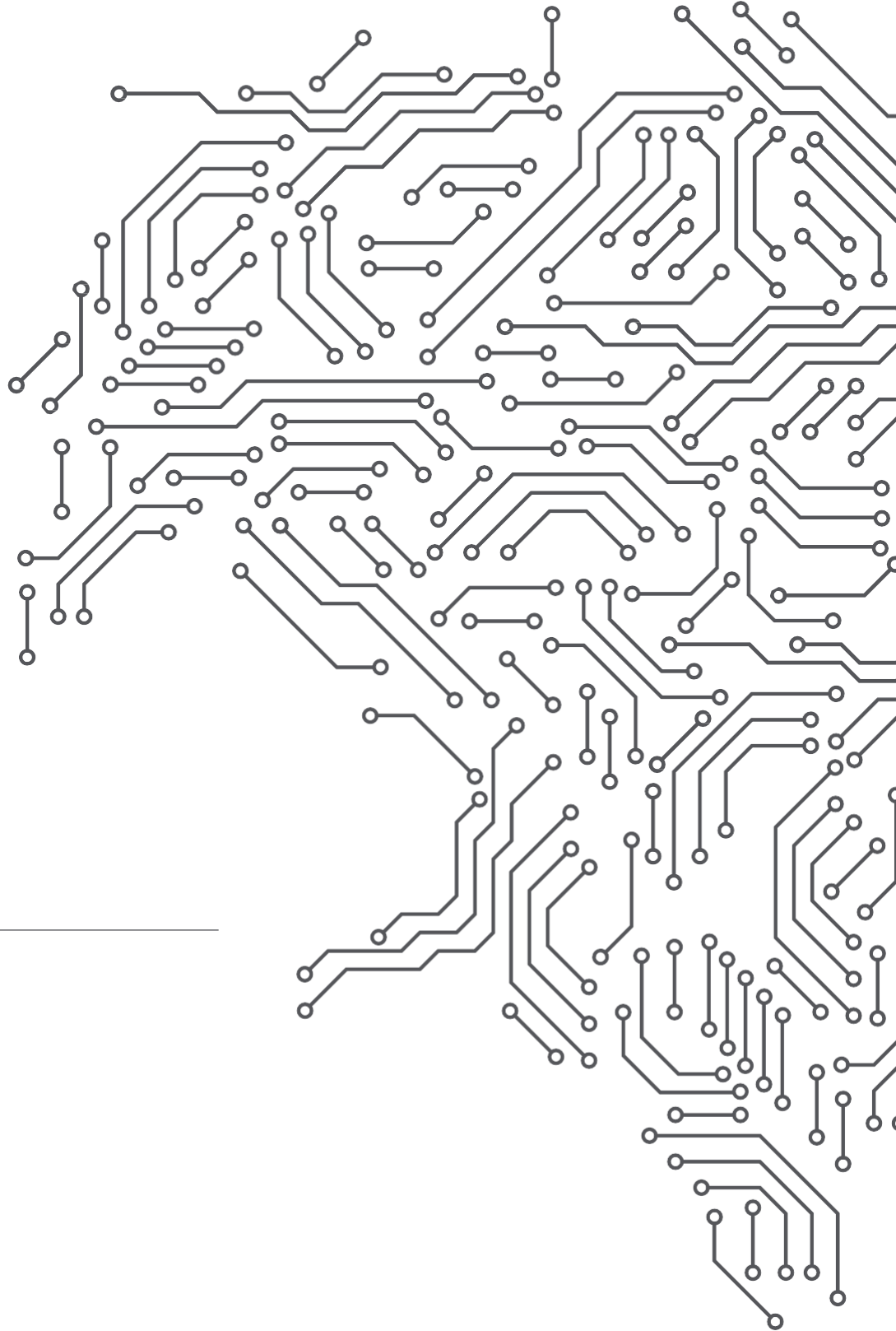




SHARIYAH  
REVIEW BUREAU



# SHARIA ANALYSIS

## *Ethereum*



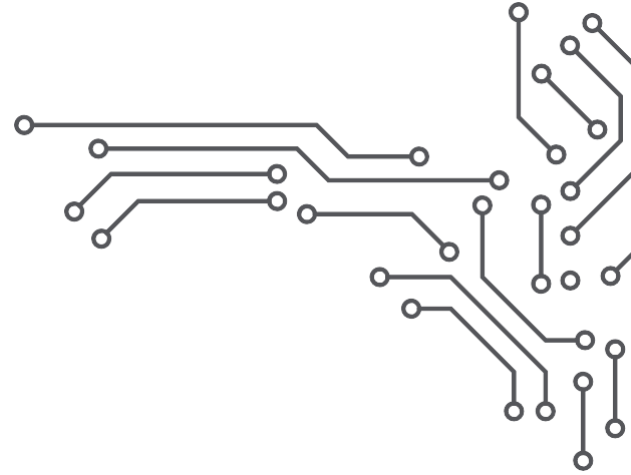
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## INTRODUCTION

Ethereum, released in 2015, embraces an open-source software platform that developers can use to create cryptocurrencies and other digital applications.

Ethereum is a decentralised blockchain network powered by the Ether token that enables users to make transactions, earn on their holdings through staking, use and store non-fungible tokens (NFTs), trade cryptocurrencies, play games, use social media and so much more.



Ticker	ETH
Consensus mechanism	Proof of Work (Network validators rewarded by mining blocks)
Network type	Decentralized & Permissionless blockchain
Maximum Supply of Tokens	None
Platform Function	Decentralized Application platform powered by smart contracts
Token Function	P2P Payment Gas (Transaction fees & Operations)
Use cases	Payment Building Decentralized Applications

## ETHEREUM PLATFORM

The platform allows anyone to deploy permanent and immutable decentralized applications onto it, with which users can interact. These are commonly referred to as Decentralized finance (DeFi) applications. They provide a broad array of financial services without the need for typical intermediaries like brokerages, exchanges, or banks, such as allowing cryptocurrency users to borrow against their holdings or lend them out for interest. Ethereum also allows for the creation and exchange of NFTs, which are non-interchangeable tokens connected to digital works of art or other real-world items and sold as unique digital property. Additionally, many other cryptocurrencies operate as ERC-20 tokens on top of the Ethereum blockchain and have utilized the platform for initial coin offerings.

## ETHEREUM 2.0

Ethereum has started implementing a series of upgrades called Ethereum 2.0, which includes a transition to proof of stake and aims to increase transaction throughput.

Groups of smart contracts are used to create dapps. Smart contracts are scripts of code which can facilitate the exchange of money, shares, content, or anything of value. Smart contracts are formed using the Ethereum Virtual Machine (EVM). Once a smart contract is running on the blockchain, it acts like a self-operating computer program. They run as programmed, without censorship, downtime or influence from a third party.

Ethereum 2.0 is a set of interconnected upgrades that will make Ethereum more scalable, more secure, and more sustainable. Part of that solution is in the proof-of-stake (PoS) consensus, a core feature of Ethereum 2.0. Instead of mining, which is energy-intensive, Ethereum 2.0 marks the move to a PoS consensus algorithm. Proof-of-stake replaces miners with validators, users who store the Ethereum blockchain, validate transactions and more. They're essentially another form of nodes. To become a full validator, one must stake a minimum of 32 ETH, at least during the early period of Ethereum 2.0. By leaving a computer connected to the network, validators earn ETH as a reward for their efforts. The idea is that those who stake their ETH have the best network intentions in mind and will do whatever they can to ensure its success. Plus if a validator fails to participate or tries something malicious, they can lose said ETH.

Staking is what is needed for someone to become a validator in a proof-of-stake system.

This is a consensus mechanism that is going to replace the proof-of-work system currently in place. Consensus mechanisms are what keep blockchains like Ethereum secure and decentralized.

Validator will be responsible for storing data, processing transactions, and adding new blocks to the blockchain. This will keep Ethereum secure for everyone and earn validator new ETH in the process. This process, known as proof-of-stake, is being introduced by the Beacon Chain.

Rewards are given for actions that help the network reach consensus. Validators will get rewards for batching transactions into a new block or checking the work of other validators because that's what keeps the chain running securely.

Note: Validators are chosen at random to create blocks and are responsible for checking and confirming blocks they don't create.

Although validators earn rewards for doing work that benefits the network, validators can also lose ETH for malicious actions, going offline, and failing to validate.

## ETH TOKEN

Ethereum's native cryptocurrency is called Ether (trading ticker is ETH), while Ethereum actually refers to a specific blockchain technology, the decentralized distributed electronic ledger that keeps track of all transactions. Ledgers are the foundations of cryptocurrency transactions.

When you send ETH or use an Ethereum application, you'll pay a small fee in ETH to use the Ethereum network. This fee is an incentive for a miner to process and verify what you're trying to do. Transaction times are faster when compared to those for Bitcoin and it also provides access to a number of decentralized applications (dApps) enabling developers to create new online tools.

## ETHER USE CASES

In Ethereum, ether can be used for the following things:

- Payments: Like bitcoin, ether can be used for payments. Users can send ether to another user and, just like cash, the payment doesn't require a third party to process or approve it.
- Powering decentralized applications: Ether is required in order to use decentralized apps (dapps) built on Ethereum, from staking ERC-20 tokens for yield farming to completing functions such as governance voting.
- Transactions fees: Every Ethereum action – from payments to using dapps – requires a fee.

## CONCEPT OF GAS

Gas is the unit of measurement used to represent the cost of running operations on Ethereum. To understand gas, it requires introducing the Ethereum Virtual Machine (EVM). At a high level, the EVM is the environment in which smart contracts are executed on the blockchain. Each node in the Ethereum network runs the Ethereum blockchain, and together they collectively form the EVM — or, the Turing-complete world computer. Within the EVM, smart contracts are executed through a series of operations. Stated another way, a transaction on the Ethereum blockchain can initiate a smart contract, which is comprised of a series of sequential operations — all of which occurs within the EVM.

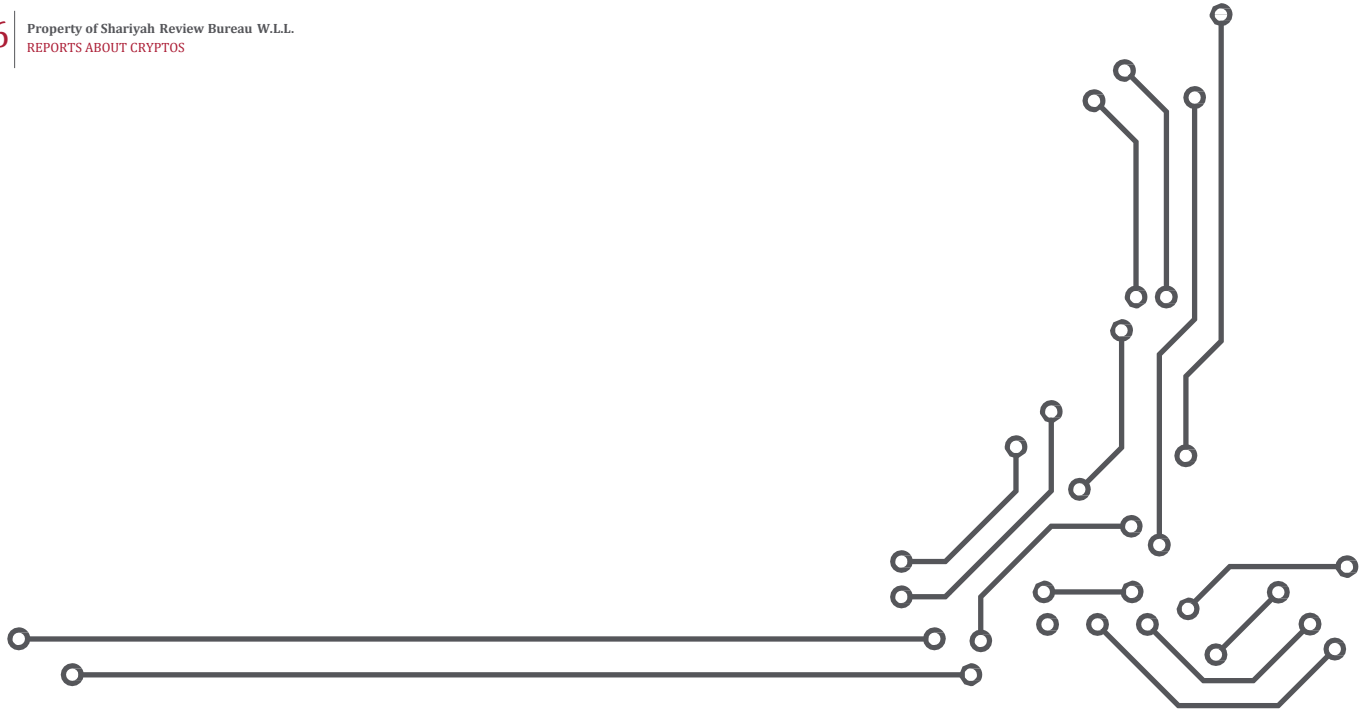
On the Ethereum blockchain, each operation (many of which can be combined to create a single unique smart contract or transaction) requires a certain amount of computing energy, or work, to perform. Because miners must use energy to complete these operations, a unit of measurement was created to monitor and compensate miners for the work they spend running transactions and smart contracts. This unit of measurement is called gas. Gas is a unit of measurement unique to the Ethereum blockchain that measures the computational work required to run transactions or smart contracts within the EVM. The more energy required to run an operation (i.e. a more complex piece of code), the more gas is required.

Gas itself does not “exist.” In other words, it cannot be owned; one cannot have a “gas token.” Rather, the value of each unit of gas is expressed in ETH. For instance, an operation might cost 3 gas, which could be equivalent to 0.00004 ETH. The computational energy needed to perform a specific transaction, however, remains constant. The gas cost of running an “addition” operation on Ethereum. The concept of gas, therefore, exists to separate the computational cost of running an operation from the market value of ether.

Using smart contracts and using Ethereum apps requires money in the form of ether, Ethereum’s native token. Ether is needed for doing just about anything on Ethereum, and when it’s used to execute smart contracts on the network it’s often referred to as “gas.” The ether can be used to call smart contracts: For example, a contract could trigger a post on Twitter (or an alternative), or it could trigger an account to begin borrowing coins on an Ethereum-based lending platform. Ethereum uses accounts to store the ether, analogous to bank accounts. There are two types of accounts:

- Externally owned accounts (EOAs): The accounts that normal users use for holding and sending ether.
- Contract accounts: These separate accounts are the ones that hold smart contracts, which can be triggered by ether transactions from EOAs or other events.

Calling smart contracts isn’t free. Each transaction costs some ether, which increases depending on how much computation the transaction is using.



## SHARIAH OPINION

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The platform allows anyone to deploy permanent and immutable decentralized applications onto it, with which users can interact. These are commonly referred to as Decentralized finance (DeFi) applications. Ethereum is also used to develop smart contracts with ether being central to all these services and utilities. Like bitcoin, ether can be used for payments, be exchanged with users, and just like cash the payment doesn't require a third party to process or approve it. Ether is required in order to be used by decentralized apps (dapps) build on Ethereum blockchain. From staking ERC-20 tokens for yield farming to completing functions such as governance voting, every Ethereum action – from payments to using dapps – requires a fee, which is paid in Ether. Ethereum provides an environment to develop and execute smart contracts, and that environment has its own medium of exchange and gas for it to operate. As such, Ether is used for various lawful use cases and therefore its utility is Shariah compliant.

## RESOURCES

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Website: <https://ethereum.org/en/> Ether:

<https://ethereum.org/en/eth/> Guides:

<https://ethereum.org/en/learn/>

Whitepaper: <https://ethereum.org/en/whitepaper/>

Documentation: <https://docs.ethhub.io/>

Ethereum 2 Staking: <https://ethereum.org/en/eth2/staking/>

Additional resources:

<https://cointelegraph.com/ethereum-for-beginners/what-is-ethereum> <https://www.coindesk.com/learn/ethereum-101/what-is-ethereum>

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Our combination of international and local market knowledge and multi-disciplinary perspective of Sharia give us an edge in the professional Sharia Advisory and Sharia Audit services industry in the GCC. The scope and value of our services, and the help they offer in building a thriving economy, keeps us excited.

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