

Tokenization of TVER Carbon Credits

Ensuring Transparency, Traceability, and Trust in
Thailand's Climate Market



Thailand's Voluntary Emission Reduction (TVER) program, led by the **Thailand Greenhouse Gas Management Organization (TGO)**, is a cornerstone for voluntary carbon markets in Thailand. This whitepaper proposes the integration of blockchain technology to tokenize TVER credits for enhanced transparency, traceability, and prevention of double counting. Through collaboration between **NetZeroCarbon (NZC)**, **BlockEdge Co., Ltd.**, and ecosystem partners, this initiative aims to digitize project onboarding, automate the credit lifecycle, and support Thailand's NDC and ESG goals.

T-VER COST

A flat rate service fee is determined for T-VER project registration and GHG emission reduction/removal certification.

This flat rate will be applied equally to all projects, regardless of their type or size, as follows:



Registration of T-VER Project

5,000 Baht per application

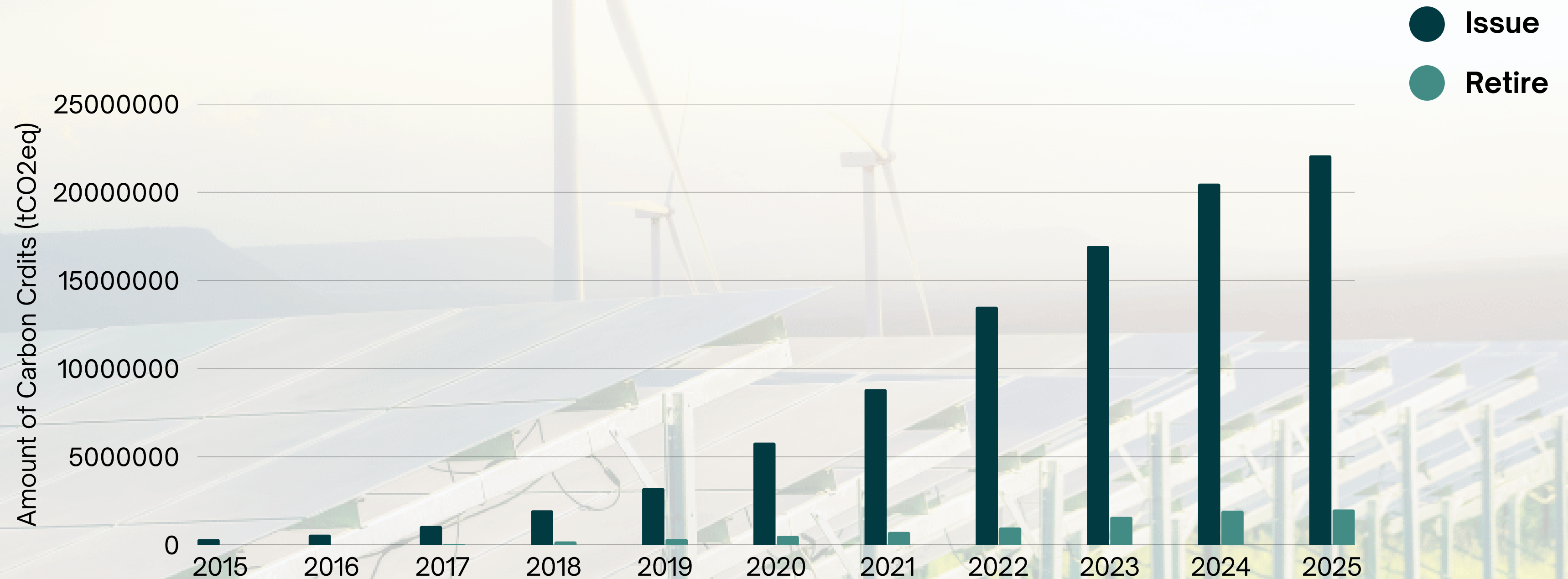


Certification of Greenhouse Gas Emission Reduction

5,000 or 3,000 Baht and deduction of 10 tCO₂eq of Carbon Credits per application

Cumulative T-VER issurance and retirement as of April 2025

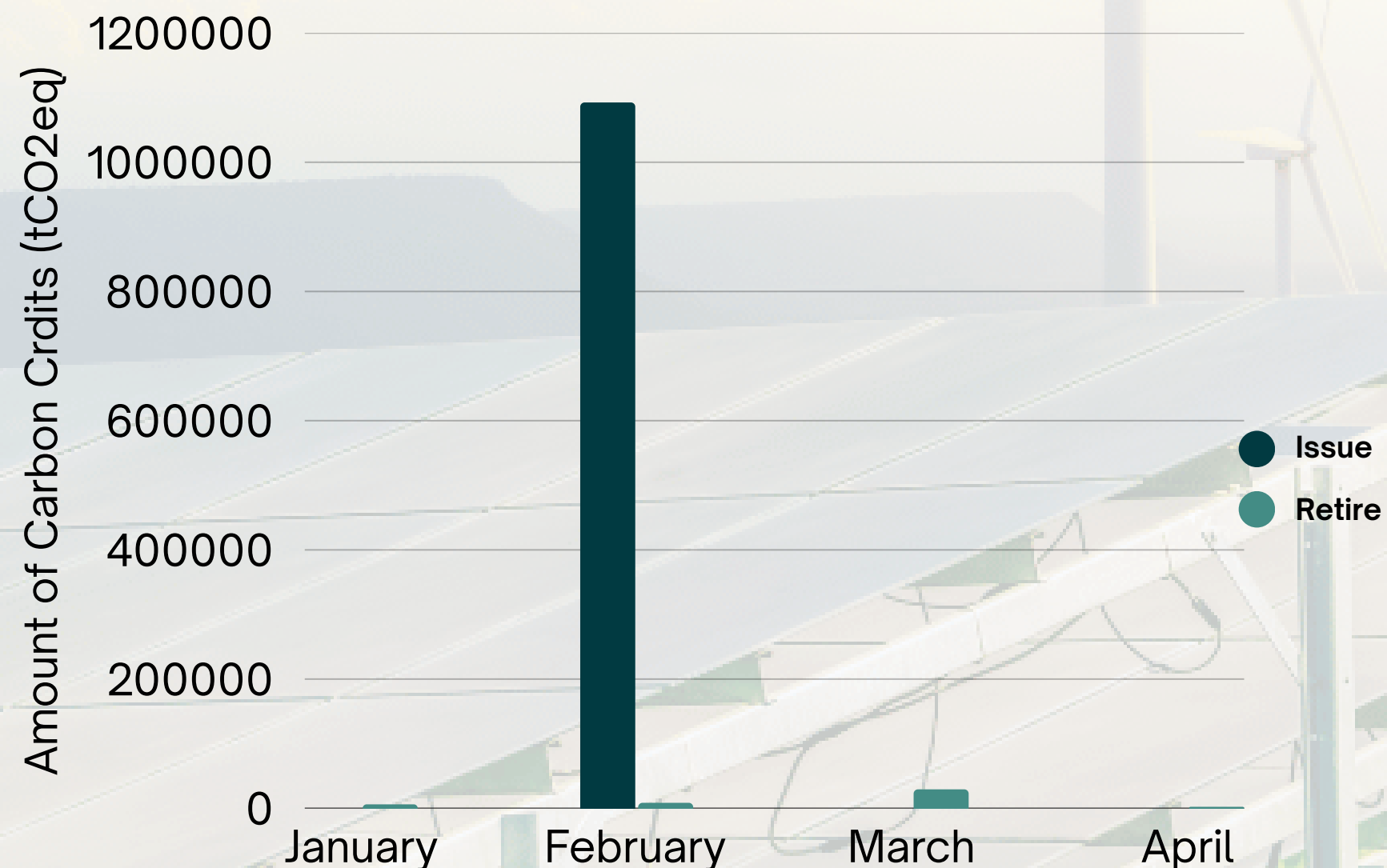
Update: April 30th, 2025



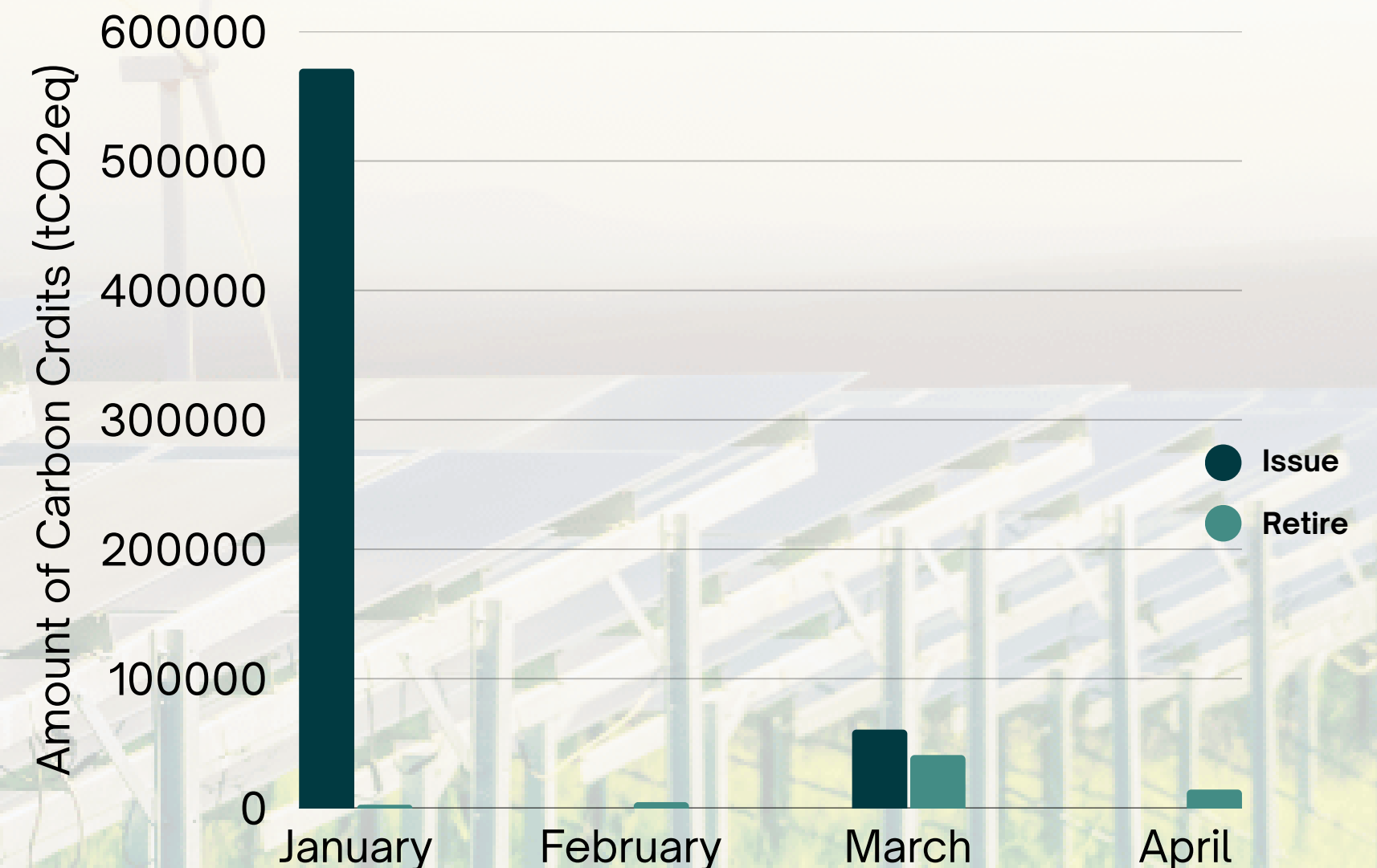
Comparison between Issuance and Retirement of T-VER in 2024 vs 2025

Update: April 30th, 2025

Monthly T-VER Issued and retired Jan - Apr 2024



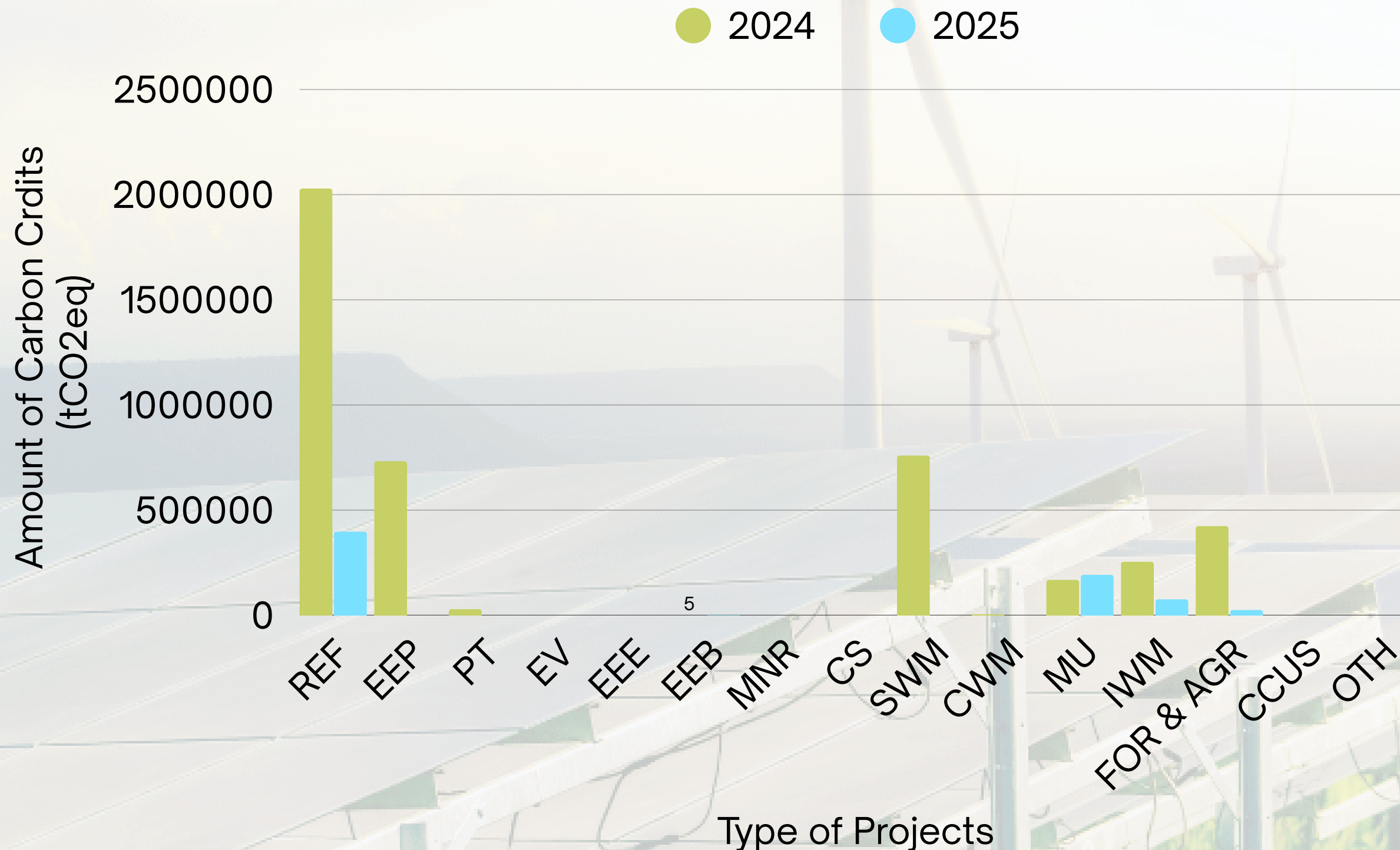
Monthly T-VER Issued and retired Jan - Apr 2025



Statistics of Issuance of T-VER in 2025

Update: April 30th, 2025

Total : 692,329 tCO₂e



REF: Renewable energy or fossil fuel replacement

EEP: Energy Efficiency Improvement

PT: Public transportation

EEB: Building Energy Consumption Improvement

SWM: Solid waste management

MU: Methane recovery and utilization

IWM: Industrial wastewater management

FOR & AGR: Reduction, absorption and removal of GHG from FOR & AGR

OTH: Others

Market Challenges

The current carbon market faces traceability gaps, manual inefficiencies, limited access for small players, and credibility risks due to lack of transparency and third-party verification.



Traceability Gap

Difficulty tracing the lifecycle of carbon credits leads to double counting risks.



Operational Friction

Manual processes for certification, credit transfer, and retirement are slow.



Access Barrier

Limited access to premium carbon credits, particularly for farmers, SMEs and regional enterprises.



Credibility Risk

Lack of transparent audit trails and third-party MRV increases greenwashing risks.

Objectives of Tokenization



Create a blockchain-based registry for TVER credits



Prevent double counting with verifiable on-chain retirement



Improve project onboarding speed and accessibility



Integrate Digital MRV (dMRV) systems and real-time tracking



Enable seamless ESG reporting for corporates

TVER Token Design

Token Type: Utility Token (non-investment)

Standard: ERC-20 or compatible on EVM chain

Backing: 1 token = 1 verified tCO2e under TGO's TVER standard

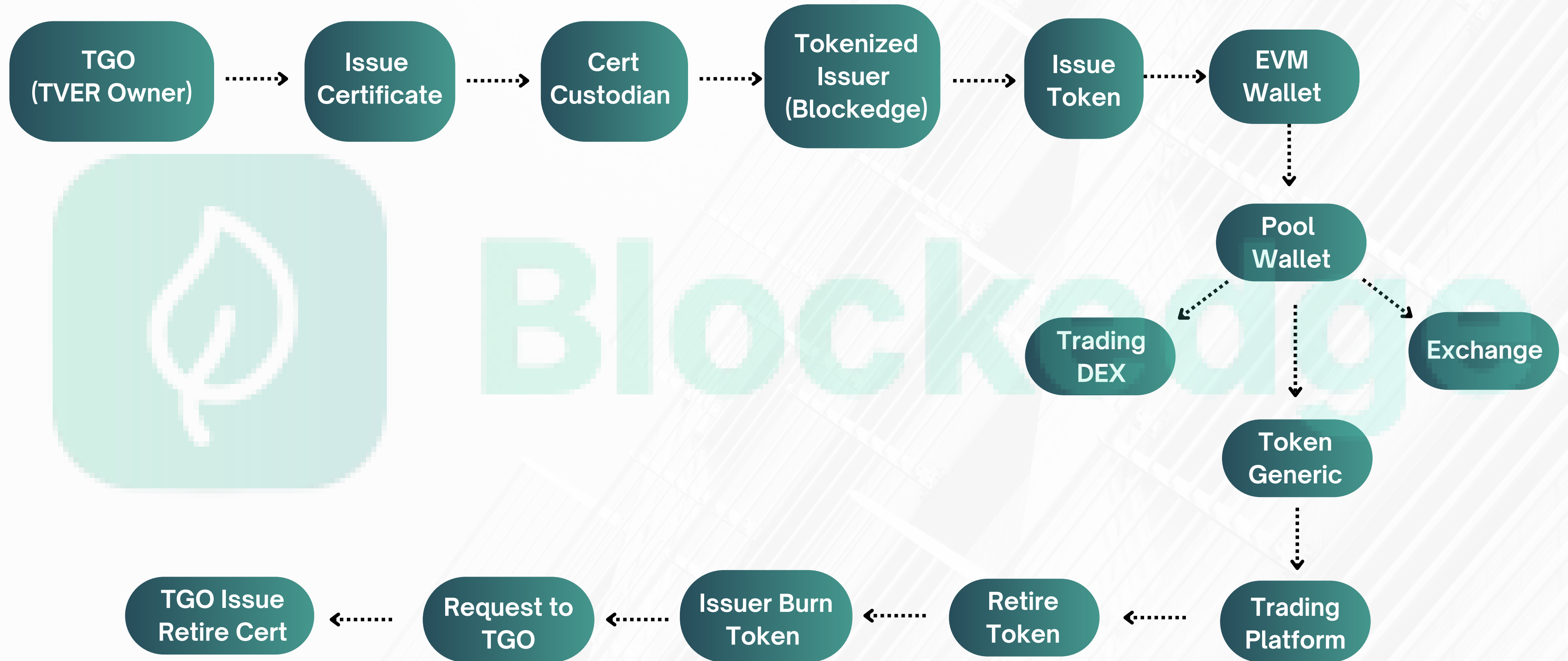
Burnable: Tokens are retired on-chain with issuance of digital certificate

Metadata Includes:

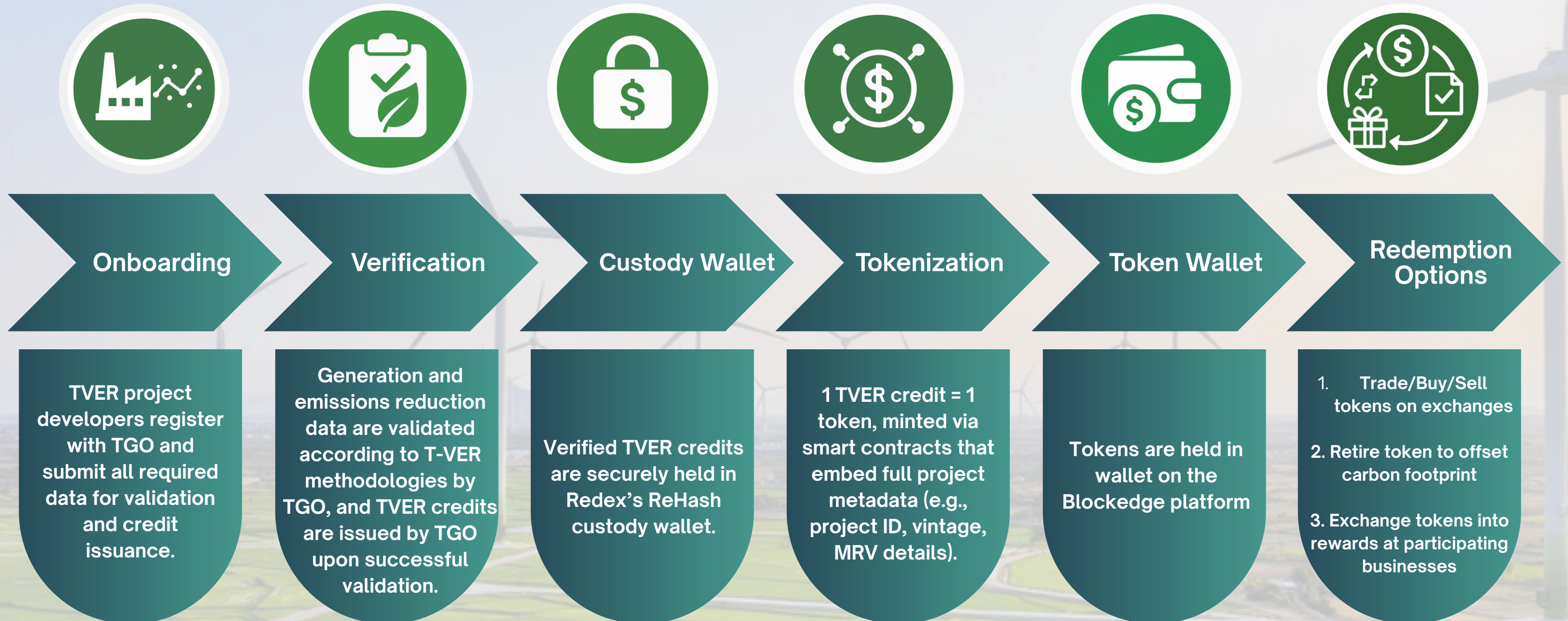
- Project ID (from TGO)
- Project developer info
- Location, project type (e.g., AWD, renewable energy)
- Verification & vintage year
- MRV methodology (e.g., SpiroCarbon, field app)
- Co-benefits (e.g., SDG links)



Tokenization Lifecycle



Tokenized Eco-system Map



Blockchain Infrastructure

- **Issuer Name:** Blockedge Co.Ltd
- **Role:** Project whitelist authority and technical token issuer
- **Function:** Develops and deploys smart contracts to tokenize verified carbon credits into ERC-20 standard tokens. Each token includes embedded metadata such as project origin, certification, and retirement status, ensuring full protocol compliance and traceability.
- **Asset Ownership:** Holds custody of the underlying carbon credit assets during the tokenization process.



Token Technical Details



- **Blockchain Network Details**

- Network name : CO2e Chain
- Currency symbol : CO2E
- Network URL : <https://rpc.co2e.cc>
- Chain ID : 171
- Block explorer URL : <https://exp.co2e.cc>

- **Token Standard**

- Batch mint token : ERC721
- Certified token : ERC20

Service Structure & Strategic Partners

- **Platform Fees:** Charges a 10% fee per project for tokenization services.
- **Exchange Preparation:** Prepares tokens for listing on exchanges, pending SEC approval.
- **Ecosystem Partners:** TGO (Thailand Greenhouse Gas Management Organization) – Regulatory authority and credit certifier, Redex (accredited REC custodian), Spiro Carbon (MRV partner)

ECOSYSTEM PARTNERS



Regulatory
authority and
credit certifier

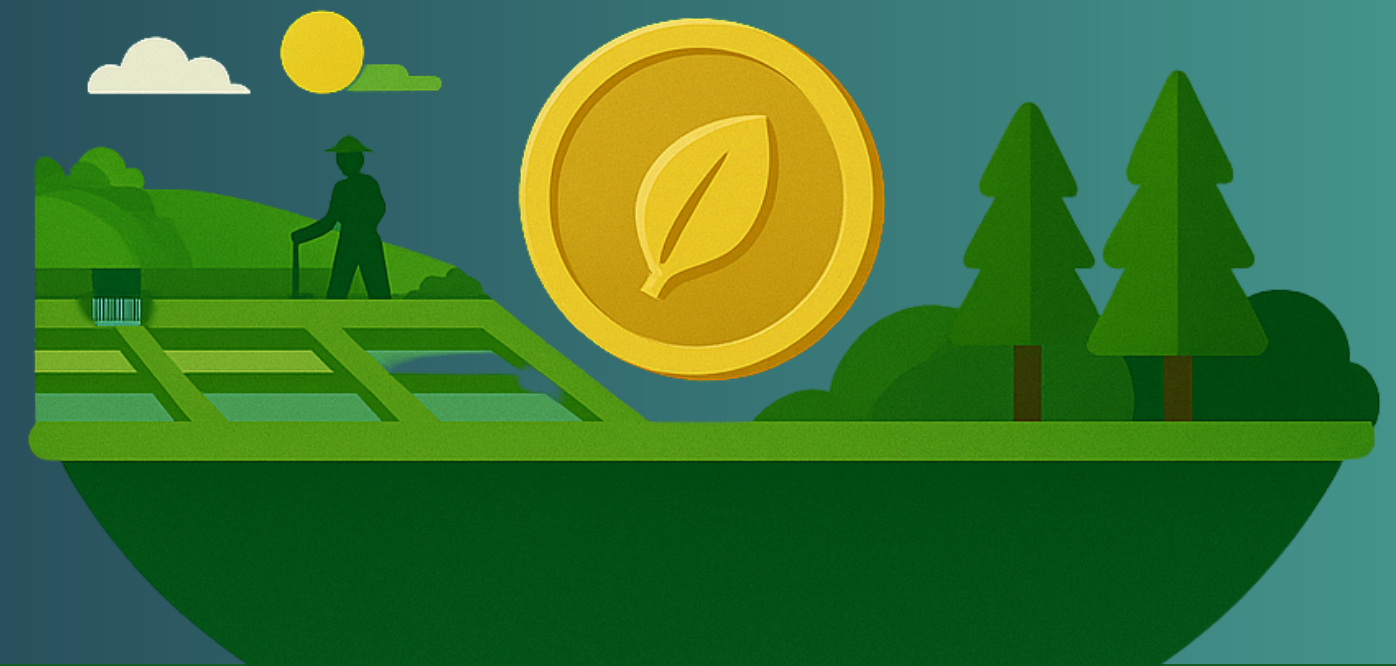
RED=EX

Accredited
custodian

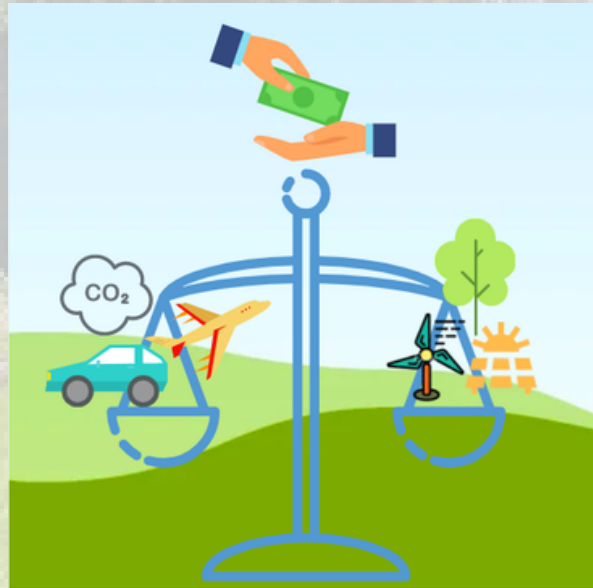


**SPIRO
CARBON**

MRV partner



Tokenomics : Primary Use Cases



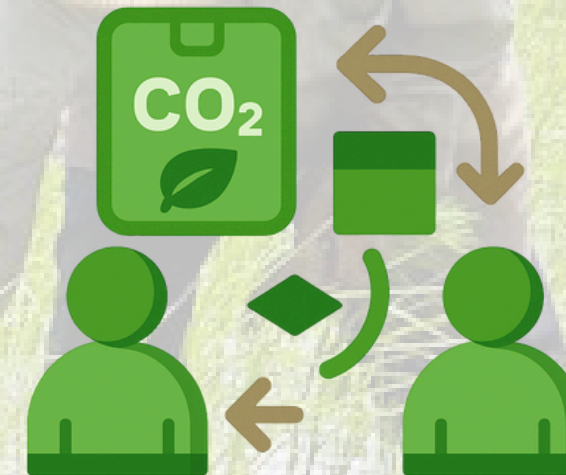
Carbon Offsetting

Redeem tokens to offset verified emissions.



Retirement & Certification

Tokens are burned and linked to immutable certificates.



Transferability

Can be transferred through approved marketplaces.



ESG Reporting

Digital proof for corporate carbon neutrality and sustainability claims.

Tokenomics : Further Use Cases



Carbon Credit Marketplaces

Integrate tokens into wider digital marketplaces



Tokenized Carbon Credit Bundles

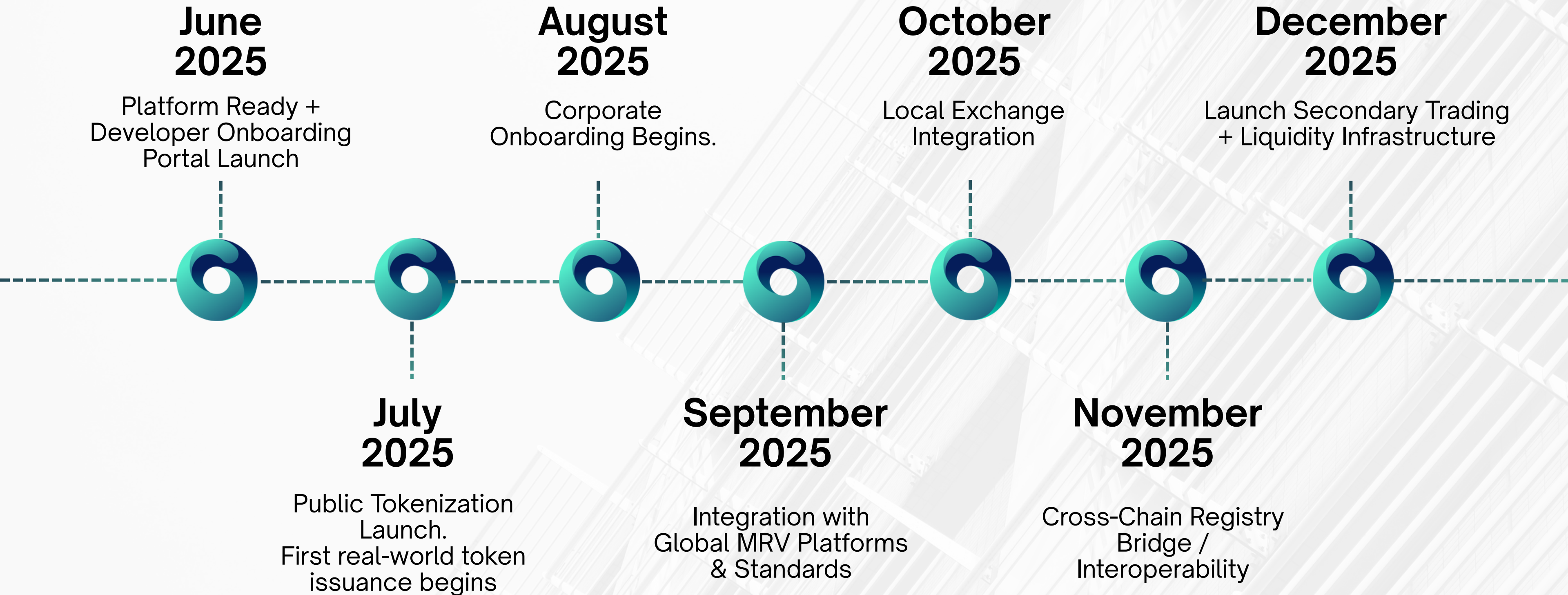
Bundle different token types into portfolios for corporate clients to easily offset against diverse SDGs.



Loyalty Rewards

Companies or individuals could earn rewards, badges, or bonuses for volume of emissions offset.

Roadmap



Terms & Conditions

The token is a utility token issued for the purpose of facilitating verified carbon offset transactions and sustainability-related services. It is not an investment instrument and does not guarantee any form of return, dividend, or financial profit. The following terms and conditions apply to all token holders:

1

Purpose & Usage

- Tokens may only be used within the authorized Blockedge ecosystem for offsetting verified carbon emissions and accessing sustainability-related platform features.
- Each token represents one metric ton of CO₂ equivalent and will be permanently retired (burned) upon redemption to ensure transparency and prevent reuse.

2

Transferability

- Tokens may be transferred between users within the approved Blockedge ecosystem or through compliant third-party exchanges, subject to regulatory approval (e.g., SEC).
- Any secondary market trading, if permitted, must adhere to applicable local regulations and the rules of the respective trading platforms.

3

Token Retirement & Expiry

- Once a token is used to offset emissions, it is permanently retired and cannot be reused or transferred.
- Retired tokens will be logged transparently on the blockchain along with retirement metadata and timestamp.

Terms & Conditions

4

Custody & Custodian

- Carbon credits and Renewable Energy Certificates (RECs) linked to the tokens are held in custody by Redex, an accredited and trusted custodian.
- The issuer ensures that each token is fully backed by an equivalent, verified carbon credit or REC until it is permanently retired.

5

Issuer Rights & Responsibilities

- Blockedge Technologies ensures the traceability and verification of underlying carbon credits, with the right to amend platform operations in accordance with regulatory compliance.
- In case of project termination or force majeure, the issuer will retire all unredeemed tokens and publish a public record detailing the closure process.

6

No Guarantee of Profit

- Tokens do not confer any equity, dividend, or ownership rights in the issuer's assets.
- Holding these tokens does not entitle the holder to any financial return, profit share, or investment gains.

Terms & Conditions

7

Legal & Regulatory Compliance

- All token issuance, usage, and associated smart contracts will comply with applicable digital asset regulations in Thailand and international jurisdictions where the token may be accessed.
- Any unresolved matters shall be governed by the applicable laws of the jurisdiction where the issuer is registered.

8

Risk Acknowledgement

- Users understand and accept the risks related to token usability, regulatory changes, and carbon market volatility.
- By holding or using Tokens, users agree to all applicable terms, disclaimers, and privacy policies made available by the issuer.

**Together, We Build a
Greener Future.**



Blockededge



DOM CHAROENYOS
Founder



KETSARA THIENCHAI
General Manager



THANARAT KUAWATTANAPHAN
IT Manager

Appendix

Blockedge Co.,Ltd led by Founder and CEO Mr. Dom Charoenyos, a seasoned expert in decentralized systems, enterprise IT, and digital transformation. His leadership ensures strategic oversight, technical excellence, and market alignment across all platform operations. Positioned at the intersection of sustainability and technology, Blockedge delivers the trust infrastructure needed to support next-generation carbon markets. As the official issuer of carbon credit tokens, Blockedge supports multiple recognized standards.

Each token issued is uniquely named and tailored to its underlying certification, enabling precise traceability and compliance. The platform manages the full token lifecycle—from verification and smart contract deployment to on-chain retirement—ensuring a high-integrity, tamper-proof system. Every token includes embedded metadata such as project origin, credit type, certification body, and co-benefit attributes. Unlike conventional registries, Blockedge provides enterprise-grade token architecture designed for regulatory readiness, ESG reporting, and ecosystem interoperability.