BNB (BNB Smart Chain)

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://www.exodus.com/assets/docs/binance-coin-whitepaper.pdf

Code	Field	Content	Source
S.1	Name	Payhound Limited	
S.2	Relevant legal entity identifier	9845001DD90AF543DC90	
S.3	Name of the crypto-asset	BNB (BNB Smart Chain)	
S.4	Consensus mechanism	BNB Smart Chain uses Proof of Staked Authority (PoSA). Every day after 00:00 UTC, the 45 validators with the most stake are elected as active validators: the top 21 are "Cabinets" and the other 24 are "Candidates". Each epoch, 18 Cabinets and 3 Candidates form the 21-validator set that takes turns producing blocks. Slashing penalises double-signing and malicious finality votes (200 BNB and 30 days in jail) and downtime (10	R1

		BNB and 2 days in jail after missing more than 150 blocks in 24 hours).	
S.5	Incentive mechanisms and applicable fees	BNB has no block subsidy: validators are paid from the transaction (gas) fees users pay in BNB. Each validator keeps its commission and shares the rest with its delegators in proportion to stake; part of the fees also rewards fast-finality voting. A governance-set share of each block's gas fees is burned in real time under BEP-95. Separately, a quarterly Auto-Burn permanently removes BNB, with the amount set by the average BNB price and the number of blocks produced in the quarter. In 2025 validators lowered the network's minimum gas price, reaching 0.05 Gwei in early October 2025.	R1, R3, 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)	79,279	R2, R6, R7

S.9	Energy consumption sources and methodologies	Bottom-up estimate: 45 active validators × the power draw of the reference hardware in BNB Chain's validator guide × 8,760 hours. The guide recommends an AWS i7i.8xlarge instance (32 vCPUs, 256 GiB memory, 7.5 TB NVMe). Its power draw is estimated with the open-source Cloud Carbon Footprint coefficients: 32 vCPUs × 2.12 W, plus 256 GiB × 0.392 W/GiB, plus 7.5 TB × 1.2 W/TB, giving 177.2 W, then × 1.135 data-centre PUE = 201.1 W, or 1,761.7 kWh per validator per year. Scope: active validators only. Backup and sentry nodes, public full and RPC nodes, opBNB and BNB Greenfield are not included.	R1, R2, R6, R7

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%	Validator locations and energy contracts are not published, so the 2025 global average	R9

			renewables share of electricity generation is used.	
S.11	Energy intensity (kWh per validated transaction)	0.0000201	79,279 kWh ÷ 3,934,700,000 transactions in 2025 (10.78 million per day × 365)	R8
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)	36.3	79,279 kWh × 0.458 kg CO2e/kWh (2025 global average grid intensity)	R9, R10
S.14	GHG intensity (kg CO2eq per validated transaction)	0.0000092	36,310 kg ÷ 3,934,700,000 transactions in 2025	R8, R10

Sources and methodologies

Code	Field	Content
S.15	Key energy sources and methodologies	Energy (S.8) is a bottom-up hardware model. The validator count comes from BNB Chain's documentation [R1] and the hardware from its validator guide [R2], with instance specifications from AWS [R6]. Power draw uses the Cloud Carbon Footprint methodology [R7]: AWS average CPU power of 0.74 W idle and 3.5 W at full load per vCPU at an assumed 50% utilisation, 0.392 W per GB of memory, 1.2 W

		per TB of SSD and a PUE of 1.135. The full 256 GiB of memory is counted, which is conservative. The transaction count used for S.11 comes from BNB Chain's reported 2025 average of 10.78 million daily transactions, based on BscScan data [R8]. Because validator locations are not public, the renewable share (S.10) is the 2025 global average from Ember's Global Electricity Review 2026 [R9]. 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 [R9][R10] to the S.8 energy estimate. This is a location-based estimate. Cloud providers' renewable-energy purchases are not taken into account, so it may overstate actual emissions for validators hosted in low-carbon regions. All emissions are reported as Scope 2 because validators use purchased electricity. GHG intensity (S.14) divides S.13 by the 2025 transaction count [R8].

References

1. **R1** – BNB Chain Docs, BSC Validator Overview (45 active validators, Cabinets and Candidates, rewards, slashing).
2. **R2** – BNB Chain Docs, Run BSC Validator (mainnet hardware: AWS i7i.8xlarge or equivalent, 128 GB+ memory, 7 TB NVMe).
3. **R3** – BNB Chain Blog, Introducing BEP-95 With a Real-Time Burning Mechanism.
4. **R4** – BNB Chain, BNB Burn tracker (Auto-Burn and BEP-95 burn records).
5. **R5** – BNB Chain Blog, Weekly Ecosystem Report (Sep 25 – Oct 1, 2025) (network-wide adoption of 0.05 Gwei minimum gas price).
6. **R6** – AWS, Amazon EC2 storage optimized instances (i7i.8xlarge: 32 vCPUs, 256 GiB, 2 × 3,750 GB NVMe).
7. **R7** – Cloud Carbon Footprint, Methodology (Apache License 2.0).
8. **R8** – BNB Chain Blog, BNB Chain in 2025: Making Scale the Standard, 31 December 2025 (average 10.78 million daily transactions; data from BscScan).
9. **R9** – Ember, Global Electricity Review 2026 (renewables 33.8% of global electricity in 2025).
10. **R10** – 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).