Bitcoin (BTC)

Mandatory information on principal adverse impacts on the climate and other environment-related adverse impacts of the consensus mechanism.

Indicator Code	Field Name	Content
S.1	Name	Payhound Limited
S.2	Relevant legal entity identifier	9845001DD90AF543DC90
S.3	Crypto-Asset Name	Bitcoin (BTC)
S.4	Consensus Mechanism	Proof-of-Work (PoW)
S.4	Incentive Mechanisms and Applicable Fees	Bitcoin operates on two networks: the Bitcoin blockchain and the Lightning Network. The Bitcoin blockchain uses a Proof-of-Work (PoW) consensus mechanism to maintain transaction security and integrity. This system is supported by economic incentives for miners and a fee structure designed to sustain the network. Miners earn block rewards, which are newly created bitcoins granted to the miner who successfully adds a new block to the blockchain. The initial block reward was 50 BTC, but it halves approximately every 210,000 blocks (about every four years) in an event called the “halving.” This halving process limits the total Bitcoin supply to 21 million coins, creating scarcity that can increase value over time. Every transaction includes a fee paid by the user, which incentivizes miners to prioritize including their transaction in a block. These fees become especially important as the block rewards decrease due to halving. Transaction fees fluctuate according to demand, with users competing to have their transactions confirmed faster. Higher fees generally result in quicker processing, particularly during times of high network congestion. For indicator calculations, energy consumption and transaction counts from the Lightning Network are also included, reflecting the Digital Token Identifier Foundation’s categorization of functionally fungible groups (“FFG”) relevant for this reporting. Excluding Lightning Network transactions would significantly increase the estimated energy use and cost per transaction.
S.6	Start of Reporting Period	2024-01-01
S.7	End of Reporting Period	2024-12-31
S.8	Energy Consumption (kWh/year)	~150000000000
S.9	Energy consumption sources and Methodologies	Annual energy consumption estimates for Bitcoin are derived primarily from the Cambridge Bitcoin Electricity Consumption Index (CBECI), which provides an upper and lower bound for the total energy use of the network. For the 2024 reporting

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		period, the estimated energy use is approximately 150 TWh/year. This figure accounts for the global hash rate, mining hardware efficiency, and network difficulty. To estimate environmental impacts, the geographic distribution of miners is combined with country-specific electricity mixes (sourced from Our World in Data – Share of Electricity from Renewables https://ourworldindata.org/grapher/share-electricity-renewables) and carbon intensity factors (from Our World in Data – Carbon Intensity of Electricity https://ourworldindata.org/grapher/carbon-intensity-electricity). These inputs are used to estimate energy sources and resulting GHG emissions. The energy impact of the Lightning Network is also considered, based on academic estimates and categorized under Functionally Fungible Groups (FFGs), as recognized by the Digital Token Identifier Foundation (DTIF).
S.10	Renewable Energy consumption (percentage of the total amount of energy used per calendar year)	32.37%
S.11	Energy Intensity (energy used per validated transaction in kWh)	14.48
S.12	Scope 1 DLT GHG emissions – Controlled (in t CO2eq per year)	0
S.13	Scope 2 DLT GHG emissions – Purchased (in t CO2eq per year) 7	66,675,159
S.14	GHG Intensity (emissions per validated transaction in kg CO2eq)	5.933
S.15	Key energy sources and methodologies	Total energy consumption is calculated using real-time network hashrate and miner hardware efficiency. CCRI models this by identifying the energy demand of the mining network on a daily basis. Hardware mix: Assumes a representative global distribution of mining devices (e.g., Antminer S19, WhatsMiner M30 series) and calculates average efficiency (Joules/TH). Geographical distribution: Uses known mining data (e.g. from Cambridge Centre for Alternative Finance) to estimate where miners operate and what energy mix (renewable vs non-renewable) is used in each region. Renewable energy use is calculated based on regional grid mix, not just miner location. As of April 2025, 32.37% of Bitcoin's electricity consumption is attributed to renewables. Energy intensity: Defined as the total annual energy consumed by the network divided by the number of validated on-chain transactions. As of 2025, this is 14.48 kWh per transaction. Methodological source: CCRI's MiCA-aligned methodology white paper (2024), along with CarbonRatings.com's open data sets.
S.16	Key GHG sources and methodologies	Scope 1 emissions: Defined as direct emissions from facilities controlled by validators/miners (e.g.

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		fuel combustion). For Bitcoin, this is assumed to be 0 t CO_2eq/year since miners do not generally own or control energy generation facilities. Scope 2 emissions: These are indirect emissions from purchased electricity. CCRI calculates this based on the estimated energy consumption and regional emission factors (kg CO_2/kWh) for electricity grids where miners operate. Total Scope 2 emissions: As of April 2025, estimated at 66,675,159 t CO_2eq per year. GHG intensity: Derived by dividing Scope 2 emissions by the total number of validated on-chain transactions, resulting in 5.933 kg CO_2eq per transaction. Emission factors: Based on regional averages for electricity grids (e.g., U.S., Kazakhstan, Russia, China, etc.), applying IPCC or IEA emission factors for fossil- and renewable-dominated grids. Methodological source: CCRI's network assessment for Bitcoin, CarbonRatings.com methodology whitepaper, Bitvavo ESG disclosures, and alignment with the EU Delegated Regulation (2025/422) reporting templates.