

CLenFi Rewards System - Full Concept Document

Executive Summary

TL;DR

CLenFi introduces a dual-layer rewards system designed to incentivize responsible borrowing behavior:

- **CT Points (Credit Tokens):** Non-transferable points earned for repayment discipline; used to reduce interest or redeem coupon NFTs
 - **CLEN Token:** Transferable utility token; stake to boost CT earnings, get fee discounts, and access premium rewards
 - **Governance:** Remains with Proof of Trust (PoT) 7-of-11 multisig; CLEN polls are non-binding community sentiment
 - **Sustainability:** Rewards funded by small portions of fees and penalties, with hard caps and epoch budgets to prevent over-issuance
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1. Objectives & Design Principles

Core Objectives

- **Behavior Change:** Incentivize on-time/early repayments and healthy utilization patterns
- **Prevent Wash Trading:** Reward based on interest actually paid, not raw spending volume
- **Simple Mental Model:** "Miles (CT)" reduce costs; "Fuel (CLEN)" provides boosts/discounts/premium access
- **Governance Minimalism:** PoT controls parameters; CLEN has no protocol control
- **Privacy & Compliance:** Identity verification via ZK-PAN; no raw personal data on-chain

Design Principles

- Sustainable reward economics
- Clear user value proposition
- Anti-gaming mechanisms
- Regulatory compliance focus
- Scalable technical architecture

2. System Assets

2.1 CT Points (Credit Tokens)

Type: On-chain points (ERC-20-like but non-transferable)

Earning Conditions:

- Repay on-time or early
- Maintain repayment streaks
- Keep responsible utilization (e.g., within 30-70% band)

Usage:

- **Primary:** Interest reduction at repayment
- **Secondary:** Coupon NFT redemption

Forfeiture Rules:

- Late \leq grace period: Reduced CT for cycle
- Late $>$ grace period: Forfeit cycle CT; redemptions locked while late
- Default: Wipe pending CT until cured

Important Note: CT \neq Credit Score. Credit Score (300-900) determines APR/limits; CT are rewards points

2.2 CLEN Token

Type: ERC-20 utility token with 1B maximum supply

Utility Functions:

- **Staking:** Stake \rightarrow sCLEN to boost CT earnings (+0-30% by lock length)
- **Fee Discounts:** Pay protocol fees in CLEN for discounts (up to 25% off fee line items)
- **Premium Access:** Gated coupon auctions and exclusive partner perks
- **Governance:** Snapshot polls for non-binding community sentiment

Acquisition Methods:

- Purchase on DEX (e.g., Base/Uniswap)
 - Airdrops/campaigns (PoT-controlled, optional)
 - Rewards marketplace participation
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3. CT Points Earning Mechanics

3.1 Core Formula

$$\text{CT_earned} = \min(\text{UserCap}, \text{EpochCap}, \text{interestPaid} \times \text{baseEarnRate} \times \text{TierMult} \times \text{ScoreFactor} \times (1 + \text{EarlyBonus}) \times (1 + \text{StreakBonus}) \times (1 + \text{sCLENBoost}))$$

Variables Explained:

- **interestPaid**: Interest component of bill (pre-CT application)
- **baseEarnRate**: e.g., 0.50 CT per \$1 interest
- **TierMult**: Risk tier multipliers (Bronze 0.8×, Silver 1.0×, Gold 1.2×, Platinum 1.5×, Diamond 1.8×)
- **ScoreFactor**: Linear mapping 300→0.5× to 900→1.5×
- **EarlyBonus**: e.g., +10% if paid ≥3 days before due
- **StreakBonus**: +10/20/30% at 3/6/12 consecutive on-time cycles
- **sCLENBoost**: +0-30% by lock length (1-12 months)
- **Caps**: UserCap per cycle and EpochCap to control issuance

3.2 Primary Redemption: Interest Reduction

Process:

- UI slider allows CT application
- Contract function: `applyCredit(debtId, creditAmount)`
- Interest payable reduced; principal unaffected

3.3 Secondary Redemption: Coupon NFTs

Features:

- ERC-1155 coupon catalog with merchant details, benefits, minimum cart, expiry, region
 - Redeem CT (optionally with small CLEN co-pay) → mint NFT
 - Off-chain code vault for one-time claim prevention
 - Expired NFTs may refund small CT fraction for UX fairness
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4. CLEN Tokenomics & Market Dynamics

4.1 Supply & Distribution

Maximum Supply: 1,000,000,000 CLEN minted to Treasury at TGE

Initial Allocation Framework:

- **Liquidity Pool Seed:** 5-10% (50-100M)
- **Rewards Pool:** 20-30% (locked; epoch drip by PoT)
- **Team/Founders:** ~10% (3-4 year vesting with cliffs)
- **Investors/Partners:** 10-15% (aligned vesting)
- **Treasury Reserve:** Remainder (future operations/liquidity/strategic)

4.2 Price Discovery

Initial DEX Price: Determined by LP seeding ratio

- Example: 50M CLEN + \$1,000,000 USDC → \$0.02/CLEN at genesis
- Thereafter: AMM price discovery (buys increase price; sells decrease)

4.3 Demand Drivers & Token Sinks

Demand Drivers:

- Staking for CT boost multipliers
- Fee payment discounts
- Premium coupon access/auctions

Token Sinks:

- Burn CLEN for premium/gated perks (configurable percentage)
- Optional: Portion of fee-in-CLEN burned, remainder to treasury

Supply Discipline:

- PoT controls reward emissions and campaign budgets
- Vesting schedules enforce healthy circulation growth

5. Governance & Control Structure

5.1 Proof of Trust (PoT)

Authority: Final decision-making power with 7-of-11 quorum requirement

Controls:

- Reward emission rates and earn rate parameters
- Tier multipliers and score factor curves
- Early repayment and streak bonus rates
- CT caps and fee discount rates
- Coupon categories, budgets, and merchant whitelists
- Circuit breakers for pausing rewards, coupon redemptions, fee discounts

5.2 Community Governance

Snapshot Polls: CLEN-weighted off-chain votes for community sentiment **Decision Process:** PoT reviews polls and decides; votes do not auto-change contracts

6. Technical Architecture

6.1 Smart Contract Structure (UUPS Upgradable)

RewardsHub (Core Orchestrator)

- Functions: `earnOnRepay()`, `applyCT()`, `redeemCoupon()`, `stakeCLEN()`, `unstake()`
- Events: CTMinted, CTApplied, CouponMinted, CLENStaked, BoostChanged, CouponRedeemed
- Roles: POT_ROLE, RISK_ROLE, REWARDS_ROLE

Supporting Contracts:

- **CTPoints:** ERC-20-like, non-transferable; mint/burn only by RewardsHub
- **CLEN:** Standard ERC-20; minted to Treasury at TGE
- **CouponVault:** ERC-1155 for inventory and metadata management
- **Treasury/Vesting:** Timelocked allocators and fee intake

6.2 Integration Points

- **Repay Module:** Exposes `applyCredit` functionality
- **ScoreEngine:** Read-only score/tier getters
- **Identity (ZK-PAN):** Uniqueness gate; one stream per user
- **DEX:** LP management via Treasury strategy

6.3 Security Measures

- UUPS + RBAC, pausable functionality, reentrancy guards, rate limits
- Comprehensive test coverage: unit + property (fuzz); fork tests for DEX paths

- Monitoring: Events indexed for dashboards and alerting
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7. User Journey Examples

7.1 First-Time User (Happy Path)

1. **Register** (ZK-PAN) → Credit NFT issued
2. **Spend** → Debt NFT minted
3. **Repay On-Time** → RewardsHub mints CT (vested until cool-off)
4. **Next Bill** → Apply CT to reduce interest or redeem coupon NFT
5. **Acquire CLEN** (DEX or airdrop), stake → higher CT earn & fee discounts

7.2 Experienced User (Streak Growth)

- Maintains 6-month on-time streak → StreakBonus +20%
- Stakes CLEN for +20% sCLENBoost
- CT redemption offsets interest monthly; occasional coupon NFT redemptions

7.3 Late Repayment (Minor)

- Within grace: CT for cycle halved; redemptions open after cure
- Score may dip slightly; next cycle incentives remain

7.4 Serious Delinquency/Default

- Cycle CT forfeited; redemptions locked
- After cure (repay dues), CT earning resumes next cycle

7.5 Coupon Redemption Process

- Browse CouponVault; redeem CT (+ optional CLEN co-pay)
- Receive coupon NFT; claim code; apply at merchant checkout
- If expired unused: optional partial CT refund (configurable)

7.6 Fee-in-CLEN Usage

- At repayment, choose "Pay protocol fees in CLEN" → receive discount (bounded by caps)
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8. Economic Parameters & Controls

8.1 Starting Parameters

Earning Rates:

- Base earn rate: 0.50 CT per \$1 interest
- Tier multipliers: 0.8× / 1.0× / 1.2× / 1.5× / 1.8× (Bronze→Diamond)
- Score factor: Linear map 300→0.5×, 900→1.5×

Bonus Structure:

- Early bonus: +10% if ≥3 days early
- Streak bonus: +10/20/30% at 3/6/12 on-time cycles
- sCLEN boost: +5/10/15/20/25/30% at 1/2/3/6/9/12 months lock

Risk Controls:

- Grace period: 7 days
- CT caps: maxCTperCycle (e.g., worth up to 50% of interest), maxCTperEpoch per user
- Fee discounts (CLEN): Up to 25% of fee line item; hard cap per user & epoch

8.2 Funding Sources

Revenue Allocation (parameterized):

- 1.5% transaction fee → up to 30% to Rewards Pool
 - Liquidation penalty → up to 5% to Rewards Pool
 - Unspent campaign budget rolls over
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9. Anti-Gaming & Risk Mitigation

9.1 Gaming Prevention

- No CT on spend; only on interest paid
- Cool-off period (24-72h) before CT usable
- Sybil-resistance: One ZK-PAN → one reward stream
- Utilization banding: Bonus only in target band
- State gates: Late/default locks redemptions until cured

9.2 Operational Controls

- Rate-limit coupon issuance; merchant caps; region/expiry control
 - Oracles and monitoring for abnormal activity loops
 - Circuit breakers for emergency situations
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10. Key Performance Indicators & Analytics

10.1 Behavioral Metrics (Weekly/Monthly)

- On-time repayment percentage
- Average Days Past Due (DPD)
- Default rate trends
- User LTV uplift vs baseline (control cohorts)

10.2 Rewards Metrics

- CT minted vs applied
- Percentage of interest offset by CT
- CLEN staking rate
- Fee-in-CLEN adoption rate
- Coupon redemption rate and breakage

10.3 Economic Sustainability

- Rewards Pool inflow vs outflow
 - Token circulation and velocity
 - Revenue impact from fee discounts
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11. Implementation Roadmap

Phase A: Testnet Deployment (Base)

- Deploy RewardsHub, CTPoints, CouponVault (test assets)
- Faucet CLEN (test) for staking/fee flows
- QA: Unit/property/fork tests; simulate edge cases (late, default, cure)
- UX polish: CT slider, fee-in-CLEN toggle, coupon gallery

Phase B: Mainnet TGE Launch

- Mint 1B CLEN to Treasury; set vesting schedules

- Seed LP (e.g., 50M CLEN + \$1M USDC → \$0.02 initial price)
- Enable CT on repay + apply to interest + fee-in-CLEN
- Weeks 2-6: Enable staking boosts → coupon NFTs
- Weeks 6+: Launch campaign engine and premium auctions

Phase C: Optimization & Expansion

- Tune parameters via PoT based on KPIs
 - Add merchant partners (D2C, OTT, mobility, food delivery)
 - Expand to multi-chain if needed (bridge utility, not governance)
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12. Frequently Asked Questions

General Questions

Q: Is CT a credit score? A: No. Credit Score (300-900) sets APR/limits; CT are rewards points to reduce costs and get perks.

Q: Do users get CLEN automatically? A: Not by repaying. They buy CLEN on DEX (or receive small airdrops) to unlock boosts/discounts/premium perks.

Q: Who decides parameters? A: PoT (7-of-11 multisig). Snapshot polls with CLEN are non-binding community sentiment.

Economic Questions

Q: Will CLEN inflate rewards dangerously? A: Most value distributed as CT (non-transferable); CLEN use is capped, with burns and vesting to control supply.

Q: How is the first price set? A: By LP seeding ratio at listing (e.g., 50M CLEN : \$1M USDC → \$0.02).

13. Glossary

Term	Definition
CT Points	Non-transferable reward points for repayment behavior
CLEN	Transferable utility token for boosts, fee discounts, and premium access

PoT	Proof of Trust governance (7-of-11 quorum)
ZK-PAN	Zero-knowledge identity—uniqueness without exposing PAN
Credit NFT	Identity-bound credit line artifact
Debt NFT	Each spend/loan occurrence and its lifecycle
Coupon NFT	ERC-1155 reward voucher token
sCLEN	Staked CLEN tokens with time locks for boosted rewards

14. Action Items Checklist

Founders/Tokenomics

- ☐ Approve initial MAXCAP, vesting, LP seed size, fee slices to rewards
- ☐ Decide initial parameter table (earn rates, boosts, caps)
- ☐ Establish merchant pipeline for coupon inventory

Product/Design

- ☐ Design CT apply slider interface
- ☐ Implement fee-in-CLEN toggle functionality
- ☐ Create coupon gallery UX
- ☐ Design streak badges and utilization band hints
- ☐ Build redemption flow interfaces

Engineering

- ☐ Implement RewardsHub, CTPoints, CouponVault, sCLEN staking contracts
- ☐ Wire applyCredit to Repay module
- ☐ Add comprehensive events and indexers
- ☐ Complete test suite (unit/fuzz/fork) + monitors & dashboards

Operations/Governance

- ☐ Set up PoT multisig with timelocks
 - ☐ Implement emergency pause mechanisms
 - ☐ Create Snapshot space for non-binding polls
 - ☐ Prepare governance disclosure pages
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Marketing One-Liner

"CLenFi now rewards repayment discipline with CT points to lower your interest, while the CLEN token unlocks boosts, fee discounts, and premium perks—governance stays secure under PoT, and rewards are sustainably funded from protocol fees."