Ethereum (ETH)

Mandatory information on principal adverse impacts on the climate and other environment-related adverse impacts of the consensus mechanism, published under Article 66(5) of Regulation (EU) 2023/1114 (MiCA) and Commission Delegated Regulation (EU) 2025/422.

Mandatory information

- V2.0 Last updated on: 20th October 2026
- Whitepaper link: https://ethereum.org/whitepaper/

Code	Field	Content	Source
S.1	Name	Payhound Limited	
S.2	Relevant legal entity identifier	9845001DD90AF543DC90	
S.3	Name of the crypto-asset	Ethereum (ETH)	
S.4	Consensus mechanism	Ethereum uses Proof-of-Stake (PoS). Validators deposit ETH as collateral (at least 32 ETH per validator) and run an execution client and a consensus client. Time is divided into 12-second slots grouped into 32-slot epochs. In each slot one validator is chosen at random to propose a block, and committees of other validators vote (attest) on its validity. Blocks become final once validators holding two-thirds of the staked ETH have attested to them.	R1
S.5	Incentive mechanisms and applicable fees	Validators earn newly issued ETH for proposing blocks, attesting and	R2, R3

		taking part in sync committees, and lose ETH for missing duties. Provably dishonest behaviour, such as proposing or attesting to two conflicting blocks, is slashed: part of the validator's stake is destroyed, the penalty grows with the number of validators slashed around the same time, and the validator is removed from the network. Users pay transaction (gas) fees in ETH. Each fee has a base fee, set by network demand and burned, and an optional priority fee (tip) paid to the block proposer.	
S.6	Beginning of the period to which the disclosure relates	2025-01-01	—
S.7	End of the period to which the disclosure relates	2025-12-31	—
S.8	Energy consumption (kWh per year)	7,870,000 (7.87 GWh)	R4
S.9	Energy consumption sources and methodologies	Figure from the Cambridge Centre for Alternative Finance (CCAF) report "Ethereum After the Merge – A Change in Power" (July 2026). CCAF measured the wall-plug power of 20 execution and consensus client combinations on two reference machines: a residential mini-PC	R4, R5

		(median 18 W) and a professional workstation (median 152 W). It then scaled the results across about 8,522 discoverable nodes, 36% residential and 64% cloud or data-centre hosted, for a network average of about 105 W per node. The figure is annualised from continuous power demand of about 0.90 MW.	

Supplementary key indicators on energy and GHG emissions

Code	Field	Value	How Derived	Source
S.10	Renewable energy consumption (% of total energy used per year)	33.8%	CCAF reports that 56.4% of the electricity used by Ethereum nodes comes from renewables and nuclear, but does not publish a renewables-only share. The 2025 global average renewables share is used as a conservative lower bound.	R4, R7
S.11	Energy intensity (kWh per validated transaction)	0.0150	7,870,000 kWh ÷ 523,937,952 transactions in 2025	R4, R6

S.12	Scope 1 DLT GHG emissions – controlled (t CO2eq per year)	0	Nodes run on purchased electricity; no on-site generation is reported	R4
S.13	Scope 2 DLT GHG emissions – purchased (t CO2eq per year)	2,370	CCAF estimate of annual network emissions (2.37 ktCO2e), based on the grid carbon intensity of each node's host country	R4
S.14	GHG intensity (kg CO2eq per validated transaction)	0.0045	2,370,000 kg ÷ 523,937,952 transactions in 2025	R4, R6
S.10	Renewable energy consumption (% of total energy used per year)	33.8%	CCAF reports that 56.4% of the electricity used by Ethereum nodes comes from renewables and nuclear, but does not publish a renewables-only share. The 2025 global average renewables share is used as a conservative lower bound.	R4, R7
S.11	Energy intensity (kWh per validated transaction)	0.0150	7,870,000 kWh ÷ 523,937,952 transactions in 2025	R4, R6

Sources and Methodologies

Code	Field	Value
S.15	Key energy sources and methodologies	Energy consumption (S.8) comes from CCAF's bottom-up, measurement-based assessment of Ethereum's node infrastructure [R4], built on the Cambridge Blockchain Network Sustainability Index methodology [R5]. CCAF maps each node to its host country. The United States (31%), Germany (16%), Finland (8%) and France (6%) together host about 62% of full nodes. On those grids, 56.4% of the electricity comes from renewables and nuclear, compared with about 43% worldwide. Because the renewables-only share is not published, S.10 uses the 2025 global renewables share from Ember's Global Electricity Review 2026 [R7]. Energy intensity (S.11) divides S.8 by the 2025 on-chain transaction count from Coin Metrics [R6]. No offsetting or market-based instruments are applied.
S.16	Key GHG sources and methodologies	Emissions (S.13) are CCAF's location-based estimate of 2.37 ktCO2e per year, calculated by applying the grid carbon intensity of each node's host country to its electricity use [R4]. All emissions are reported as Scope 2 because nodes use purchased electricity. Renewable-energy purchases by cloud providers are not taken into account. GHG intensity (S.14) divides S.13 by the 2025 on-chain transaction count [R6].

References

1. **R1** – ethereum.org, Proof-of-stake (PoS).
2. **R2** – ethereum.org, Proof-of-stake rewards and penalties.
3. **R3** – ethereum.org, Gas and fees.
4. **R4** – Cambridge Judge Business School, New report maps Ethereum's climate footprint with new precision, 10 July 2026 (CCAF report "Ethereum After the Merge – A Change in

Power": 7.87 GWh, 2.37 ktCO2e, 56.4% renewables and nuclear, about 8,522 nodes at about 105 W each).

5. **R5** – CCAF, Cambridge Blockchain Network Sustainability Index: Ethereum Methodology.
6. **R6** – Coin Metrics, Community Data, file eth.csv, daily metric TxCnt summed from 2025-01-01 to 2025-12-31: 523,937,952 transactions (retrieved 23 September 2026).
7. **R7** – Ember, Global Electricity Review 2026 (renewables 33.8% of global electricity in 2025).