

Amun Ecosystem Tokens:

A collection of index tokens providing the crypto community with access to smart contract platforms on various blockchains.

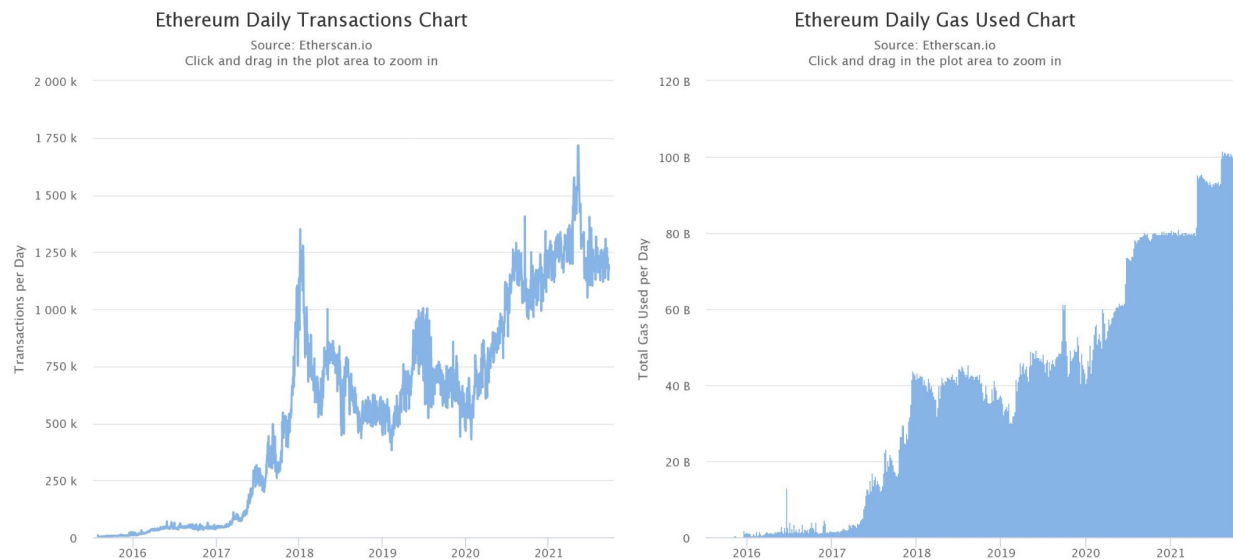
<https://amun.com>

Version 1.5

Abstract

Background

Towards the end of 2020 and the start of 2021, the Ethereum network began showing its scalability limitations. As the network is still in its early stages, the inflow of users resulted in a significant increase in both transaction time and gas costs.

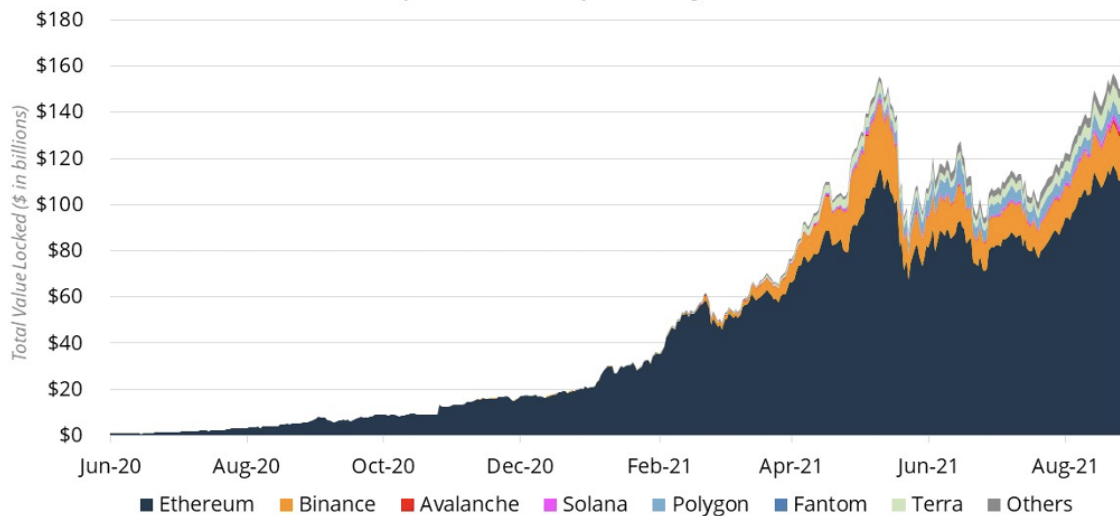


As a result, both developers and users started looking for possible scaling solutions. In 2021, this led to the rise of alternative smart contract platforms, with Binance Smart Chain taking the lead and many others following. We have now seen that these ecosystems mature along with Decentralized Applications (DApp) verticals with several network native tokens reaching market capitalization over \$100 million.



Total Value Locked in Smart Contract Platforms

Ethereum is still the dominant blockchain by total value locked by a wide margin

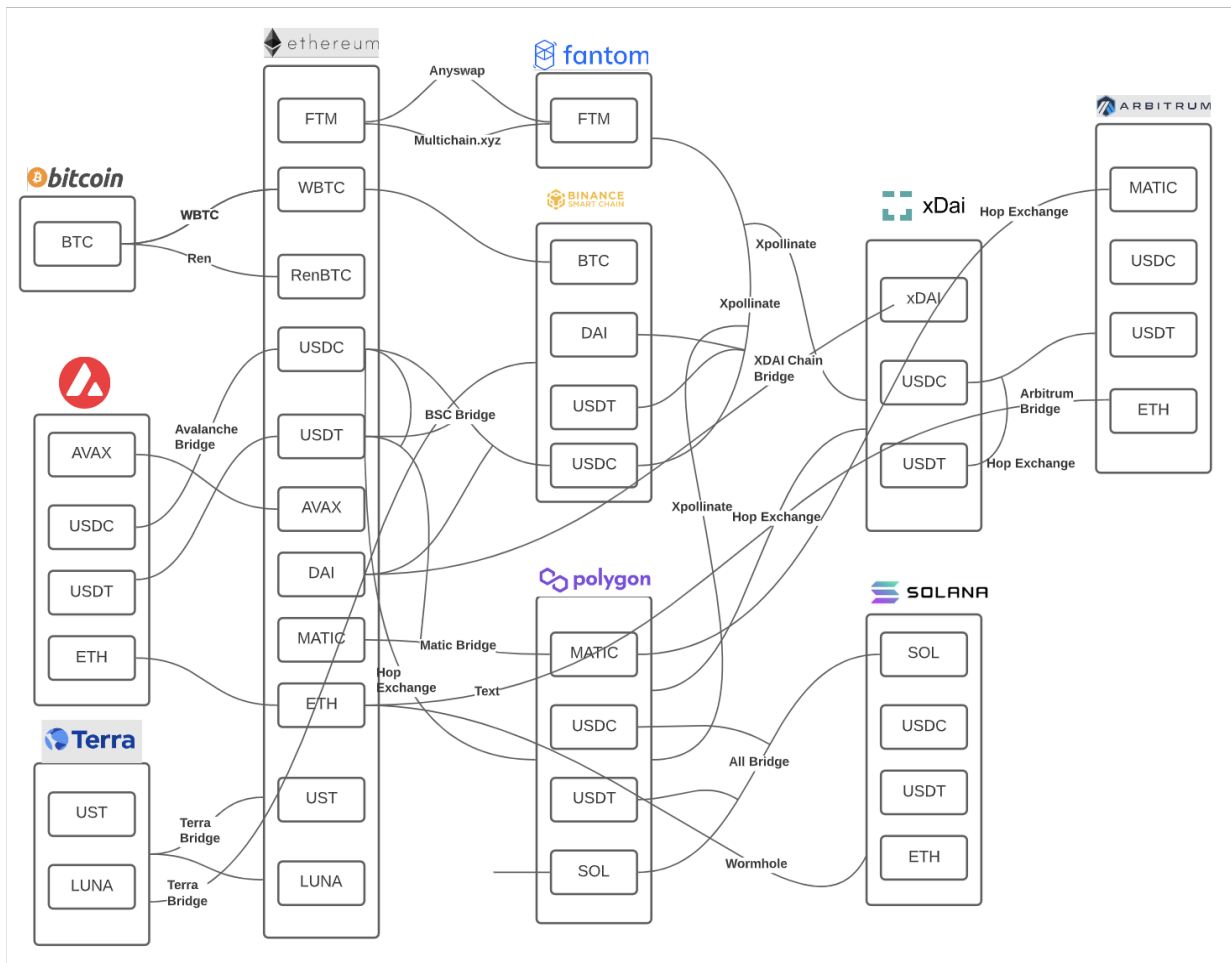


Data as of: Aug. 29, 2021
Source: Messari, DeFi Llama

The Issue

Despite the growth of smart contract networks, accessing these platforms in a decentralized manner is still not easy for the DeFi average user. While strides have been made with regards to interoperability between different networks, bridging technology is still in its infancy and, in many cases, are not the most user friendly applications. For starters, configuring one's wallet to add a new network is not a straightforward task for those who are new to DeFi. Some networks, like Solana, require the onboarding of new wallet providers altogether. In addition, the process of bridging funds can involve multiple steps and may be time consuming, with the withdrawal of some assets taking anywhere from three hours to seven days to bridge back to Ethereum. In some cases, the use of these DeFi tools are inaccessible to users in restricted jurisdictions.

As we see DeFi and cross-chain tools evolve to improve interoperability, it also brings greater fragmentation among the various bridges. Understanding the available solutions for bridging assets cross chain is often reserved for the most knowledgeable DeFi user. Below is an example of the various links between the different blockchain networks to demonstrate the complexity of these solutions.



Introduction to Amun Ecosystem Tokens

Purpose

Amun's Ecosystem Tokens intend to alleviate these issues by providing users with exposure to network-native assets without having to go through the troublesome process of bridging funds over to other blockchains. Our goal is to provide dynamic tokens that pick the most liquid and utilized tokens in an ecosystem and wrap them in an index, giving holders exposure to a diversified array of underlying value.

Protocol Statistics *(as of Sep 7, 2021)*

Network	TVL	DApps	Active Wallets
Ethereum	\$123.21b	2514	485, 816
Binance Smart Chain	\$17.07b	1430	1,058,967
Solana	\$7.83b	368	N/A
Terra	\$7.06b	10	N/A
Polygon	\$4.62b	435	172,986
Avalanche	\$2.06b	48	129,229

To date, Ethereum is still the largest smart contract platform by a considerable margin. It continues to absorb the majority of liquidity, users, dApps and developer mindshare. As scalability issues become more apparent, DeFi will continue to expand its solutions across other Layer 1 blockchains. Although most of these ecosystems are in their infancy, there is demand from users to gain exposure to alternative Layer 1 blockchains. Therefore, we see significant value in providing users with exposure to these ecosystems with DeFi and Ethereum as the quintessential epicenter.

Design

Basics

The Amun's Ecosystem tokens represent an index of the top coins native to the respective blockchain network. For example, on Ethereum these are standard ERC-20 tokens, and on Solana these are standard SPL tokens. Anyone who holds these tokens has direct exposure to the underlying coins stored in the smart contract. The smart contract will be held on each of the respective networks the tokens are providing exposure for.

By purchasing a token, a user captures the returns from a set of underlying tokens, which will comprise the top protocols in the network based on a function of market capitalization and DEX liquidity. The tokens will be available on a variety of platforms beginning with select decentralized exchanges, and through creations, are directly minted with the smart contract using the Amun Tokens web interface. Each ecosystem token is tied to a proportional amount of constituents tokens that composes the basket in total. The basket tokens' smart contract is controlled by a multi-sig wallet that requires the votes of the Ecosystem Token Holders. Each

Ecosystem Token Holder can propose a change, such as adjusting the inclusion criteria or initial weighting of the base token, and all Ecosystem Token Holders can vote on the proposal. No individual Ecosystem Token Holder can change the smart contract for basket tokens held by it - changes always require a majority vote.

Holders can freely transfer the tokens to any address they like as the tokens are based on the native ecosystem token standards. The tokens utilize off-chain data APIs that provide the price feed information for rebalances with the necessary details about allocations or weightings. In addition, in order to ensure executions are taking place without the need of a centralized authority, the tokens utilize Decentralized Exchanges (DEXes). To prevent large orders from having a significant price impact, contracts are integrated with DEX aggregators who spread orders across multiple DEXes.

These index tokens can have contracts on multiple networks, such as our Polygon Ecosystem Index that is native to Polygon but also comes in a wrapped version¹ on Ethereum. Users can buy or sell tokens on Ethereum and the respective network and bridge them overusing a variety of bridging protocols.

Minting and Burning

These tokens can be bought or sold on select decentralized exchanges. In addition, users can mint or burn these tokens through the Amun Tokens platform at their Token Value. The process of minting and burning directly with the contract works as follows:

Order Stage

Users send the network's native token (i.e. ETH or SOL) or stablecoins from their wallet to the token smart contract. The smart contract holds, at any given moment, information about its current index weights and allocations. Upon receiving the user's funds, the contract determines the amount required to be purchased from each constituent.

This is determined with the following formula, where the basket has a predetermined number of constituents. The weight of constituent X in the index is a function of the market capitalization (M) of X plus the liquidity (L) of X. We take the ratio of the market cap of token X by the sum of the set of the constituents ($\sum i \in c$), and add it to the ratio of liquidity volume of token X divided by the sum of the set of the constituents.

¹ A "Wrapped Token" represents the ownership of another token, but introduces new functionality beyond what existed in the non-wrapped token

$$Weight\ of\ Token_x = \left(\frac{M_x}{\sum_{i \in cM_i}} + \frac{L_x}{\sum_{i \in cL_i}} \right) \times .25$$

*For certain ecosystem tokens, we multiply the result by .25 when half the index is comprised of the ecosystem's base token. This additional calculation varies by ecosystem.

The allocation of each constituent at time t is then determined by the following formula:

$$Allocation\ of\ Token_{x,t} = \frac{(weight_x \times price_{x,t})}{\sum_{i \in c} (weight_i \times price_{i,t})}$$

Once all required constituent amounts are determined, the swap manager contract is set in motion and purchases the tokens required to collateralize the basket token.

Minting Stage

After conclusion of the swaps into the underlying constituents, the next phase in the process is the minting of tokens. The amount of tokens to mint is determined by the below logic. The first step would be to determine the current Token Value. Given the set of token in the index denoted by $i \in [1, \dots, \gamma]$, and the time intervals from time $t=0$ till time T the Net Token Value (NTV) at time T is formally expressed as:

$$Per\ Basket\ Token_{NTV,T} = Per\ Basket\ Token_{NTV,t=0} \times \prod_{i=1}^{20} \prod_{t=1}^T (1 + w_{i,t} r_{i,t,t-1})$$

Where $Per\ Basket\ Token_{NTV,t=0}$ is the initial value of the token at time $t = 0$, and $\prod_{i=1}^{20} \prod_{t=1}^T (1 + w_{i,t} r_{i,t,t-1})$ is the compounded product of the weighted average returns of the underlying tokens in the index from $t = 0 \rightarrow T$, such that $w_{i,t}$ represents the weight of token i at time t and $r_{i,t,t-1}$ represents the return of token i from time $t - 1$ to time t .

Moreover, since each basket token value reflects the aggregate value of the underlying index assets then it also holds that:

$$Per\ Token_{NTV,t} = \frac{\sum_{i=1}^I Underlying\ Asset_{i,t,USD}}{\# Outstanding\ Tokens_t}$$

where $\sum_{i=1}^I \text{Underlying Asset}_{i,t,USD}$ is the sum of the underlying assets purchased in USD value at time t based on the reference prices provided by the index, and $\# \text{Outstanding Tokens}_t$ is the number of outstanding basket tokens at time t .

Given that the execution of the swap may incur price slippage, the amount of constituents purchased, and subsequently the number of basket tokens to be minted are a function of the actual execution price (blind auction mechanism). Mathematically, the number of tokens that are minted is expressed as:

$$\text{New Tokens Minted} = \frac{\text{Value of Native Token Delivered}}{(\text{Per basket Token}_{NTV,t} + \text{Per Token Slippage}_{USD})}$$

where the per token slippage is the USD value of the slippage for trade execution of the underlying assets in the predefined proportions.

Once basket tokens have been minted and sent to the purchaser's wallet, the process is concluded.

Redemption

In the opposite direction, the Ecosystem Token Holders can redeem by burning their basket tokens (i.e. using their private keys to sign a transaction that will burn the basket tokens). The Ecosystem Token Holders can choose whether to receive the network's native token (i.e. ETH or SOL) or stablecoins. There will be an option on the front end of the Amun platform where users can select the coin they wish to receive in return.

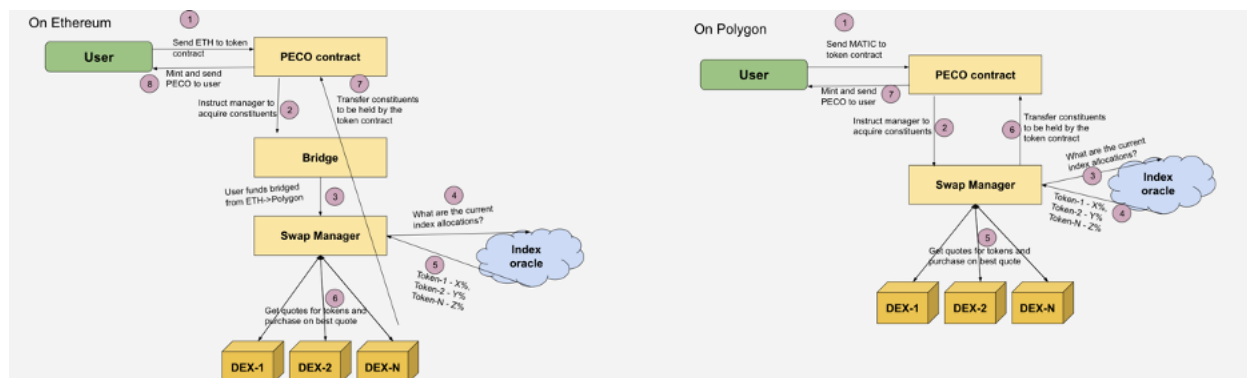
Bridging

To provide exposure to tokens native to respective networks, the smart contract makes use of bridging technology to move funds over from Ethereum to blockchains such as Polygon. Below are flow diagrams of the steps done in the process should users wish to deposit or withdraw directly with the contracts on the Ethereum network. These diagrams will be using fund flows from Ethereum to Polygon for the Amun Polygon Ecosystem Token (PECO) as a reference.

For Deposits

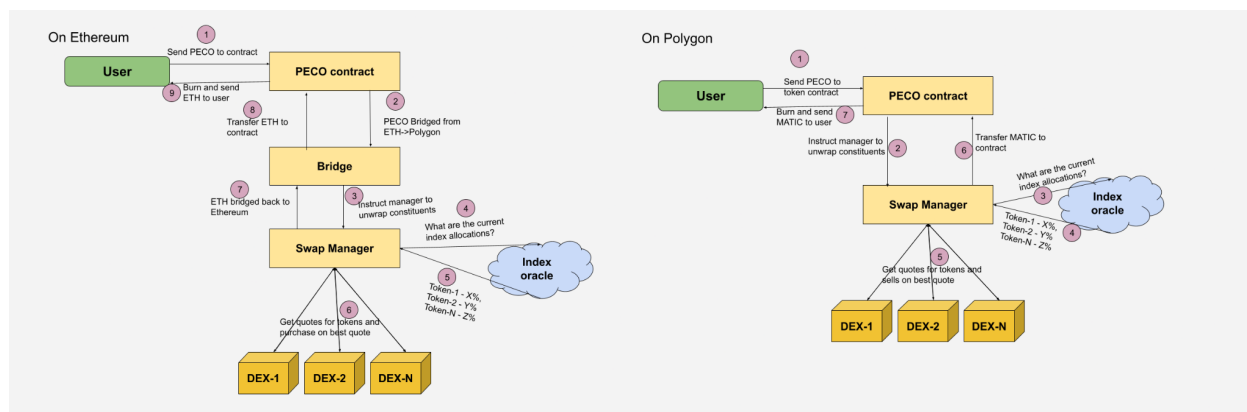
When users wish to mint new tokens on our platform through Ethereum, the process that runs in the background is outlined below. This example is explained in the context of Ethereum native tokens but is the model applied to every blockchain Amun creates index tokens for. For example,

users will send ETH, SOL, or stablecoin to the smart contract depending on what network they are interacting with. The smart contract will then bridge those funds over to the new network (if necessary) to a contract called the Swap Manager. The Swap Manager then determines the approximate amount of the index constituent tokens to purchase on exchanges and stores those constituent tokens in the Bridge main contract. In return, users will receive the Ethereum version of the index basket token that they can trade on decentralized exchanges, bridge over to the other network, or redeem through the Amun platform at a later point in time.



For Withdrawals

For withdrawals, the opposite sequence of events take place. Users will send their index tokens to the contract. The contract will then bridge the index tokens over to the new network to the Swap Manager. The Swap Manager then takes the amount of index basket tokens it received to determine how much of the underlying constituents need to be exchanged into ETH, SOL, or stablecoin. Once the trades have concluded, the ETH, SOL, or stablecoin is bridged back over to the native network and delivered to the user's wallet.



Rebalancing

Ecosystem tokens will be rebalanced on a monthly basis on the first of the month in order to ensure proper tracking of the constituent index. In the event that the Amun index methodology determines that ecosystem token weightings have not changed, or if various data dependencies fail, no rebalance will occur for that month.

Index Methodology

Ecosystem tokens will track a decentralized index with the calculations and methodology determined by parameters in the contract. These parameters are defined below.

Calculation

The underlying index will pull all available ecosystem-native tokens market capitalizations data from a consortium of data providers such as CoinGecko, CoinMarketCap, and DeFiLlama. The tokens are then ranked in descending order from the highest market capitalization to the lowest, with added smoothing of 30 days moving average over values.

Eligibility

In order to be eligible for the index, this index will only contain constituent tokens native to protocols offering one of the following services in a decentralized manner:

- The project must be native to the respective network and contribute to its ecosystem.
- The project must have launched on the network's mainnet for a period greater than 2 months, to eliminate transient, unsustainable projects.
- The project has organic adoption in liquidity and market cap.
- The project has sufficient liquidity on the network's primary Decentralized Exchanges. For a starting point, we look for DEX liquidity above \$3 million.
- To start, the network's native token will make up a greater proportion of the index composition. As these ecosystems mature, we expect to lower the portion of native token to make way for more project tokens.
- The remainder of the index is composed of protocol tokens weighted using the averaged ratio of market cap and DEX liquidity.

Fees

This product will incur fees to offset daily costs. There will be a rebalance fee whenever such an event takes place that will cover the costs of performing these actions. These costs include the gas costs required to make these trades (denominated in the network's native token).

To start out, this token will not incur fees pertaining to performance or minting and burning; however, that could change at a later date in the future. All rebalance fees are also waived through 2022.

Amun's Current Suite of Index Tokens:

- DeFi Index Token (DFI): <https://amun.gitbook.io/amun-defi/ecosystem-tokens/untitled>
- Polygon Ecosystem Index (PECO): <https://amun.gitbook.io/amun-defi/ecosystem-tokens/polygon-ecosystem-index-peco>
- Solana Ecosystem Index (SOLI): <https://amun.gitbook.io/amun-defi/ecosystem-tokens/solana-ecosystem-index-soli>

Appendix

About Amun

Amun is a leading cryptocurrency issuer which aims to make purchasing crypto more accessible, and efficient.

Under its 21Shares brand, Amun is the world's largest issuer of crypto exchange-traded products (ETPs). The 21Shares suite of ETPs has simplified access to crypto for both institutional and retail investors in the traditional finance community. In a similar fashion, Amun aims to provide tokens that will make it easy for the crypto community to access sophisticated strategies that are not otherwise readily available in this space. Amun is a team of entrepreneurs, engineers, and financial product developers who are uniquely placed to revolutionize cryptocurrency investing through the issuance of our broad range of tokens. Our goal is to make these tokens present a new paradigm in cryptocurrency investing and to facilitate their use.

Our investment in superior technology and automation has enabled us to both release products, as well as work directly with top organizations including the Bitcoin Cash Foundation, Bitcoin Suisse, Binance, Bitwise, Coinbase, FlowTraders, Sygnum, Polygon Foundation, and the Tezos Foundation as launch partners or customers of the Amun Platform.