Ethereum (ETH)

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	Ethereum (ETH)
S.4	Consensus Mechanism	Proof-of-Stake (PoS)
S.4	Incentive Mechanisms and Applicable Fees	A Proof-of-Stake (PoS) consensus system motivates validators to help secure the blockchain and verify transactions by requiring them to lock up their own cryptocurrency as collateral. Instead of relying on computing power, validators are chosen to add new blocks based on how much crypto they have staked. Honest participants are rewarded with transaction fees, while those who behave dishonestly or attempt to add invalid blocks risk losing a portion of their staked funds. This built-in economic penalty helps prevent misconduct and maintains the integrity of the network.Fees include Gas fees, paid by users; variable based on network demand and block capacity.
S.6	Start of Reporting Period	2024-01-01
S.7	End of Reporting Period	2024-12-31
S.8	Energy Consumption (kWh/year)	2,600,000 kWh
S.9	Energy consumption sources and Methodologies	After the merge in September 2022, Ethereum switched from Proof-of-Work to Proof-of-Stake, reducing total energy usage by over 99.95%. Current energy use is estimated based on the number of validators, the average power usage per validator (~100 W), and uptime. Annual consumption (~2.6 GWh) is calculated from: ● ~900,000 active validators in 2024 ● Each validator running on low-power devices (Raspberry Pi, cloud instances, or efficient servers) ● Network uptime assumed at 95%+ Data cross-referenced with: ● Ethereum Foundation and research reports ● Carbon intensity figures from Our World in Data for cloud regions (Amazon AWS, Hetzner, etc.) ● Node mapping studies
S.10	Renewable Energy consumption (percentage of the total amount of energy used per calendar year)	47%-55%

Indicator Code	Field Name	Content
S.11	Energy Intensity (energy used per validated transaction in kWh)	0.006
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	870
S.14	GHG Intensity (emissions per validated transaction in kg CO2eq)	0.00211
S.15	Key energy sources and methodologies	Renewable Energy Consumption Estimated: ~47–55% (based on geo-weighted energy mix) To estimate the proportion of renewable energy used by Ethereum: ● The geographic distribution of validator nodes is assessed using a combination of: ○ Public information sites ○ Open-source network crawlers ○ In-house developed crawlers ● Where node-level location data is unavailable or incomplete, reference networks with comparable incentivization and consensus mechanisms (Proof-of-Stake systems) are used to estimate validator location distribution. ● These geographic insights are merged with regional renewable electricity generation data from: ○ Our World in Data ○ Ember (2025) ○ Energy Institute – Statistical Review of World Energy (2024) ● Final weighting produces a blended renewable share estimate of approximately 47–55%, subject to validator movement and regional grid variability. Dataset source: *Ember (2025); Energy Institute – Statistical Review of World Energy (2024) – with processing by Our World in Data*. Dataset: Share of electricity generated by renewables – Our World in Data **Energy estimates**: Based on bottom-up modeling of node specifications and network activity (CCRI). **Annual energy use**: ~2.6 MWh (0.0026 TWh), post-Merge. **Hardware types**: Consumer-grade computers and servers with low power consumption (≈69.35 Wh per validating node, per CCRI). **Energy intensity**: Computed from energy use and transaction count (~0.006 kWh/tx). **No Proof-of-Work**: Since the Merge, Ethereum has fully transitioned to Proof-of-Stake, reducing energy consumption by >99.95%.
S.16	Key GHG sources and methodologies	**Scope 1**: No emissions from Ethereum validator-controlled sources.

Indicator Code	Field Name	Content
		Scope 2: Derived from CCRI's geographic assumptions and electricity grid emissions data. **Emissions model**: Location-based methodology using regional grid carbon intensities. **Tools and datasets**: As described in CCRI methodology documentation: ● Whitepaper on MiCA methods (PDF) ● API Documentation for emissions indicators *Emissions values do not include offsetting or RECs. All values are estimates subject to assumptions about validator distribution and energy source attribution.*