

## **Response to ESMA regarding the MiCA Consultation Paper 2nd Package 6 December 2023**

Thank you for the opportunity to contribute to this important consultation. We refer throughout to the “Technical Standards specifying certain requirements of Markets in Crypto Assets Regulation (“MiCA” or the “Regulation”) - second consultation paper, dated 5 October 2023” (the “Paper”).

Initial comments:

**Assumption of harm.** The Paper and MiCA make an inherent assumption that there is “adverse impacts” on climate. This should not be so. This should be carried out objectively to determine what the “impacts” may be. Ultimately consensus mechanisms, in particular proof of work, consume electricity. The consumption of electricity does not itself have any adverse impacts on the climate, or other environment-related adverse impacts -- i.e. bitcoin miners are actually zero-emission companies. If it did, then the use of electric cars would also (logically) have adverse impacts on the climate, or other environment-related adverse impacts.

**Positive benefits.** Any assessment of bitcoin and other consensus mechanisms should take into account any POSITIVE effects that those industries and uses may have. For instance in relation to methane mitigation, demand response, grid stability, or in making new renewable or sustainable energy projects economically viable from day one - even prior to such projects being connected to the grid. Ignoring “bitcoin”, we should not lose sight of the fact that we have the potential for a zero-emission buyer of electricity that can locate anywhere, turn off near instantly, and utilise stranded or excess power. Proof-of-work machines do not cause pollution, do not exude chemicals, do not pollute waterways, and do not even need to be permanent installations. We strongly recommend that the Regulation (or the Union’s implementation of the requirements in the Regulation) incorporates requirements for the disclosure of such positive impacts of Proof of Work as in many cases they represent significant untapped potential for the Union to exploit in moving towards net zero and in some cases towards a carbon-negative grid. We will cite relevant examples for consideration throughout the submission.

Furthermore for large crypto-assets (for example bitcoin and ethereum) we would suggest that there is harmonisation in the data produced, and that this be in fact produced by ESMA (or the Union) itself and freely/publicly available so that companies that may be required to report or disclose this data can do so in an even-handed way - i.e. ESMA itself produces the relevant data for large assets based on its centralized expertise. Crypto-assets are not unique (i.e. it is not the same as other “reporting” based on entity activity), but are standardised globally. This would provide an example to the market of the rigour expected in the display of the data and a “gold-standard” implementation of the RTSs, as well as a uniform standard for the largest cryptoassets to ensure harmonisation. Not to do so risks either (a) centralized data providers doing this, and charging large amounts of money to access the data - in effect a ‘tax’ on a nascent industry, (b) wide disparity in implementations by different presenters e.g. the metrics for “bitcoin” may be very differently displayed on Coinbase, Kraken, Gemini or other exchanges and smaller VASP/CASP providers, (c) large costs for individual VASP/CASP providers in sourcing data and displaying this, and (d)

significant confusion for investors who may see different metrics and data on different platforms, tainting the utility of the entire project.

By way of example we include here several instances of the positive impact Bitcoin mining is able to have on sustainability, net zero, and humanity's global carbon footprint in general:

- KPMG producing a detailed report relating to Bitcoin's role in the ESG imperative: <https://kpmg.com/us/en/articles/2023/bitcoin-role-esg-imperative.html>
- Bitcoin mining energizing sustainability through green innovation: <https://thehill.com/opinion/energy-environment/4315048-bitcoin-mining-is-energizing-sustainability-through-green-innovation/>
- Farms being able to reduce methane emissions using Bitcoin mining: <https://www.independent.ie/farming/agri-business/how-this-former-beef-farmer-is-turning-his-grass-into-mining-for-bitcoin/a1236394378.html>
- Marathon Digital Holdings reducing methane emissions from landfill gas using Bitcoin mining: <https://ir.mara.com/news-events/press-releases/detail/1330/marathon-digital-holdings-announces-energization-of-its>
- Nation-state mining being undertaken by Bhutan, in a sustainable way and being used to develop energy independence: <https://www.independent.ie/farming/agri-business/how-this-former-beef-farmer-is-turning-his-grass-into-mining-for-bitcoin/a1236394378.html>
- Cornell University researchers recently investigating planned renewable energy projects across the U.S. and calculating each project's potential to profit from bitcoin mining during the pre-commercial development phase, when a wind or solar farm is generating electricity, but has not yet been integrated into the grid: "From Mining to Mitigation: How Bitcoin Can Support Renewable Energy Development and Climate Action" (<https://pubs.acs.org/doi/10.1021/acssuschemeng.3c05445>)
- Mini Hydro plants being subsidised by Bitcoin mining in Kenya: <https://fd.nl/tech-en-innovatie/1464228/bitcoins-delven-helpt-afrikaans-platteland-te-elektrificeren>

**Q1: Do you agree with ESMA's assessment of the mandate for sustainability disclosures under MiCA?**

No. "Cryptocurrency mining" and consensus mechanisms are a zero-emissions business, and miners themselves emit no CO2 and do not contribute to any climate or adverse environmental impacts. To assert otherwise is plainly false. There has been a significant conflation between "energy use" and "environmental impact" but these are NOT equivalent. The issue that we as a society face is how we generate our electricity, and whether such generation is via sustainable means or not. As we will note below, Bitcoin mining is uniquely placed to support and foster the growth of a sustainable grid and we hope that the Union will not miss the opportunity to take advantage of this fact. The latest data shows that the global Bitcoin mining industry's sustainable electricity mix is 59.9%, making it one of the most sustainable industries globally (<https://bitcoinminingcouncil.com/bitcoin-mining-council-survey-confirms-year-on-year-improvements-in-sustainable-power-and-technological-efficiency-in-h1-2023/>).

However, if this is to be implemented, then any assessment should be NEUTRAL and not pre-supposing that any use of energy is “bad”. For instance any assessment should take into account the many positive impacts of bitcoin mining, both on the reduction of greenhouse gas emissions and on the potential of this industry to support the build out of sustainable electricity grids (<https://gridlesscompute.com/>), to give just two examples. Requiring a focus only on ‘adverse’ impacts will result in the loss both of a valuable data-gathering opportunity and likely also result in the Union missing out on the potential for the Bitcoin network to become carbon negative in the future, and the economic and emission-reduction benefits that will ensue (<https://www.forbes.com/sites/digital-assets/2023/07/08/bitcoin-network-to-reduce-more-emissions-than-its-energy-sources-produce/>).

By way of example, the fairly new Las Vegas sphere cost \$2.3 billion and uses 150 terawatt-hours of electricity per year to power the massive screen. Even based on Digiconomist [source: <https://digiconomist.net/bitcoin-energy-consumption>] (whose data is often disputed and likely significantly over-estimates energy consumption) the total energy consumption of the entire bitcoin network today is ~137 terrawatt-hours of electricity. So one Las Vegas sphere consumes significantly more electricity than the entire bitcoin network. New “spheres” are planned in London, South Korea, and “several” other places around the world (<https://www.construction-europe.com/news/what-is-holding-up-construction-of-the-next-msg-sphere-in-london-/8032190.article>). Logically therefore if “reducing energy consumption” would benefit the planet - which this submission does NOT believe! - we could gain more by turning off 1 single switch in Las Vegas than would be possible if the entire bitcoin network ceased to function. As observed above, the Las Vegas sphere does not have any positive benefits for the grid or otherwise and certainly no positive effects for hundreds of millions of users around the world - it is purely for enjoyment of those attending it, and for advertising.

**Q2: In your view, what features of the consensus mechanisms are relevant to assess their sustainability impacts, and what type of information can be obtained in relation to each DLT network node?**

We would suggest that the following features be requested in relation to consensus mechanisms in order to assess their sustainability impacts. We shall elaborate on each, and give suggestions as to the type of information that may be obtained, below.

**1. Methane Mitigation:** The extent to which a consensus mechanism is able to use or combust wasted or stranded methane gas either from landfill waste, agriculture (<https://www.scillingmining.com/>), or in conjunction with the oil and gas industry. The Union will be aware that methane is a potent greenhouse gas and there is a growing body of evidence to suggest that Bitcoin mining presents a unique opportunity to address and reduce the amount of methane that is released into the atmosphere. We refer to paragraph 7 of the evidence submitted to the United Kingdom Parliament at the following link for additional summary details (<https://committees.parliament.uk/writtenevidence/110956/pdf/>). We also refer to the recent detailed paper from the World Bank “Financing Solutions to Reduce Natural Gas Flaring and Methane Emissions” (<https://openknowledge.worldbank.org/server/api/core/bitstreams/27e9b31f-c8bf-5fa4-ae33->

[3576d60e1a48/content](#) ) , which includes a very detailed case study on Crusoe Energy Systems, a Bitcoin mining and flexible compute company that is currently using Bitcoin mining to reduce greenhouse gas emissions in the form of methane, using modular generation units and mobile computing equipment. We highlight chapter 4 of the World Bank's report in particular, and would also cite the recent video case study on Crusoe that was released by the World Economic Forum, further demonstrating the positive impact Bitcoin mining can have on sustainability efforts (<https://www.weforum.org/videos/this-start-up-catches-waste-methane-to-power-data-centre/s/> ) . We would suggest that Bitcoin mining firms be encouraged to disclose the extent to which their operations are currently mitigating methane emissions, together with estimates of the amount of GHG or CO2E that are mitigated as a result.

**2. Sustainable Grid build out:** Sustainability reporting should include the extent to which a consensus mechanism is able to provide a buyer of first and last resort for the energy generated immediately upon construction of a new sustainable energy plant (whether wind, solar or other), in advance of that plant being connected to the grid and prior to it becoming otherwise economically viable. At present, only Bitcoin (using the proof of work consensus mechanism) is capable of operating at sufficient scale in order to provide this benefit. ESMA will no doubt be aware of the long wait that new low-carbon projects face before being connected to the grid - in some instances in the UK, this wait can be as long as a decade or more ( <https://www.theguardian.com/business/2023/may/16/grid-connection-delays-low-carbon-projects-ofgem-energy> ) . We suggest that appropriate disclosures from mining firms would include the nature and extent of any relevant sustainable grid integrations, and include details as to whether wind, solar, hydro or other sources such as geothermal are involved. Additionally, useful data may be obtained in this way that could highlight where sustainable projects are lacking grid connection or infrastructure and are therefore turning to Bitcoin mining or flexible computing in order to become or remain economically viable.

**3. Grid Stability:** The extent to which a consensus mechanism is able to provide a buyer of first and last resort in order to ensure that a sustainable grid is able to maintain consistent power output during times of both oversupply and undersupply. Bitcoin miners are able to do this by ensuring that sustainable grids are built with sufficient oversupply, yet remain economically viable - and miners are able to act as the perfect interruptible load to release power to the grid when it is required (<https://k33.com/research/archive/articles/bitcoin-miners-can-strengthen-electricity-grids> ) .

**4. Sustainable use of waste heat:** Bitcoin mining as a process generates significant heat, as do all data centers. It is a truism, however, that a large number of human activities require heat, and the mining industry is beginning to integrate with many such activities in order to provide a more cost-effective way of providing heat - since the costs of generating the required heat may be offset against the Bitcoin earned from the mining process. There are many such examples, several of which we set out here:

a. Mining heat being used to dry timber:

<https://cointelegraph.com/news/sustainable-bitcoin-miner-uses-waste-heat-to-dry-wood>

b. Breweries and distilleries using mining heat:

<https://d-central.tech/breweries-and-distilleries-can-reduce-heating-costs-and-increase-profits-with-bitcoin-miners-heat/>

c. Domestic heating appliances coming to the market for use in the home:

<https://heatbit.com/> or <https://hestiia.com/en>

d. A New York spa that is heating its pools with Bitcoin mining:

<https://www.datacenterdynamics.com/en/news/brooklyn-bathhouse-heats-water-with-bitcoin-mining/> .

If and to the extent that a Bitcoin mining operation is involved in a comparable activity, we would recommend that relevant disclosures also be made as part of the disclosure process. If nothing else, this will illustrate the ongoing synergy between the Bitcoin mining industry, the energy sector, the heating industry and the financial services industry. It is relatively unique for such synergies to form and such disclosures will doubtless provide great insights for ESMA into the ongoing and nascent innovation in the space. By way of additional example, certain Bitcoin miners are also diversifying their business into generative AI (<https://news.bitcoin.com/bitcoin-miner-iris-energy-dives-into-generative-ai-investing-10m-in-nvidia-gpus-amidst-soaring-demand/> ).

It is likely that in the near future Bitcoin mining, AI computation and other data centre functions may be co-located, using the same power source and the same geographical data centres. The Union should therefore consider whether it is either equitable or economically sensible to block or restrict (or require 'environmental disclosures' on) some forms of computing but not others, let alone whether this is even practically feasible.

It is therefore neither logical nor proportionate to expect a small VASP provider in one jurisdiction, perhaps one that provides simple wallet software, to give details regarding the entire global Bitcoin network. Doing so would be equivalent to asking a small software provider in Amsterdam to provide disclosures on the state and energy consumption of the entire internet. It cannot be equitable for the VASP provider in our example to be asked to provide details regarding the adverse or positive sustainability impacts of a network that operates in Norway drying woodchips, in El Salvador running on geothermal power, or in the Republic of Ireland running on farm biogas.

**Q6: Do you agree with ESMA's description on the practical approach to assessing the sustainability impacts of consensus mechanisms? If not, what alternative approach would you consider suitable to assess these impacts?**

We would highlight in particular the erroneous but often quoted 'energy cost per transaction' metric. This has been repeatedly debunked as a faulty indicator of energy use, not least by the University of Cambridge Judge Business School. We quote: "*Bitcoin's energy footprint is linked to block production, not transaction processing. This means that the number of transactions within a block has no impact on its energy expenditure: for a given difficulty level, a full block containing thousands of transactions has the same electricity footprint as an empty block with no transactions. The widespread misconception that Bitcoin's energy consumption rises with a growing number of transactions seems to have its origins in the popular energy cost per transaction metric. Often used to compare the 'energy efficiency' of different payment systems, it is a purely theoretical measure that has little practical relevance without additional context.*"

With the growth of “layer 2” technologies such as the Lightning Network, this metric becomes further useless. There could be billions of transactions contained in a single transaction, or there could be 1 peer-to-peer transaction.

Given the fact that such data is ‘purely theoretical’ and has ‘little practical relevance’, we would suggest that this erroneous “energy cost per transaction” metric is NOT used or requested as part of the disclosures.

**Q7: Do you agree with the definitions proposed in the draft RTS, in particular on incentive structure and on DLT GHG emissions? If not, what alternative wording would you consider appropriate?**

The latest data shows that the global Bitcoin mining industry’s sustainable electricity mix is 59.9%, making it one of the most sustainable industries globally (<https://bitcoinminingcouncil.com/bitcoin-mining-council-survey-confirms-year-on-year-improvements-in-sustainable-power-and-technological-efficiency-in-h1-2023/>). We would therefore support the ESMA proposal that detailed information regarding energy mix be requested, albeit from individual miners rather than in respect of the entire network, and then only those miners operating in a jurisdiction where the Regulation is applicable or who voluntarily provide their data for this purpose.

Given the increasingly important and well-documented trend for Bitcoin mining to reduce GHG emissions, whether mitigating flaring on oil fields (<https://k33.com/research/archive/articles/bitcoin-mining-using-stranded-natural-gas-is-the-most-cost-effective-way-to>), reducing methane emissions from landfills (<https://www.forbes.com/sites/digital-assets/2023/07/08/bitcoin-network-to-reduce-more-emissions-than-its-energy-sources-produce/>), or cutting farm biogas emissions (<https://irishtechnews.ie/the-bitcoin-farmer-bitcoin-mine-biogas-powered/>), we would also recommend that the ESMA disclosure indicators also provide an opportunity for miners or networks to disclose the extent to which they or their operations are actively involved in reducing methane gas emissions. ESMA will be aware that methane has more than 80 times the warming power of carbon dioxide over the first 20 years after it reaches the atmosphere and that cutting methane emissions represents the most efficient means available to us of immediately slowing the rate of global warming, as we decarbonize our economy (<https://www.edf.org/climate/methane-crucial-opportunity-climate-fight>). At present, and particularly since the shift of the Ethereum network to a proof of stake consensus mechanism, the Bitcoin mining industry is the only real-world example of an electricity buyer capable of reducing methane emissions at scale and in such a flexible way. ESMA and the Union should therefore gather data on this capability with a view to promoting and supporting the Bitcoin mining industry as a potent tool in the Union’s wider efforts to meet net zero targets.

**Q8: In your view, are the proposed mandatory sustainability indicators conducive to investor awareness? If not, what additional or alternative indicators would you consider relevant?**

There is a significant risk of investors being MIS informed if the metrics used - whatever they may be - do not include the positive aspects of bitcoin mining. This would be akin to judging the environmental impacts of electric cars *only* by the costs of their production (battery pollution, cross-border supply chains, pollution from factories etc) and not considering that they are zero (direct) emissions. If the sustainability indicators are not correctly calibrated then investors will be (essentially) given false and entirely misleading information by firms because they would be mandated to do so. This is dangerous, and should be carefully considered.

**Q29: Is there any other information, specific to crypto-assets, that should be included in the tables of Annex II of the draft RTS? Please provide reasons for your answers.**

We refer to our other responses. Positive impacts on sustainability must be included as well as any negatives to ensure that any metrics and information provided to investors is balanced and accurate.