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

Crypto-asset: Ethereum (ETH)

N	Field	Content
	General information	
S.1	Name	Northstake ApS
S.2	Relevant legal entity identifier	CVR 42818739
S.3	Name of the crypto-asset	Ethereum (ETH)
S.4	Consensus Mechanism	Proof of Stake (PoS), introduced with The Merge in 2022, replacing mining with validator staking. Validators must stake at least 32 ETH. Every block a validator is randomly chosen to propose the next block. Once proposed the other validators verify the block's integrity. The network operates on a slot and epoch system, where a new block is proposed every 12 seconds, and finalization occurs after two epochs (~12.8 minutes) using Casper-FFG. The Beacon Chain coordinates validators, while the fork-choice rule (LMD-GHOST) ensures the chain follows the heaviest accumulated validator votes.
S.5	Incentive Mechanisms and Applicable Fees	The crypto-asset's PoS system secures transactions through validator incentives and economic penalties. Validators stake at least 32 ETH and earn rewards for proposing blocks, attesting to valid ones, and participating in sync committees. Rewards are paid in newly issued ETH and transaction fees. Under EIP-1559, transaction fees consist of a base fee, which is burned to reduce supply, and an optional priority fee (tip) paid to validators. Validators face slashing if they act maliciously and incur penalties for inactivity. This system aims to increase security by aligning incentives while making the crypto-asset's fee structure more predictable and deflationary during high network activity.
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
	Mandatory key indicator on energy consumption	
S.8	Energy consumption (per year) in kWh	2,390,166
	Sources and methodologies	
S.9	Energy consumption sources and methodologies	For the calculation of energy consumption, a bottom-up approach is used. The nodes are considered to be the central factor for the energy consumption of the network. These assumptions are made on the basis of empirical findings through the use of public information sites, open-source crawlers and crawlers developed in-house. The main determinants for estimating the hardware used within the network are the requirements for operating the client software. The energy consumption of the hardware devices was measured in certified test laboratories. Data sourced from Crypto Risk Metrics (crypto-risk-metrics.com). The underlying data covers the period 2024-03-22 to 2025-03-22. All indicators represent estimates. Northstake does not account for any offsetting of energy consumption or other market-based mechanism as of today.
	Supplementary key indicators on energy and GHG emissions	
S.10	Renewable energy consumption (share of energy from renewable generation resources) in %	17.41
S.11	Energy intensity (energy used per validated transaction) in kWh	0.00011
S.12	Scope 1 DLT GHG emissions — Controlled (per year) in t CO_2eq	0
S.13	Scope 2 DLT GHG emissions — Purchased (per year) in t CO_2eq	795.48

S.14	GHG intensity (emissions per validated transaction) in kg CO_2eq	0.00004
	Sources and methodologies	
S.15	Key energy sources and methodologies	To determine the proportion of renewable energy usage, the locations of the nodes are determined using public information sites, open-source crawlers and crawlers developed in-house. If no information is available on the geographic distribution of the nodes, reference networks are used which are comparable in terms of their incentivization structure and consensus mechanism. This geo-information is merged with public information from the European Environment Agency (EEA) and thus determined. The intensity is calculated as the marginal energy cost with respect to one more transaction. Source: Crypto Risk Metrics (crypto-risk-metrics.com).
S.16	Key GHG sources and methodologies	To determine the GHG emissions, the locations of the nodes are determined using public information sites, open-source crawlers and crawlers developed in-house. If no information is available on the geographic distribution of the nodes, reference networks are used which are comparable in terms of their incentivization structure and consensus mechanism. This geo-information is merged with public information from the European Environment Agency (EEA) and thus determined. The intensity is calculated as the marginal emission with respect to one more transaction. Source: Crypto Risk Metrics (crypto-risk-metrics.com).

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