoW (proof-of-work) mining as environmentally harmful would not have a significant impact on Bitcoin but it would hurt Europe in terms of environmental, social and economic sustainability because it would:

- **Increased Emissions and Resource Consumption in Regions with Power Surplus**:
    - By strategically locating their operations in areas with excess energy, Bitcoin mining companies absorb surplus capacity, facilitating the integration of renewable sources like solar and wind power, reducing carbon emissions, enhancing the grid's stability and promoting economic opportunities for local development.

- **Blocked Energy Infrastructure Upgrades in Regions with Power Deficits:**
    - Companies engaged in Bitcoin mining operations often provide financing for energy infrastructure upgrades. Labeling Bitcoin mining as environmentally harmful may discourage potential investors and hinder funding opportunities. This could impede the necessary upgrades to energy infrastructure, especially in communities with power deficits.

- **Slowdown the Adoption of Clean Energy:**
    - Bitcoin mining, when strategically located in regions with abundant renewable energy, contributes to the adoption of clean energy practices. If Bitcoin mining faces negative perceptions, there may be a slowdown in the overall adoption of clean energy, as the incentive for miners to use and promote renewable sources diminishes.

Bitcoin mining operations do not have a direct negative carbon impact. Bitcoin mining operations themselves do not contribute to emissions directly; rather, their environmental impact is determined by the energy sources powering these operations. To effectively combat pollution, regulatory efforts should focus on addressing the use of dirty energy sources for power production rather than discriminating against specific usage, such as Bitcoin mining.

Bitcoin mining operations in Europe actively seek regions with abundant renewable energy sources, such as hydroelectric or geothermal. Bitcoin's PoW incentive mechanism rewards cleaner and more efficient energy production and is certainly not overall competitive with a public grid with low renewable mix. In regions where this doesn't happen and coal is still being used to power Bitcoin mining operations, these companies, if provided with a supportive framework, can play a crucial role in funding long-term clean energy initiatives.

Environmental impact Bitcoin's proof-of-work mining versus consensus mechanisms of other crypto assets, such as proof-of-stake

- **If Bitcoin mining operations were to shut down, it would lead to a future rise in natural resource consumption and emissions:**
    - Off-grid, there would be less decentralized renewable energy production and so consumers would get their power from non-renewable sources or from the grid.
    - On-grid, the renewable energy mix would come down because without bitcoin mining, the grid would not grow its capacity to absorb the energy surplus of intermittent renewable sources and would be more dependent on fossil fuels.
    - There would also be less harnessing of vented methane in Oil & Gas operations, industrial processes, wastewater treatment plants, agriculture and landfills.

- If the remaining crypto assets were to shut down, there would be a direct reduction of energy consumption and related emissions on their expensive server farms and corporate operations.

Nevertheless, both Bitcoin mining and running other crypto assets have a small direct impact on emissions and natural resource consumption.

Bitcoin PoW mining is more energy efficient than traditional finance monetary systems

For the same transaction volume and the same number of transactions, all other global monetary systems, such as fiat currencies directly consume much more energy and resources than Bitcoin and do not offer the same level of security. Bitcoin's energy consumption is not primarily related to transaction volume and number of transactions but to its security in mining new bitcoins. Bitcoin is superior technology and through its Lightning Network, a second-layer scaling solution, it can process millions of transactions per second through the nodes faster and more efficiently than any other existing system.

Bitcoin PoW mining is the most energy efficient consensus algorithm

In a proof-of-stake (PoS) network, consensus forms when most validators agree on the blockchain's state, mirroring inefficiencies and perceived injustices in the current financial system. The key concern revolves around externalities crucial for both PoS and traditional financial systems' integrity.

Externalities wield significant influence, impacting resource consumption for security. Traditional financial systems demand substantial resources for security, involving government and central bank support, wealth reserves, military reliance, financial credit, and economic sustainability, contributing to public confidence.

In PoS, validators create blocks based on their cryptocurrency stake, introducing the 'nothing-at-stake' problem. Unlike PoW, which demands substantial computational power for a successful attack, PoS relies on token concentration. If a party controls 51% of tokens, they can potentially manipulate validation, risking network security. The challenge lies in assessing the immeasurable resources needed for enterprise server farms, questioning how this process is less resource-intensive than Bitcoin's PoW for the same level of security and integrity.

The answer is that Bitcoin has achieved an absolute state of decentralization and Bitcoin PoW mining is now the most energy efficient consensus mechanism simply because it is the only absolute secure ledger.

Bitcoin mining the most carbon neutral industry on the planet

Bitcoin incentives decentralized power solutions which in turn incentives local economic development in areas where there are energy resources that are untapped, underutilized and stranded in specific geographical locations. Bitcoin has been the major driver of technological innovation in renewable energies and in the recovery of off-grid power production. Over 65% of its energy consumption comes from renewable and stranded resources:

- **Renewable energy and grid stability**
    - Bitcoin mining operations strategically position themselves in regions with surplus energy, playing a major role in grid management. This impactful grid-balancing act not only prevents wastage but also elevates overall energy efficiency and resilience. It's an effect of Bitcoin's decentralized footprint that incentivizes regional efficient use of energy in regions with excess capacity.
- **Methane Utilization in Off-Grid Mining Operations**
    - Instead of releasing methane into the atmosphere, the captured methane is harnessed to power the process of mining Bitcoin. This not only reduces the environmental impact of vented methane but also provides a sustainable energy source for local economic development.

Bitcoin is the key to unlock the circular economy and a sustainable planet

Bitcoin is scarce and has a finite supply of 21 million bitcoins, unlike fiat currencies that lose purchasing value over time due to inflation. Therefore, Bitcoin promotes savings instead of spending. Bitcoin encourages a circular economy approach to resources. Users prefer to reduce, reuse and recycle everything they can in order to save their money in Bitcoin, rather than buying new goods and disposing of them. This is a shift from a linear (take - make - dispose) economy where resources end up as waste once they have been used or consumed, contributing to environmental issues such as pollution, resource depletion and biodiversity collapse.

The Earth Overshoot Day and Bitcoin

According to the Global Footprint Network, an international research organization that focuses on sustainability and environmental issues, the Earth Overshoot Day signifies the moment when our global ecological footprint surpasses the Earth's ability to replenish and regenerate its resources in that specific year. In 2023, this day was August 2nd and in 2022 it was July 28th. This means that resources are getting scarcer and scarcer every year.

The solution is to decouple resource consumption from economic growth and Bitcoin is the only global monetary system that supports this economic model. Central banking currencies rely on a linear economy where growth is coupled with spending and therefore with increasing resource consumption and not resource preservation nor resource regeneration.

Flaws in Greenpeace's Article “Investing in Bitcoin’s climate pollution: Big Finance is betting on dirty Bitcoin”

In this article, the suggestion of changing Bitcoin’s code in order for its ledger to be less energy-intensive and polluting lacks logic because:

- **Bitcoin’s ledger is secured by the nodes that have a copy of the blockchain, not the miners.**
    - For reference, a Bitcoin node can draw 5W of power consuming 30kWh of electricity per year. 200 thousand nodes draw 1 MW of power (the equivalent of a hospital of 250 beds) leading to a consumption of 8760 MWh and an electricity bill of ~1 MEUR for 0.12 €/kWh. So the ledger is not energy intensive as stated.
    - The energy-intensive operations of Bitcoin mining primarily revolve around the emission of new coins, and the Proof-of-Work (PoW) consensus mechanism has the role of guaranteeing Bitcoin’s integrity and security through decentralization and stands out as the most energy-efficient method for securing this process.

- **PoS is less secure and the resource consumption required by externalities are immesurable, mirroring the traditional financial system**
    - Centralization, nothing-at-stake, long-range attacks and initial token allocation make PoS less secure and practically impossible to account for the external resources needed to avoid those issues.

- **Bitcoin in an immutable ledger**
    - Changing the code from PoW to PoS would require a hard fork, meaning the code would not be backwards compatible and therefore that would be another new blockchain and Bitcoin. Node runners can validate code updates from BIP - Bitcoin's Improvement Proposals to add new rules (soft forks that are backwards compatible). but they cannot change the fundamentals such as the hard cap of 21 million bitcoins and the PoW consensus mechanism.

This example and other attacks on Bitcoin PoW seem more like a direct competitors' attack on Bitcoin than a real energy resource allocation and environmental issue brought up by local concerned entities than anything else.

Bitcoin is the biggest environmental opportunity the planet has to become more sustainable:

- Incentives for every user around the world to preserve resources in order to save money
- Cleaner and more efficient energy used to run a secure global monetary system
- Primary driver of technological innovation in renewable energies and the recovery of off-grid power production
- Renewable and stranded resource utilization
- Harnessing vented methane to avoid emissions
- Local economic development based on environmental sustainability