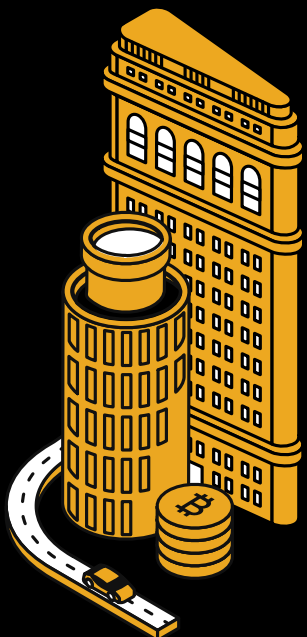


State of Crypto

Issue 15 / July 2025



21shares[®]
Crypto investing with ETPs



Introduction

Welcome to the mid-year outlook edition of the State of Crypto from 21Shares!

We've hit the halfway mark of 2025, and it's the perfect time to pause, reflect, reassess where the digital asset markets stand, and where they might be headed next.

Back in December 2024, we laid out a series of bold predictions for the year ahead. Now, with six months of market activity behind us, we're taking a fresh look, revisiting each call and rating it out of 5 based on how things have actually played out. With the benefit of hindsight and real-world data, we're cutting through the noise to provide a clear, grounded view of where the crypto market stands today.

Whether you're fine-tuning your investment strategy or simply looking for a clearer perspective on market dynamics, this report offers a structured, data-driven breakdown of key trends, outcomes, and insights to help guide your next move.

Let's get into it.

— Adrian Fritz
Global Head of Research

Authors

Adrian		Global Head of Research
Karim		Senior Associate, Digital Asset Research
Matt		Associate, Digital Asset Research
Max		Associate, Digital Asset Investment Strategist
Darius		Associate, Digital Asset Investment Strategist

Contact

research@21shares.com

Table of Contents

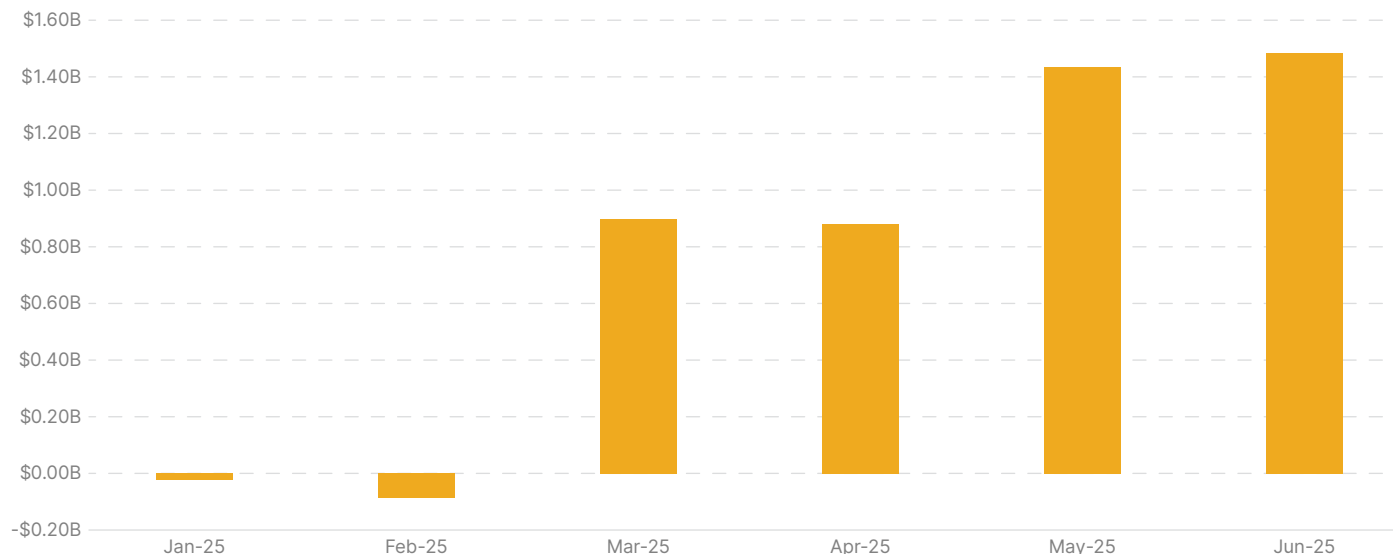
(4/5)	Another nation-state will adopt Bitcoin as a strategic reserve asset	04
(5/5)	Bitcoin's scalability solutions will drive total value locked to \$10 billion	05
(2/5)	Ethereum's revenue renaissance will begin in 2025	06
(4/5)	ETPs will drive further institutional adoption, reaching \$250 billion in AUM globally	07
(4/5)	Solana will continue to eat Ethereum's market share, reaching an all-time high in total value locked	08
(2/5)	User-friendly Layer 1s will drive the growth of the next generation of smart-contract platforms	10
(3/5)	Revenue-sharing will completely change the investment case for DeFi	11
(5/5)	Stablecoins to deepen integration across traditional sectors	12
(3/5)	Tokenization to advance in private credit	13
(4/5)	Many jurisdictions to reconsider retail crypto ban, as more investor protection comes into effect	14
(5/5)	Decentralized broadband solutions to maintain their momentum	16
(1/5)	Blockchain to emerge as AI's watchdog, safeguarding digital truth	17

Another nation-state will adopt Bitcoin as a strategic reserve asset

4/5

Bitcoin is rising as a strategic asset, with plenty of room for growth ahead

Figure 1 - Net cumulative growth of national Bitcoin holdings



Source: BitcoinTreasuries.net. Data as of June 25, 2025

Our prediction that another nation would adopt Bitcoin (BTC) as a strategic reserve asset in 2025 has largely come to fruition. In March, the United States formally established its Strategic Bitcoin Reserve, becoming the largest public holder with over 200,000 BTC. States such as New Hampshire and Arizona have already passed Bitcoin reserve-related legislation. Meanwhile, 26 additional states have introduced similar bills, and 17 are currently debating them. New Hampshire notably became the first state to authorize its treasury to allocate up to 5% of public funds to Bitcoin and gold, following the passage of a landmark bill in early May.

Moreover, countries like Bhutan and El Salvador continue to maintain sizable

Bitcoin holdings. At the central bank level, Japan and the Czech Republic are now actively exploring Bitcoin reserve strategies. Pakistan used the stage at the Bitcoin 2025 conference in Las Vegas to announce the creation of its own Strategic Bitcoin Reserve. It has also dedicated 2,000 megawatts of surplus electricity to Bitcoin mining, a clear signal of both fiscal and infrastructure alignment with crypto.

These developments confirm our thesis: nation-states are beginning to treat Bitcoin not just as a speculative asset, but as a long-term store of value and a hedge against fiscal instability and fiat devaluation.

A parallel trend emerged in the corporate sector. Companies continue to add Bitcoin to their balance sheets at a rapid

pace. Strategy (formerly MicroStrategy) and Metaplanet have led the way. Following a series of strategic acquisitions in 2025, Strategy now holds 582,000 BTC, representing more than 2% of Bitcoin's total supply, while Metaplanet has accumulated 8,888 BTC. According to data from BitcoinTreasuries.net, corporate treasuries have added an additional 250,000 BTC since the beginning of the year. Strategy's aggressive accumulation has set a new benchmark, inspiring a growing number of companies to follow suit. We expect this corporate adoption wave to continue throughout the year.

Bitcoin's scalability solutions will drive total value locked to \$10 billion

5/5 Bitcoin's use cases are gaining momentum

We forecasted that Bitcoin's scalability solutions would drive total value locked (TVL) beyond \$10 billion in 2025, up from just \$1.7 billion when we made the call. That milestone was achieved ahead of schedule, first crossed in late 2024 and reached again earlier this year. As of June 30, 2025, Bitcoin-related TVL stands at approximately \$9.5 billion, just shy of the mark, underscoring strong momentum in the space.

A major catalyst has been the rapid growth of Bitcoin-native staking protocols like Babylon and CoreDAO, which have collectively locked in over \$6.2 billion in TVL this year alone. Babylon launched its Genesis Chain in April, while CoreDAO

continues to gain traction among institutional partners.

This trajectory reflects a growing demand to make Bitcoin more productive, beyond its traditional role as a store of value. Investors are increasingly pursuing yield-generating opportunities while maintaining control over their BTC, thanks to emerging staking platforms and Layer 2 (L2) protocols that prioritize security and decentralized custody. As utility expands, it attracts new capital, new users, reinforcing its place as a crucial financial infrastructure in the digital era.

Figure 2 - Total value locked in the Bitcoin ecosystem



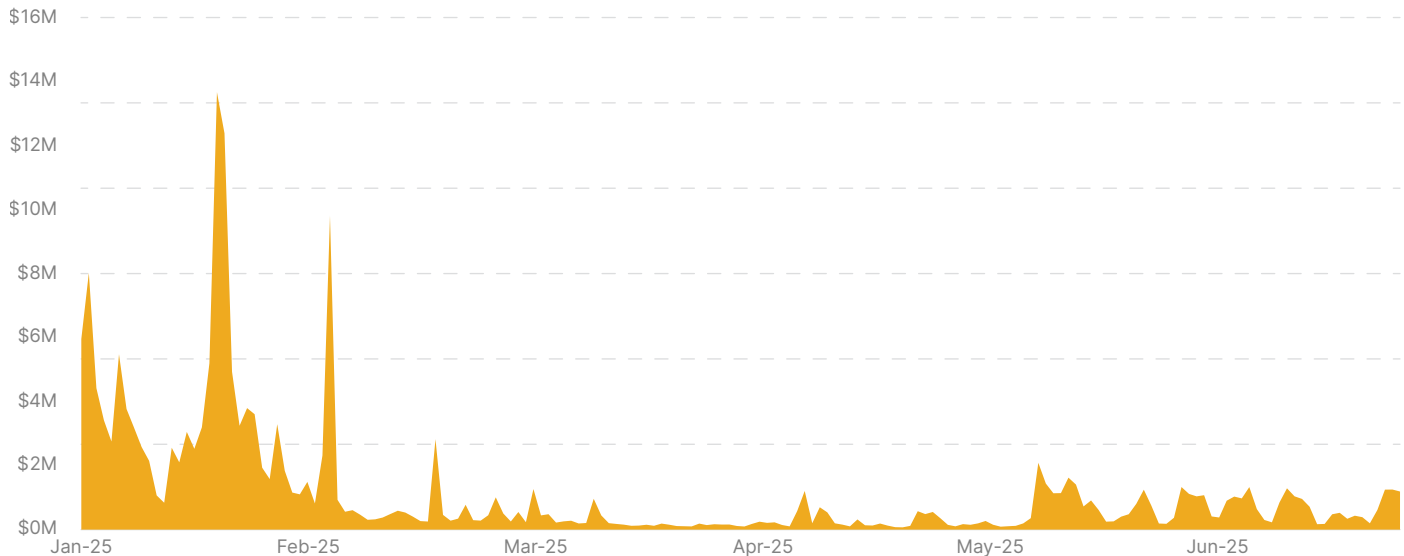
Source: 21Shares, DeFiLlama. Data as of June 25, 2025.

Ethereum's revenue renaissance will begin in 2025

2/5

L2 adoption is thriving, but ethereum revenue rebound still lagging

Figure 3 - Ethereum's daily revenue this year



Source: TokenTerminal. Data as of June 25, 2025.

Our prediction that Layer 2 (L2) networks would gain momentum on Ethereum has materialized. One of the most evident signs of this trend is the rise of Coinbase's Base, which has become the leading L2 in terms of revenue contribution. Base consistently accounts for 20–40% of all fees paid by L2s to Ethereum's mainnet, validating our thesis that L2 adoption can directly reinforce Ethereum's economic model.

New high-fee contributors like Worldcoin's World Chain, paying nearly \$1 million in Ethereum fees year-to-date, have also gone live, alongside new L2 launches such as Converge, a collaboration between Ethena and Securitize, further fueling the growth.

We also forecasted that Web2 and TradFi players would begin launching Ethereum-based L2s, a prediction that has come true. Alibaba-affiliated Jovay

entered the market, and both UBS and Deutsche Bank have begun testing use cases on ZKsync.

But the biggest headline came from Robinhood. The company announced plans to launch Robinhood Chain, an Ethereum L2 built on Arbitrum, with the goal of bringing assets like stocks and private equity on-chain. This marks a major leap toward bridging the gap between traditional finance and decentralized networks, exactly the kind of crossover we've been anticipating.

However, our expectation of a broader revenue resurgence for Ethereum's mainnet hasn't fully materialized. While fee revenues did spike in January, activity has since softened. That said, revenue has been gradually recovering since late April, with an upward trend continuing into June. If this momentum holds and the Ethereum Foundation follows through

on its shift from research to product execution, along with renewed efforts to scale the mainnet and bring in Web2 and TradFi players through Layer 2s, it could support a stronger, more sustained revenue rebound.

While Ethereum's economy hasn't fully bounced back yet, important progress is underway. Increased BLOB usage, deeper L2 integration, and ongoing efforts to scale the L1 are bringing more users back to the mainnet. Ethereumize, an institutional marketing and product arm for the Ethereum ecosystem, is also focused on onboarding more financial institutions into the ecosystem.

Ethereum's price recovery, up nearly 100% from its April lows, suggests the market may already be pricing in the upside. However, whether this will be reflected in revenues remains to be seen.

ETPs will drive further institutional adoption, reaching \$250 billion in assets under management globally

4/5

Crypto ETPs have become the institutional gateway, with record AUM and rising acceptance

At the time of our prediction in December 2024, global crypto ETP assets under management (AUM) stood near \$100 billion. Following the US election results, flows surged by over \$20 billion, pushing AUM to \$150 billion by year end and solidifying ETPs as the preferred vehicle for large-scale, regulated crypto exposure

Despite persistent macro challenges, including an ongoing trade war, fiscal strain, and geopolitical tensions, momentum has remained optimistic. This is reflected in several key developments:

- As of mid-2025, total AUM has reached a record \$180 billion, fueled by rising market valuations and over \$11 billion in net inflows year-to-date.
- Bitcoin remains the cornerstone, representing

nearly 80% of crypto ETP holdings. Investment products now hold over 1.37 million BTC, or 6.5% of the total supply, more than any other single holder category worldwide.

- A key sub-prediction has also come to pass: one Bitcoin ETF has officially entered the world's top 25 ETFs by AUM, a major milestone signaling growing institutional legitimacy for crypto assets.

While growth has moderated since the post-election surge, the outlook remains optimistic. Regulatory momentum is accelerating:

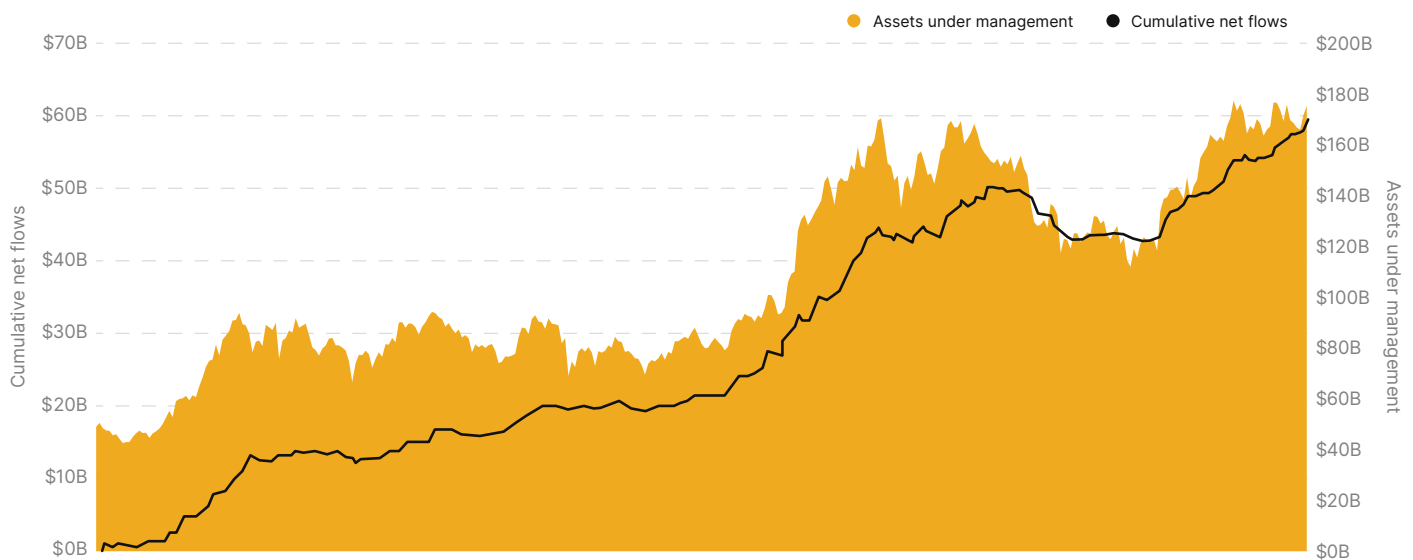
- US states are advancing laws to allow Bitcoin ETPs for public fund investment.
- The U.K. is moving toward ending its

retail ETN ban.

- Japan's has proposed reforms that could lift restrictions on crypto ETFs by reclassifying digital assets as financial products.

If macro conditions improve, a 38% rise in valuations alone would push global AUM past \$250 billion. This aligns with our 2025 Bitcoin target of around \$140K, which, at today's prices, would single-handedly deliver that milestone even before factoring in new inflows, making the outcome increasingly probable.

Figure 4 - Assets under management vs. cumulative net flows of global crypto ETPs



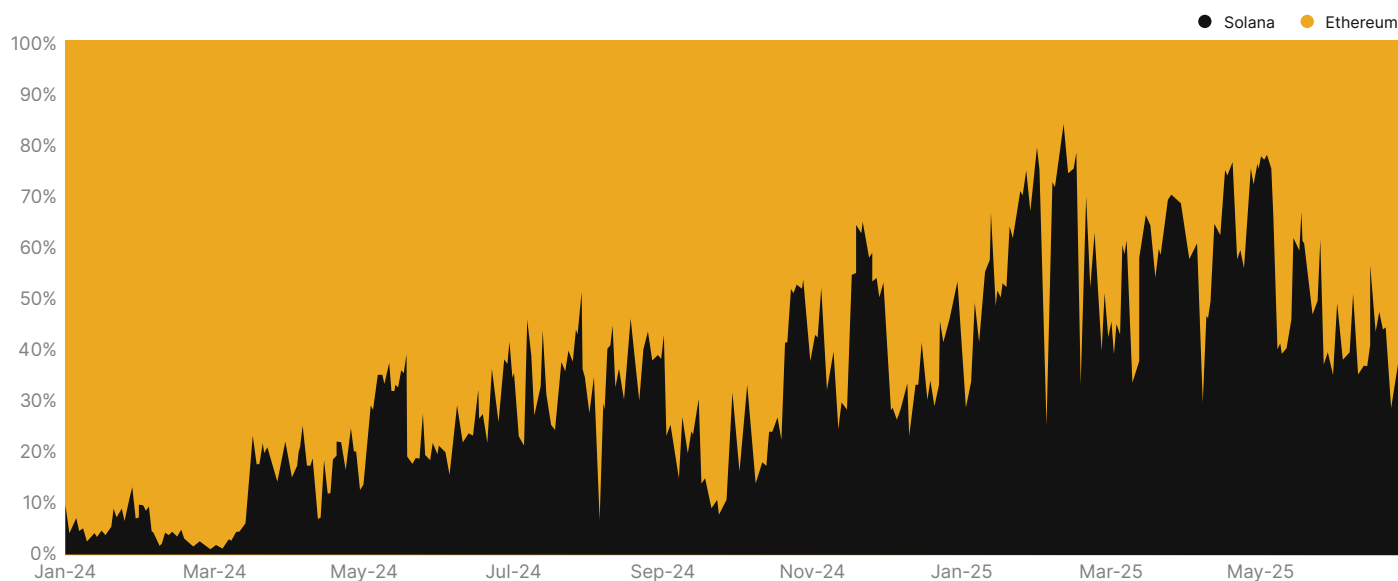
Source: 21Shares, Bloomberg, Data as of June 25, 2025

Solana will continue to eat Ethereum's market share, reaching an all-time high in total value locked

4/5

Solana is leading in adoption and innovation, outpacing Ethereum

Figure 5 - Share of fees generated on Solana vs. Ethereum



Source: 21Shares, TokenTerminal. Data as of June 25, 2025.

In 2025, Solana (SOL) cemented its position as Ethereum's (ETH) top challenger, with a string of real-world integrations and institutional milestones. In May, MetaMask added native Solana support, opening the floodgates for its over 100 million users to send, swap, and interact with Solana dApps (decentralized applications), marking MetaMask's first step beyond EVM chains.

That same month, Solana struck a landmark deal with R3, unlocking potential access to over \$10 billion in tokenized real-world assets from R3's global banking clients, including HSBC, Euroclear, and Bank of America. The partnership enables institutions to settle on either public Solana or private Corda, but what truly stands out is the plan to enable na-

tive interoperability between Corda and Solana. This bridges the gap between permissioned and public blockchains for the first time, setting a new standard for institutional blockchain integration.

Institutional momentum continued to build as BlackRock expanded its \$1.7 billion BUIDL fund to Solana, citing speed, low fees, and strong developer traction. BUIDL now distributes daily tokenized dividends on Solana, embedding the network deeper into real-world financial rails. In parallel, Kraken is preparing to launch tokenized US equities, including Apple, Tesla, and Nvidia, on Solana. This positions Solana to challenge Ethereum's dominance in the tokenization sector.

Institutional conviction surged further as Sol Strategies filed a \$1 billion se-

curities offering, following a \$500 million raise and acquisition of 122,000+ SOL. Meanwhile, DeFi Development Corp. became the first public firm to adopt Solana-native liquid staking infrastructure, validating the network's staking economy. This is vital as public companies are now stacking SOL, just like they did with BTC and ETH.

On the technical front, Solana developers unveiled Alpenglöw, a next-gen consensus upgrade expected to slash finality from 12.8 seconds to just 150 milliseconds. With mainnet deployment expected by the end of 2025, it promises near-instant settlement, well beyond Ethereum's capabilities.

Solana's Performance

Fee revenue

Solana outperformed Ethereum in fee revenue, powered by high-throughput apps like Pump.fun, Axiom, and Telegram-based tools like Photon and Bonk. Over \$350 million has bridged from Ethereum to Solana this year alone.

TVL

Total value locked is up 25% year-to-date, reaching 57 million SOL, nearing its 2022. peak.

Network fundamentals

Low fees and high throughput continue to drive real economic activity.

DEX efficiency

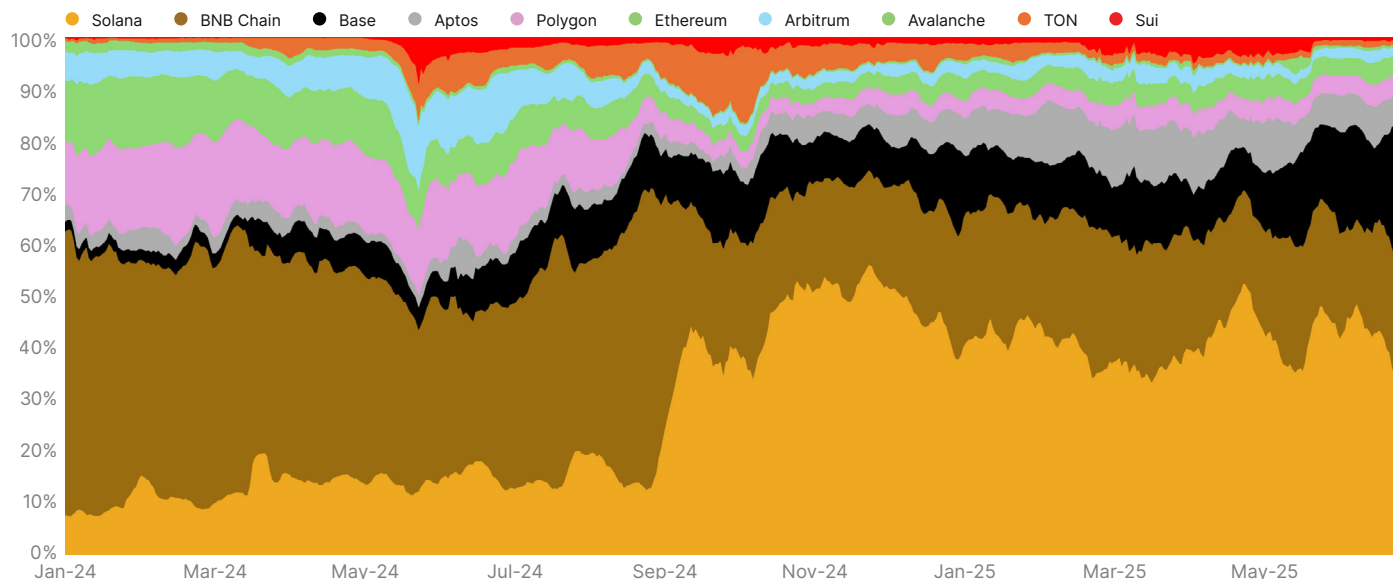
Solana leads Ethereum in decentralized exchange (DEX) volume per \$1 of TVL.

User-friendly Layer 1s will drive the growth of the next generation of smart-contract platforms

2/5

It's not just L1s seeing growth; user-friendly app-chains and L2s are capturing attention too

Figure 6 - Share of active users across several networks



Source: TokenTerminal, Artemis. Data as of June 25, 2025.

We predicted that the next phase of ecosystem growth would be driven by user-friendly Layer 1 (L1) blockchains. While the broad direction of this thesis has proven correct, the momentum is coming from both new user experience (UX)-first chains and established networks improving usability.

At the start of the year, we highlighted Sui and TON as emerging examples of UX-focused L1s. Sui has seen meaningful traction: developer activity is climbing, institutional-grade stablecoins are entering the ecosystem, and its gaming-first SuiPlayOX1 handheld has generated early excitement.

TON has regained momentum. Now, it is ranking among the top five chains by NFT trading volume and recently secured a \$400 million VC round, as legal overhangs surrounding Telegram's founder continue to ease.

However, the real acceleration has come from elsewhere. Today, Solana, BNB Chain, and Base collectively account for over 65% of weekly user activity:

- Solana leads by a wide margin, powered by high throughput, low fees, and a frictionless UX that resonates with retail users.
- Base and BNB Chain, both tied to major centralized exchanges, benefit from intuitive on-ramps, demonstrating the power of the CEX funnel.

The shift toward usability-focused design is also visible in breakout platforms like HyperLiquid, an on-chain CEX-like protocol that delivers over \$10 million in weekly revenue, despite not being reflected in traditional user metrics. By returning 97% of trading fees to tokenholders through buybacks, Hyper-

Liquid is a standout example of how simplicity and incentive alignment drive lasting engagement.

Looking ahead, mobile and hardware are shaping up as the next frontier for crypto UX. With nearly two-thirds of internet traffic now mobile, platforms must meet users where they are. Solana's Seeker phone and Sui's upcoming SuiPlayOX1 are ready to do just that, thereby embedding blockchain directly into everyday tools and reducing the need for technical understanding.

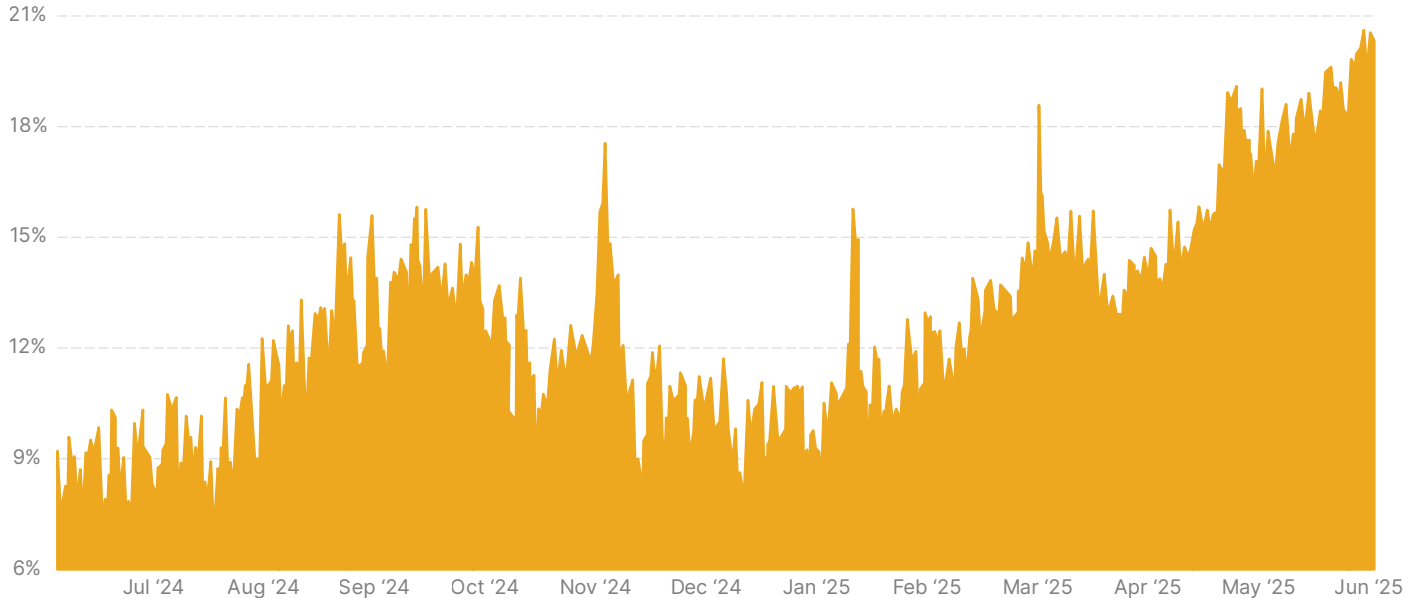
Ultimately, infrastructure alone won't win the next wave of adoption. It will be driven by platforms that abstract complexity, remove friction, and design for the user from the start. As we're already seeing, the market is rewarding those who get it right.

Revenue-sharing will completely change the investment case for DeFi

3/5

While DeFi tokens don't share revenue yet, increasing client interest and evolving regulatory clarity signal a potentially strengthening investment case.

Figure 7 - DeFi mentions across social media platforms over the year



Source: Kaito.AI, Data as of June 9, 2025.

As anticipated, decentralized finance (DeFi) protocols are in the process of transforming their governance tokens into yield-bearing assets by introducing revenue-sharing mechanisms like dividends and token buybacks. This marks a shift toward more mature tokenomics that combine decentralized governance with equity-like mechanics.

- Aave launched a \$1 million/week buyback over six months, redistributing AAVE to stakers and the ecosystem. Stakers also now receive 50% of GHO stablecoin revenue. Its Horizon project will further share real-world asset lending revenue, starting at 50% in year one and gradually decreasing.
- Jupiter launched a buyback mechanism in February 2025, allocating 50% of protocol revenue to repurchase and

lock JUP tokens for three years. Over \$25 million has already been bought back. While initially focused on supply reduction, proposals are emerging to introduce direct revenue sharing with stakers.

- Uniswap announced plans to implement revenue-sharing via new staking infrastructure and fee mechanisms for its 2025 roadmap. However, no concrete progress has been made as of yet.

Meanwhile, these protocols use equity-inspired mechanisms like buybacks to drive token value, serving as an interim approach while standard revenue-sharing is still being debated for future implementation.

- Raydium channels swap fees into buybacks: 84% to liquidity providers,

12% to automated RAY buybacks, and 4% to the treasury, benefiting holders indirectly.

- HyperLiquid allocates 97% of protocol revenue to an Assistance Fund that continually buys back HYPE tokens. By mid-2025, over \$850 million in HYPE had been repurchased, with up to 54% of revenue also going to liquidity providers.

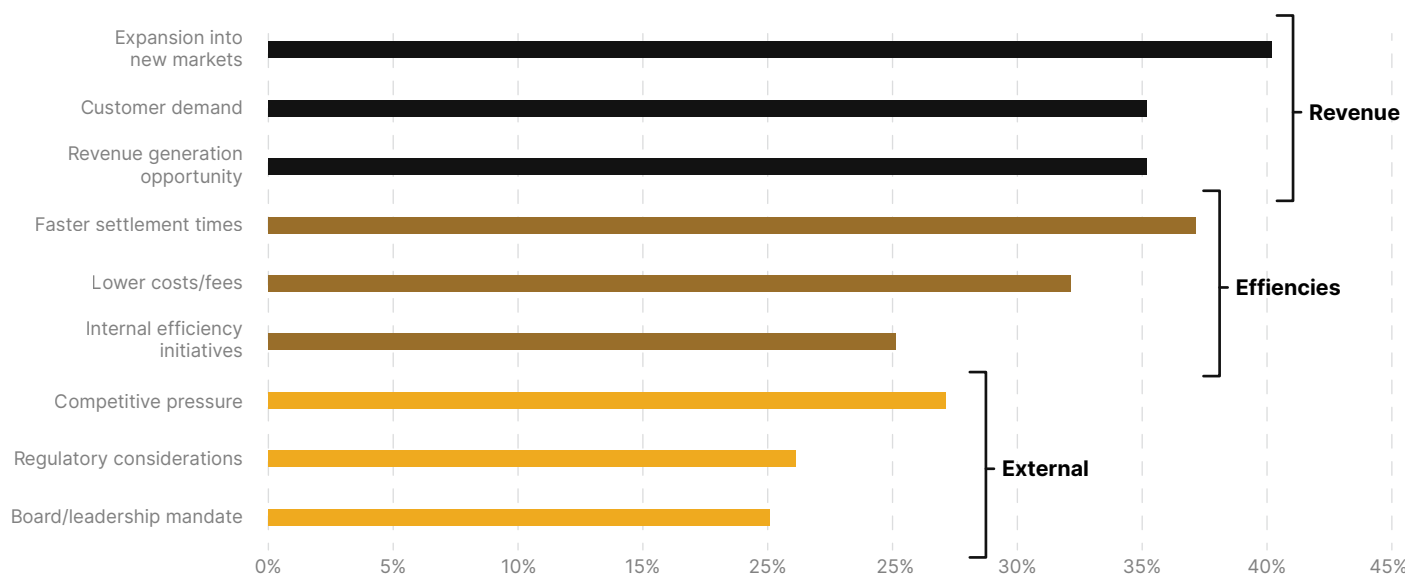
We believe that the evolving US regulation, especially the SEC's proposed "innovation exemption" for DeFi, will accelerate the trend toward full-scale, performance-aligned revenue-sharing. Protocols like Aave, Maker (now Sky), and Uniswap have already seen positive market reactions, signaling what's ahead.

Stablecoins to deepen integration across traditional sectors

5/5

Stablecoin summer, Genius Act, crypto's best product-market fit

Figure 8 - Top factors influencing stablecoin exploration



Source: 21Shares, Fireblocks. Data as of May 16, 2025.

Our prediction that nation-states, financial institutions, and Web2 companies would deepen their stablecoin adoption is playing out across multiple fronts, with clear traction in regulation, infrastructure, and real-world usage.

In the US, stablecoin legislation is gaining momentum. The GENIUS Act has emerged as the leading proposal for comprehensive federal oversight, with bipartisan support expected to move it forward soon. Internationally, Hong Kong has launched a stablecoin sandbox alongside a licensing regime, and Thailand is piloting a retail baht-backed stablecoin.

In traditional finance, banks are beginning to step in. Standard Chartered partnered with Robinhood to support the launch of USDG, a new stablecoin issued by Paxos, designed as a regulated, institutionally backed digital dollar. Stripe has

expanded its crypto footprint through the acquisition of Bridge, a stablecoin infrastructure firm, and Privy, a wallet provider, reinforcing its end-to-end stablecoin payments stack. Meanwhile, Shopify has partnered with Coinbase and Stripe to enable USDC payments, bringing stablecoins directly into mainstream online commerce.

Branded stablecoin issuance has also begun to materialize faster than expected. WorldLibertyFinance's branded stablecoin USD1, backed by Trump-affiliated entities, has already reached a \$2.2 billion market cap. Bank of America has announced plans to launch its own USD stablecoin once regulation is in place. In parallel, the largest US banks, including JPMorgan Chase, Bank of America, Citigroup, and Wells Fargo, are now exploring a joint stablecoin initiative aimed at challenging Tether's dominance.

Stablecoins are gaining momentum

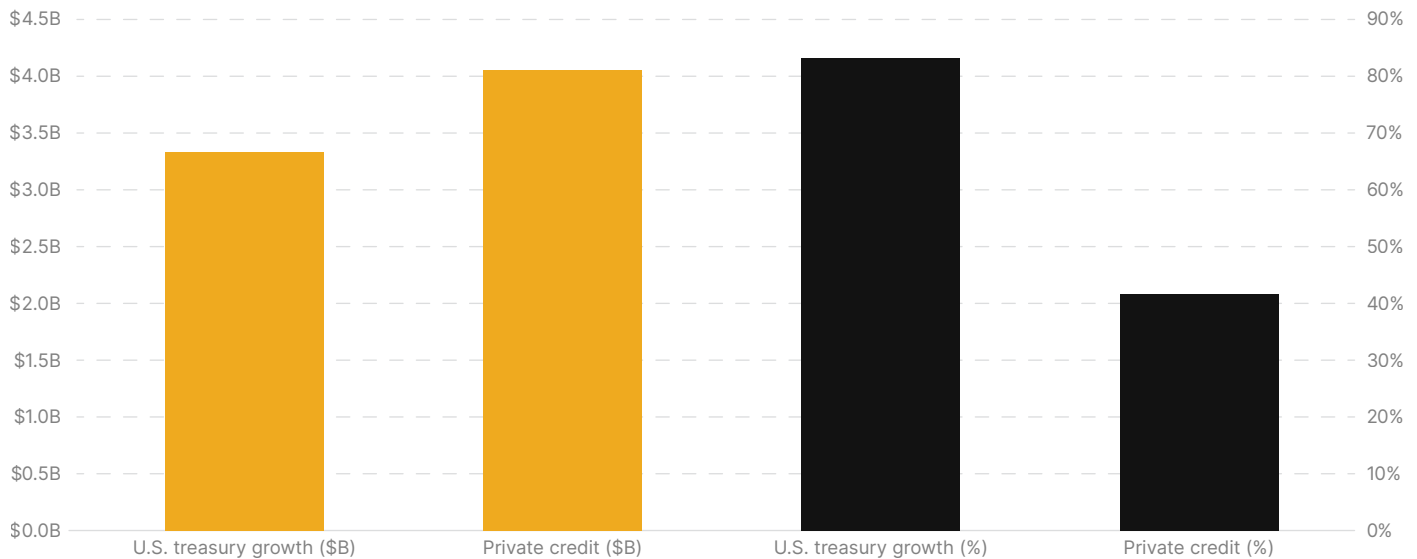
- Stablecoin AUM stands at an all-time high of \$252 billion, up nearly \$100 billion year-over-year (YoY).
- Active stablecoin addresses hit a record 35.7 million in May, a 47.5% YoY increase.
- In emerging markets, stablecoins continue to serve as a hedge against local currency volatility.
- US policy developments are paving the way for a regulated and institutionally scalable stablecoin ecosystem.

Tokenization to advance in private credit

3/5

High rates keep tokenized government securities ahead, challenging private credit

Figure 9 - Growth of tokenized real-world assets this year



Source: RWA.xyz, 21Shares. Data as of June 25, 2025.

Our prediction that private credit would emerge as the fastest-growing subsector within tokenization is partially validated by early 2025 data. In absolute terms, private credit has led real-world asset (RWA) growth, expanding by approximately \$3.6 billion in H1 2025. However, tokenized US Treasuries are not far behind, growing \$3.3 billion over the same period and remain the fastest-growing category by percentage, up 82.5% vs. private credit's 36.4%.

Our original conviction was tied to a broader macro view: that central banks, particularly the Federal Reserve, would begin cutting rates in 2025, reducing Treasury yields and pushing investors toward higher-yielding instruments like

tokenized private credit. At the time, the market was pricing in 5 to 6 rate cuts, suggesting a likely shift from Treasuries to riskier debt. However, by mid-year, the Fed has yet to cut rates even once, sustaining investor demand for safer yield, particularly in the form of tokenized Treasuries.

Despite the delay in macro tailwinds, key building blocks for tokenized private credit are taking shape:

Platforms such as Maple, Figure, and Tradable are expanding offerings and onboarding both retail and institutional users.

One of our core predictions that Moody's would begin rating on-chain credit is playing out. The firm has started testing blockchain-based credit rat-

ings, beginning with municipal bonds on Solana.

In a sign of institutional demand, Apollo, an \$800 billion asset manager, has tokenized its \$1.5 billion Diversified Credit Fund, reinforcing confidence in private credit's on-chain future.

While the pace of adoption has been slower than anticipated, the underlying thesis remains relevant. If macro conditions shift in H2, particularly with even one or two Fed rate cuts, we expect private credit tokenization to accelerate.

Many jurisdictions to reconsider retail crypto ban, as more investor protection comes into effect

4/5

Multiple jurisdictions are rethinking retail bans and potentially opening their doors to crypto ETPs

Figure 10 - Projected crypto ETP market size across countries considering lifting retail bans



Source: 21Shares, Bloomberg, Data as of July 2, 2025. *Projected crypto ETP market size is based on a 1.30% adoption rate of crypto ETPs relative to each country's traditional ETP market — consistent with US market behavior.

We predicted that 2025 would mark a turning point in global retail access to crypto, and that shift is now visibly underway. In the UK, regulators are preparing to lift the retail ban on derivatives and exchange-traded notes (ETNs) referencing certain types of cryptoassets later this year. While current crypto offerings, such as IG Group's direct retail trading services, operate through platforms outside the scope of UK exchange listing rules, interest in the sector continues to build. These moves affirm the direction we anticipated and signal growing access to crypto for retail investors.

Security risks are also forcing a broader rethink. The Bybit hack, the largest internet breach to date, with over \$1 billion in losses, underscored the vulnerabilities of direct ownership via centralized exchanges and further reinforced

the case for regulated exposure through exchange-traded products (ETPs).

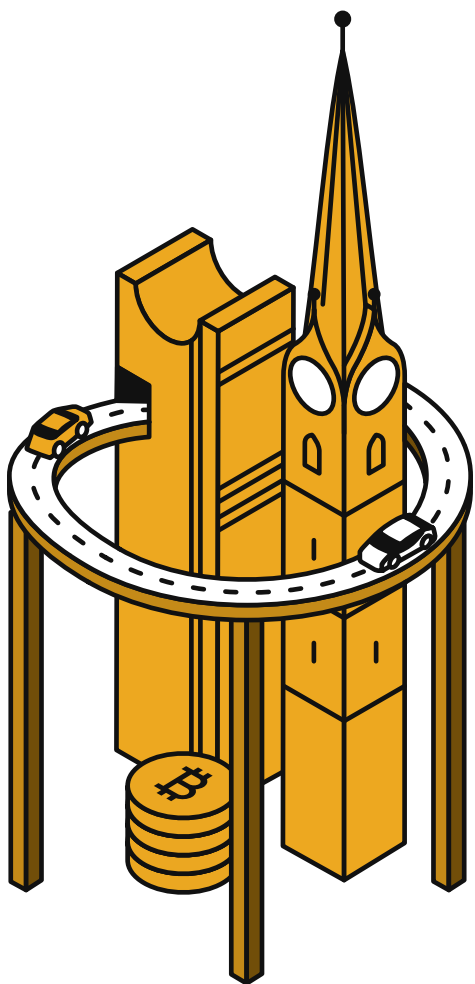
Governments worldwide are adapting:

- Japan has proposed legalizing Bitcoin ETFs, slashing crypto taxes from 55% to 20%, and introducing new investor protection rules aimed at preventing FTX-style failures.
- Notably, KRW-denominated spot trading volume has reached \$663 billion in 2025, making South Korea the second-largest crypto market globally. As a result of this interest, South Korea lifted its corporate crypto trading ban and is preparing to open the door to crypto ETFs under a newly elected pro-crypto administration.

As shown in Figure 10, the projected market opportunity is significant. If crypto ETPs were to capture just 1.30% of each

country's existing traditional ETP market - in line with adoption levels seen in the U.S. - regions like the UK, Japan, and South Korea could see billions in inflows. In the US, over 70% of ETP inflows now come from non-institutional investors, highlighting that retail access is not just a regulatory matter, but a key engine of growth.

As crypto remains firmly in the spotlight, ETPs are rapidly emerging as the preferred vehicle for both retail and institutional exposure, offering institutional-grade custody, transparent holdings, and trading via traditional exchanges. As regulatory momentum builds across major markets, 2025 is shaping up to be the year where clear rules and broader access finally align, just as we anticipated.



Take a look at how our two bonus predictions played out

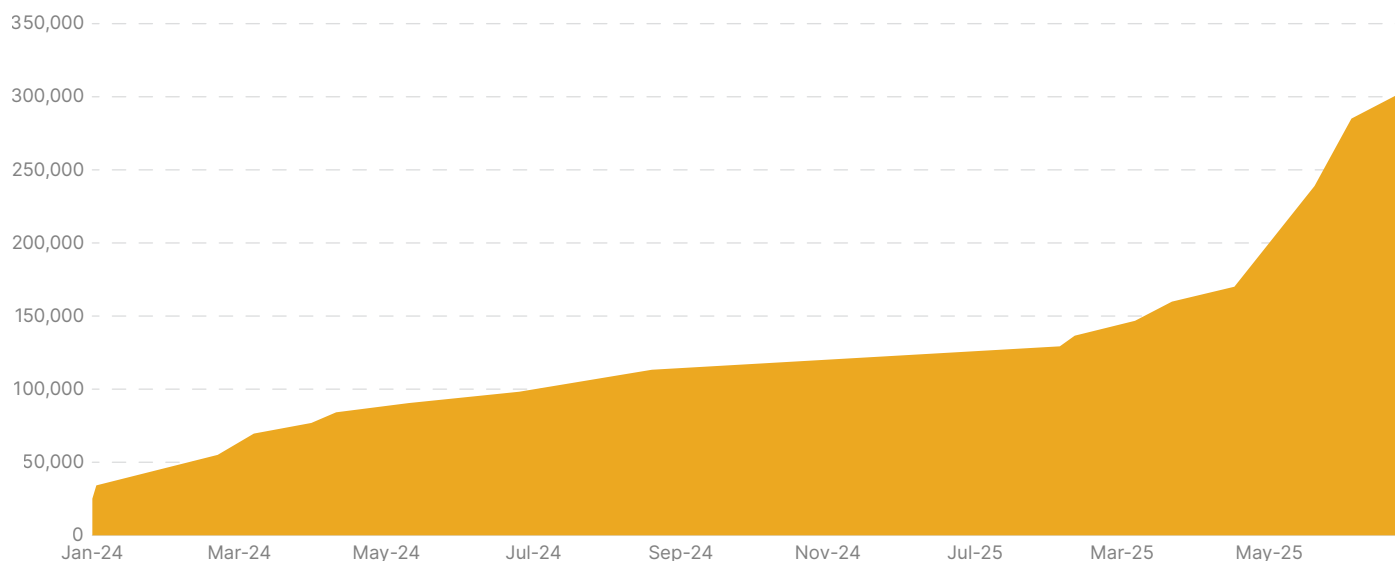
In our 2025 outlook, we included two bonus predictions focused on emerging subsectors we believe will play a key role this year. As the crypto landscape continues to shift, these areas are worth keeping on your radar. Now, let's see how they've performed so far.

Decentralized broadband solutions to maintain their momentum

5/5

Helium's progress validates decentralized broadband growth

Figure 11 - Total number of Helium Mobile subscribers



Source: Dune Analytics. Data as of June 25, 2025.

As expected, Helium-powered decentralized broadband made major strides in 2025, marking a turning point for decentralized connectivity.

A major development was Helium's partnership with telecommunications company AT&T, delivering seamless Wi-Fi across 62,000+ US hotspots. AT&T users auto-connect to Helium's decentralized network, advancing wireless convergence and optimizing handoffs between Wi-Fi and cellular to enhance user experience.

Another key milestone was reached earlier in the year when Movistar Mexico, a subsidiary of telecommunications giant Telefónica, launched full commercial deployment following successful pilots in 2024. Now active across 300+ sites and serving over 2.3 million subscribers, the network offloads an average of 390MB

per user daily, roughly an hour of data usage, helping reduce infrastructure costs and expanding coverage in underserved regions. Helium hotspots are now sold in Movistar stores, with the agreement enabling resale to MVNOs, extending reach, and accelerating adoption.

In June 2025, Helium deepened integration with Akenza, a leading traditional IoT platform, simplifying global LoRaWAN deployment. Users can now connect to Helium through Akenza's Connectivity-as-a-Service (CaaS) platform with a single click, and no separate contracts are required. This unifies connectivity and device management, speeding adoption and expanding Helium's global IoT footprint. As a result, Helium mobile subscribers have grown by over 150% since our last report.

On the regulatory front, the SEC

dropped its lawsuit against Nova Labs, Helium's core developers, settling for \$200K without admission of wrongdoing. This landmark settlement clarifies that token distribution and hardware sales for decentralized networks do not inherently violate securities laws, a major regulatory win for the DePIN sector.

While Helium led the way, momentum also accelerated across the broader decentralized broadband sector:

- XNET secured a similar partnership with AT&T, offloading nearly 93 TB of data.
- WiFi Dabba deployed 4,760 active hotspots (from 12,000 units sold), providing affordable connectivity to over 90,000 users in underserved Indian regions.

Blockchain to emerge as AI's watchdog, safeguarding digital truth

1/5 AI x Blockchain just getting started

At the close of 2024, we predicted that blockchain would emerge as a watchdog for AI, playing a key role in safeguarding digital truth. As of mid-2025, that vision has yet to materialize at scale.

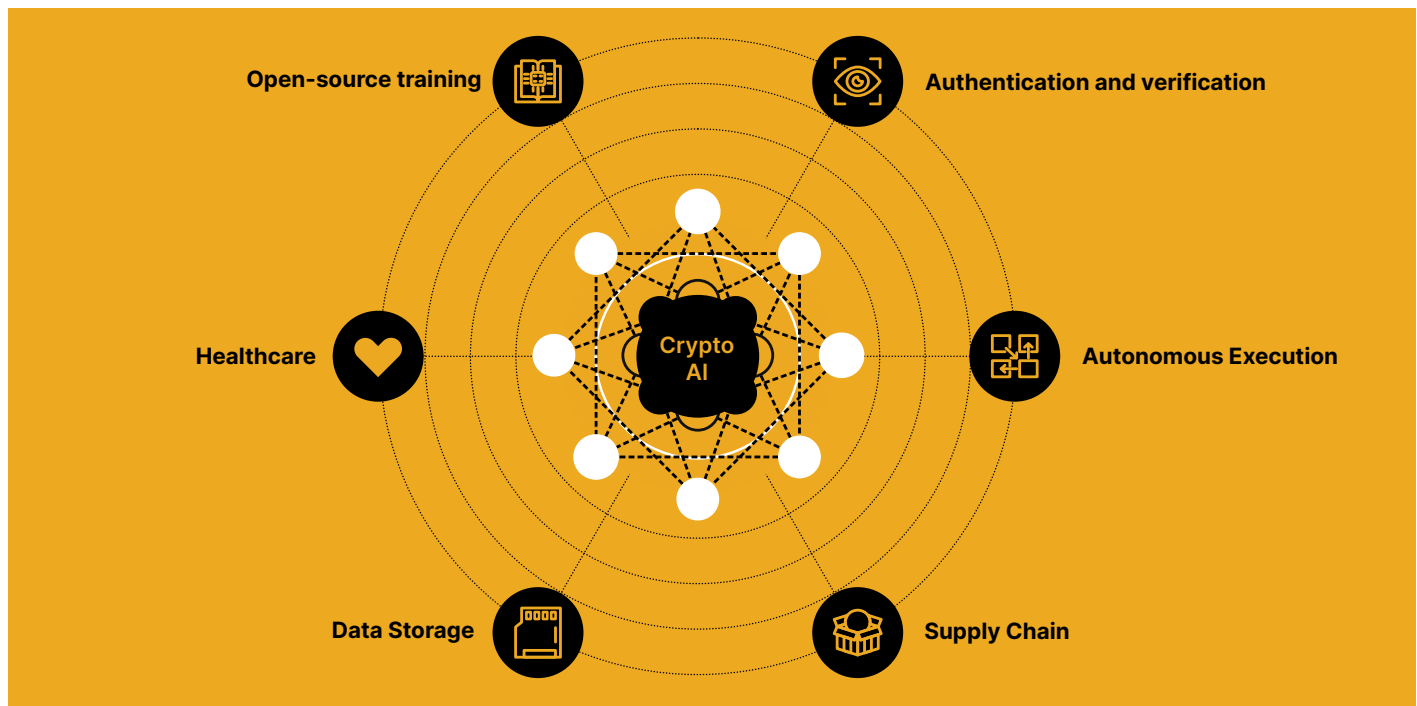
That said, we're beginning to see early signs of alignment. One promising area is deepfake detection and content authenticity. Blockchain is now being used to generate tamper-resistant fingerprints for digital media, verifying provenance and integrity through on-chain records.

There is movement around using blockchain for transparency and accountability in AI development. Projects like Prove AI are piloting immutable audit trails to log training data, model iterations, and decision histories, an approach increasingly relevant as regulatory frameworks like the EU AI Act begin to take shape.

There's also growing experimentation at the intersection of blockchain and autonomous AI agents. Smart contracts are providing the rules and infrastructure for agents to operate, handle payments, verify identity, and manage compliance. A standout example is Bittensor, a decentralized network where AI models collaborate, compete, and are rewarded based on on-chain metrics. Major consultancies, including Deloitte, are now highlighting this convergence, especially within financial services.

While blockchain has not yet become AI's definitive accountability layer, early use cases, increasing research interest, and prototype tools suggest that the groundwork is being laid. Progress is slower than expected, but the direction is becoming clearer.

Figure 12 - Potential convergence of blockchain and AI



Source: 21Shares

References

Introduction

Bitcoin halving report: <https://www.21shares.com/en-eu/research/bitcoin-halving-report-2024>

Stablecoins in Circulation: <https://defillama.com/stablecoins?backing=FIATSTABLES&backing=CRYPTOSTABLES>

Another nation-state will adopt Bitcoin as a strategic reserve asset

MicroStrategy Holdings: <https://platform.arkhamintelligence.com/explorer/entity/microstrategy>

MetaPlanet Holdings: <https://platform.arkhamintelligence.com/explorer/entity/metaplanet-2>

Bhutan BTC Holdings: <https://platform.arkhamintelligence.com/explorer/entity/druk-holding-investments>

Russia Close to Starting Trials of Crypto Payments, Exchanges - Bloomberg <https://www.bloomberg.com/news/articles/2024-08-26/russia-close-to-starting-trials-of-crypto-payments-exchanges>

U.S. Government Holdings <https://platform.arkhamintelligence.com/explorer/entity/usg>

Bitcoin's scalability solutions will drive total value locked to \$10 billion

What is the Nakamoto Upgrade? | Stacks Documentation <https://docs.stacks.co/nakamoto-upgrade/what-is-the-nakamoto-release>

sBTC: Design of a Trustless Two-way Peg for Bitcoin <https://stacks-network.github.io/stacks/sbtc.pdf>

At the time of writing, Glassnode recorded nearly \$1 trillion in BTC held by long-term holders, leaving their BTC idle for at least 155 days.

GitHub - bip420/bip420 Op_CAT <https://github.com/bip420/bip420>

BitVM: Compute Anything on Bitcoin <https://bitvm.org/bitvm.pdf>

ETPs will drive further institutional adoption, reaching \$250 billion in assets under management globally

The progress of Strategic Bitcoin Reserve (SBR) bills across all US states: <https://bitcoinlaws.io/reserve-race>

Britain wants to lift a ban on a key crypto product: <https://www.cnbc.com/2025/06/06/uk-fca-to-lift-ban-on-crypto-etns.html>

Japan Set to Lift Ban on Bitcoin and Crypto ETFs: <https://thecryptobasic.com/2025/02/10/japan-set-to-lift-ban-on-bitcoin-and-crypto-etfs>

Ethereum's revenue renaissance will begin in 2025

Danksharding | ethereum.org <https://ethereum.org/en/roadmap/danksharding/>

EIP-7762: Increase MIN_BASE_FEE_PER_BLOB_GAS - #3 by ryanberckmans - EIPs - Fellowship of Ethereum Magicians <https://ethereum-magicians.org/t/eip-7762-increase-min-base-fee-per-blob-gas/20949/3>

Overview | Celo Documentation <https://docs.celo.org/cel2>

Sonic Labs <https://docs.soniclabs.com/>

Base revenue <https://tokenterminal.com/terminal/projects/base?v=MDhkMzJhYmQ0MjI1MzA3OGRIMGFjZDU5>

Base total value locked <https://defillama.com/chain/Base>

Solana will continue to eat Ethereum's market share, reaching an all-time high in total value locked

Solana's inflows from Ethereum https://app.artemis.xyz/flows?tab=ecosystemFlows&sourceChains=%2CEthereum&destinationChains=%2Cbitrumbase%2Cmetis%2Cpolygon%2COptimism%2CSolana%2Cstarknet%2CzkSync&protocols=all%2Cinjective_ibc%2Cpeggy%2Cacross%2Csynapse%2Cwormhole%2Crainbow_bridge%2Carbitrum%2Cavalanche%2Cbase%2COptimism%2Cpolygon%2Cstarknet%2CzkSync

Solana's DEX traded volume <https://dune.com/queries/3500326/5886419>

Solana Average Transaction Fee vs Median (Non-Vote Transactions) <https://dune.com/queries/4149593/6985114>

Solana Number of Successful Transactions <https://dune.com/queries/3186743/5323336>

PyUSD on Solana Transfer Volume, Txns and Senders <https://dune.com/queries/4022845/6774895>

Breakpoint 2024: Keynote: Fast Forward From Frankendancer to Firedancer (Kevin Bowers) <https://www.youtube.com/watch?v=8sl3RcN2Rdk>

User-friendly layer 1s will drive the growth of the next generation of smart-contract platforms

All Chains TVL <https://defillama.com/chains>

Market Landscape of Tokenized Government Securities by Blockchain <https://dune.com/queries/3095804/5164658>

SuiPlay0X1 <https://www.suiplay0x1.com/>

Solana Mobile debuts Saga, a flagship Android phone for web3 <https://solana.com/news/saga-reveal>

TON's Stablecoin Supply <https://app.artemis.xyz/project/ton?from=chains&tab=stablecoins>

Revenue-sharing will completely change the investment case for DeFi

Unichain <https://docs.unichain.org/whitepaper.pdf>

Stablecoins to deepen integration across traditional sectors

Philippines' Central Bank Gives Approval to Coins.ph to Pilot Stablecoin in Key Remittance Market <https://www.coindesk.com/policy/2024/05/14/philippines-central-bank-gives-approval-to-coinsph-to-pilot-stablecoin-in-key-remittance-market/>

Philippines: OFW cash remittances 2023 | Statista <https://www.statista.com/statistics/1242750/remittance-overseas-filipino-workers-to-philippines/>

The 2024 Crypto Spring Report <https://static.poder360.com.br/2024/06/Chainalysis-The-Crypto-Spring-Report-2024.pdf>

UAE stablecoin issuer gets nod from central bank <https://cointelegraph.com/news/uae-central-bank-aed-stablecoin-approval>

Thailand's oldest bank announces stablecoin remittance services <https://cointelegraph.com/news/thailand-commercial-bank-announces-stable>

coin-remittance-services

The Emerging Market Story https://castleisland.vc/wp-content/uploads/2024/09/stablecoins_the_emerging_market_story_091224.pdf

Fintech giant Stripe to buy crypto startup Bridge | Reuters <https://www.reuters.com/markets/deals/fintech-giant-stripe-buy-crypto-startup-bridge-2024-10-21/>

The GENIUS Act: <https://www.congress.gov/bill/119th-congress/senate-bill/394/tex>

USD1's price and market cap: <https://www.coingecko.com/en/coins/usd1-wifi>

Bank of America plans to launch stablecoin: <https://finance.yahoo.com/news/bank-america-plans-launch-stablecoin-081305207.html>

Some US banks explore venturing into crypto with joint stablecoin: <https://www.reuters.com/business/finance/some-us-banks-explore-venturing-into-crypto-with-joint-stablecoin-wsj-reports-2025-05-23/>

Tokenization to advance in private credit

Tokenization: Market Landscape of Tokenized Government Securities by Protocols <https://dune.com/queries/3095760/5164589>

Tokenized Private Credit: A New Digital Frontier for Real World Assets <https://www.spglobal.com/en/research-insights/special-reports/tokenized-private-credit>

Many jurisdictions to reconsider retail crypto ban, as more investor protection comes into effect

SECURITIES EXCHANGE ACT OF 1934. Release No. 101001 / September 12, 2024. eToro's Remedial Efforts. Page 4, <https://www.sec.gov/files/litigation/admin/2024/34-101001.pdf>

SECURITIES AND EXCHANGE COMMISSION, v. BINANCE HOLDINGS LIMITED, BAM TRADING SERVICES INC., BAM MANAGEMENT US HOLDINGS INC., AND CHANGPENG ZHAO. Footnote 6, page 24. <https://storage.courtlistener.com/recap/gov.uscourts.dcd.256060/gov.uscourts.dcd.256060.273.1.pdf>

Financial Innovation and Technology for the 21st Century Act <https://www.congress.gov/118/bills/hr4763/BILLS-118hr4763rfs.pdf>

Lummis-Gillibrand Payment Stablecoin Act <https://www.gillibrand.senate.gov/wp-content/uploads/2024/04/LIP24254.pdf>

Robinhood Crypto Launches Crypto Transfers in Europe <https://www.globenewswire.com/news-release/2024/10/01/2955809/0/en/Robinhood-Crypto-Launches-Crypto-Transfers-in-Europe.html>

ESMA34-1270380148-1032 Call for Evidence on the review of the UCITS Eligible Assets Directive https://www.esma.europa.eu/sites/default/files/2024-05/ESMA34-1270380148-1032_Call_for_Evidence_on_the_UCITS_EAD_Review.pdf

Property (Digital Assets Etc.) Bill - GOV.UK <https://www.gov.uk/government/publications/property-digital-assets-etc-bill>

금융위, 가상자산위원회서 현물 ETF·법인 가상자산 계좌 허용 검토 - 뉴스1 <https://www.news1.kr/finance/financial-policy/5564086>

Korean Won Topped Dollar as Preferred Currency for Crypto Trades Last Quarter - Bloomberg <https://www.bloomberg.com/news/articles/2024-04-16/korean-won-topped-dollar-as-preferred-currency-for-crypto-trades-last-quarter>

World's Most Crypto Business Friendly Countries in 2024 <https://socialcapitalmarkets.net/crypto-trading/crypto-business-friendly-countries/>

UK-listed IG Group launches crypto trading to retail investors: <https://cointelgraph.com/news/ig-group-uk-crypto-trading-retail-investors>

Decentralized broadband solutions to maintain their momentum

What Is the Average Cell Phone Bill Per Month? | MoneyLion. <https://www.moneylion.com/learn/average-cell-phone-bill-per-month/#:~:text=As%20of%202024%2C%20CNBC%20reported,in%20the%20monthly%20budget%20league>

How Much Does it Cost to Build a Cell Tower? - Dgtl Infra <https://dgtlinfra.com/how-much-does-it-cost-to-build-a-cell-tower/>

Helium Mobile - Unlimited \$20/mo. <https://heliohelium.com/plan>

Helium Mobile dashboard <https://dune.com/rawmaan/helium-mobile>

Total Helium Mobile Subscriber NFTs <https://dune.com/queries/2859736/4782690>

Blockchain to emerge as AI's watchdog, safeguarding digital truth

Fox's Verify Tool <https://www.verify.fox/>

Fox Attested Publications <https://dune.com/queries/3342034/5599975?ref=ournetwork.ghost.io>

Disclaimer

This report has been prepared and issued by 21Shares AG for publication globally. All information used in the publication of this report has been compiled from publicly available sources that are believed to be reliable, however we do not guarantee the accuracy or completeness of this report. Crypto asset trading involves a high degree of risk. The crypto asset market is new to many and unproven and may have the potential to not grow as expected.

Currently, there is relatively small use of crypto assets in the retail and commercial marketplace in comparison to relatively large use by speculators, thus contributing to price volatility that could adversely affect an investment in crypto assets. In order to participate in the trading of crypto assets, you should be capable of evaluating the merits and risks of the investment and be able to bear the economic risk of losing your entire investment.

Nothing in this email does or should be considered as an offer by 21Shares AG and/or its affiliates to sell or solicitation by 21Shares AG or its parent of any offer to buy bitcoin or other crypto assets or derivatives. This report is provided for information and research purposes only and should not be construed or presented as an offer or solicitation for any investment. The information provided does not constitute a prospectus or any offering and does not contain or constitute an offer to sell or solicit an offer to invest in any jurisdiction.

Readers are cautioned that any such forward-looking statements are not guarantees of future performance and involve risks and uncertainties, and that actual results may differ materially from those in the forward-looking statements as a result of various factors. The information contained herein may not be considered as economic, legal, tax, or other advice and users are cautioned against basing investment decisions or other decisions solely on the content hereof.

Scan Me!

