Polygon (POL)

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://polygon.technology/papers/pol-whitepaper.pdf

Mandatory information

Code	Field	Content	Source
S.1	Name	Payhound Limited	
S.2	Relevant legal entity identifier	9845001DD90AF543DC90	
S.3	Name of the crypto-asset	Polygon (POL)	—
S.4	Consensus mechanism	Polygon PoS uses Proof-of-Stake with two layers. Heimdall, the consensus layer built on CometBFT, tracks the staking contracts on Ethereum, verifies Bor state and submits checkpoints of the Polygon chain to Ethereum, each signed by validators holding more than two-thirds of the stake. Bor, the execution layer built on Go Ethereum, produces blocks. The active validator set is capped at 105, and each validator runs a public sentry node and a	R1, R3, R5

Code	Field	Content	Source
		private validator node. Since the Rio upgrade in October 2025, a single block producer is elected per span by a stake-weighted validator vote, with backup producers on standby.	
S.5	Incentive mechanisms and applicable fees	Validators stake POL on Ethereum and earn staking rewards and transaction fees for producing blocks and signing checkpoints. Missed checkpoint signatures reduce a validator's performance score. POL holders can delegate stake to validators and share in their rewards, after the validator's self-set commission. Users pay transaction (gas) fees in POL. The MATIC-to-POL migration was 99% complete by the end of 2025.	R1, R4, R5
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)	209,457	R1, R2, R3, R6, R12, R13

Code	Field	Content	Source
S.9	Energy consumption sources and methodologies	Bottom-up estimate in two parts. (1) Validators: 105 validators × 2 machines (sentry and validator) at Polygon's recommended specification of 16 cores, 64 GB memory and 6 TB storage. Power is estimated with the open-source Cloud Carbon Footprint coefficients, counting 16 cores as 32 vCPUs: 32 × 2.12 W + 64 GB × 0.392 W/GB + 6 TB × 1.2 W/TB = 100.1 W, × 1.135 data-centre PUE = 113.6 W, or 995.5 kWh per machine per year. 210 machines = 209,062 kWh. (2) Ethereum settlement: one checkpoint about every 20 minutes (26,280 a year) × 0.0150 kWh per Ethereum transaction = 395 kWh. Scope: public full and RPC nodes, which no public source counts, are not included.	R1, R2, R3, R6, R12, R13

Supplementary key indicators on energy and GHG emissions

Code	Field	Value	How derived	Source
S.10	Renewable energy consumption (%	33.8%	Validator locations and energy contracts are not published,	R10

Code	Field	Value	How derived	Source
	of total energy used per year)		so the 2025 global average renewables share of electricity generation is used.	
S.11	Energy intensity (kWh per validated transaction)	0.000150	209,457 kWh ÷ 1,400,000,000 transactions in 2025	R7, R8, R9
S.12	Scope 1 DLT GHG emissions – controlled (t CO2eq per year)	0	Validators run on purchased electricity; no on-site generation is reported	—
S.13	Scope 2 DLT GHG emissions – purchased (t CO2eq per year)	95.9	209,457 kWh × 0.458 kg CO2e/kWh (2025 global average grid intensity)	R10, R11
S.14	GHG intensity (kg CO2eq per validated transaction)	0.0000685	95,931 kg ÷ 1,400,000,000 transactions in 2025	R7, R8, R9, R11

Sources and methodologies

Code	Field	Content
S.15	Key energy sources and methodologies	The validator count and two-machine setup come from Polygon's documentation [R1] and staking portal [R3], and the hardware from Polygon's node prerequisites [R2]. Power draw uses the Cloud Carbon Footprint methodology [R6]: AWS average CPU power of 0.74 W idle and 3.5 W at full load per vCPU at 50% utilisation, 0.392 W per GB of memory, 1.2 W per TB of SSD

Code	Field	Content
		and a PUE of 1.135. The Ethereum share uses CCAF's energy estimate for Ethereum [R12] divided by Ethereum's 2025 transaction count [R13]. The 2025 Polygon PoS transaction count is the reported total of over 1.4 billion [R7][R9], which can be checked against PolygonScan's public daily transaction data [R8]; using 1.4 billion as a floor makes the intensity figures slightly conservative. Because validator locations are not public, S.10 uses Ember's 2025 global renewables share [R10]. No offsetting or market-based instruments are applied.
S.16	Key GHG sources and methodologies	Emissions (S.13) apply the 2025 global average grid emissions intensity of 458 g CO2e per kWh reported from Ember's Global Electricity Review 2026 [R10][R11] to the S.8 energy estimate. This is a location-based estimate. Renewable-energy purchases by validators or their hosting providers are not taken into account. All emissions are reported as Scope 2 because validators use purchased electricity. GHG intensity (S.14) divides S.13 by the 2025 transaction count [R7][R8][R9].

References

1. **R1** – Polygon Docs, Becoming a validator (105-validator cap, sentry and validator nodes, Heimdall and Bor, checkpoints, delegation).

2. **R2** – Polygon Docs, Prerequisites (validator and sentry node hardware: 8–16 cores, 32–64 GB memory, 4–6 TB storage).
3. **R3** – Polygon, Staking portal (105 validators, 20-minute checkpoint interval).
4. **R4** – Polygon Labs, POL Whitepaper.
5. **R5** – Polygon Blog, 2025 in Review: A Year of Real Payments Usage on Polygon, 31 December 2025 (Rio upgrade; MATIC-to-POL migration 99% complete).
6. **R6** – Cloud Carbon Footprint, Methodology (Apache License 2.0).
7. **R7** – Phemex News, Polygon Surpasses 1.4 Billion Transactions in 2025, 5 January 2026.
8. **R8** – PolygonScan, Polygon PoS Chain Charts & Statistics and Daily Transactions Chart (public on-chain data, downloadable as CSV).
9. **R9** – Cointelegraph, original post on X reporting over 1.4 billion Polygon transactions in 2025 (source cited by R7).
10. **R10** – Ember, Global Electricity Review 2026 (renewables 33.8% of global electricity in 2025).
11. **R11** – Down To Earth, Clean energy meets all global power demand growth as renewables overtake coal: Ember report 2026, April 2026 (global average 458 g CO2e/kWh in 2025, from Ember).
12. **R12** – Cambridge Judge Business School, New report maps Ethereum's climate footprint with new precision, 10 July 2026 (Ethereum 7.87 GWh per year).
13. **R13** – Coin Metrics, Community Data, file eth.csv, TxCnt summed for 2025: 523,937,952 Ethereum transactions (retrieved 23 September 2026).