



SDG BLOCKCHAIN ACCELERATOR

Impact Measurement Framework

Atlas Ledger

1. Project Information

- **Project Name:** Atlas Ledger
- **Challenge & UNDP Office:** Reforestation projects with UNDP Burkina Faso
- **Document Version:** V 1.0

2. SDG Alignment

SDG 13: Climate Action

- **Target:** Reduce carbon emissions through verified tokenized offsets
- **Indicator:** Tons of CO₂ offset per transaction

SDG 15: Life on Land

- **Target:** Scale reforestation and sustainable land management projects
- **Indicator:** Hectares of land restored / number of trees planted through financed projects

SDG 1: No Poverty

- **Target:** Channel climate finance to vulnerable communities in Africa and beyond
- **Indicator:** Number of households or farmers receiving tranche-based disbursements

SDG 17: Partnerships for the Goals

- **Target:** Build cross-sector collaborations for climate impact verification and finance
- **Indicator:** Number of partnerships UN agencies, local financial providers, local communities, local cooperatives, local associations etc...

3. Key Performance Indicators (KPIs)

KPI	Measurement Method	Target / Threshold	Notes
Successful validator transactions	On-chain transaction logs via Cardano	95%+ success rate	Monitored via Blockfrost API
Climate project contracts deployed	Backend database + contract deployment tracking	10+ projects/year	Tracked via Project entities and V6ContractDeploymentService
Trees planted	Projects entries and self assessment	100.000 trees/year	Monitored by the validators
CO2 sequestered	Calculated from the self assessment	3.000t CO2/project	Monitored by the validators
Climate project milestones completed	Smart contract milestone payouts	100% milestone completion tracking	Tracked via milestone_ix progression
Active donors/users onboarded	Backend database + wallet tracking	250 unique wallet addresses	Tracked via DonorContribution entities
Funds locked in smart contracts	UTxO analysis on Cardano blockchain	Real-time ADA/StableCoins amounts	Monitored via V6ProjectStatusService
Project milestone success rate	Contract payout completion vs. deployment	75%+ projects complete all milestones	Tracked via project status analytics

4. Tracking Methods

- **On-chain Metrics:**

- **Transaction success rate:** Monitored via Blockfrost API with retry logic and rate limit handling
- **ADA locked/released:** Real-time UTxO monitoring at contract addresses using `fetchUtxosWithRetry`
- **Milestone progression:** Tracked via datum `milestone_ix` field in smart contract validation
- **Payout completions:** Contract-to-beneficiary transaction monitoring

- **Off-chain Metrics:**

- **User engagement:** Admin dashboard tracking via `AdminController` endpoints
- **Monitoring:** Project monitoring from 3rd party data validated by the climate experts (validators)
- **Project analytics:** Comprehensive `V6ProjectStatusService` analytics
- **Donor contribution tracking:** `DonorContributionService` with milestone-specific statistics
- **Transaction history:** Full audit trail via `Transaction` entity with metadata

All transactions are logged with milestone context and tracked via `V6ProjectStatusService`. Weekly reconciliation occurs through blockchain sync operations.

5. Baseline vs Projected Outcomes

Metric	Baseline	Projected Outcome
Climate project contracts deployed	0	10 - 1st year
Trees planted	0	100.000
CO2 sequestrated	0	30.000 tCO2
Successful validator transactions	N/A	≥95%
Climate project milestones completed (payout)	0	100%
Active donors/users onboarded	0	250
Funds locked in smart contracts	0	+ 100000 ADA
Project milestone success rate	N/A	75%

6. Monitoring & Reporting Plan

Frequency: Real-time monitoring with daily aggregation and weekly reporting

Responsible Party: Admin / Project Validator

- **Format:**
 - **Real-time:** Admin dashboard with treasury, donations, and system health endpoints
 - **Daily:** Automated blockchain sync via V6BlockchainSyncService
 - **Weekly:** Comprehensive project analytics via getV6ProjectAnalytics
- **Tools:**
 - **Blockfrost API:** Cardano blockchain data access
 - **V6 Service Layer:** Comprehensive monitoring and analytics
 - **Admin Dashboard:** Real-time system health and treasury monitoring
 - **Database Analytics:** PostgreSQL-based reporting with TypeORM

7. Risks & Mitigation

- **Risk:** Blockfrost API rate limiting affecting data accuracy
Mitigation: Implemented exponential backoff retry logic with intelligent caching (lines 359-482 in OracleContractsV6AdminService)
- **Risk:** Data inconsistency between on-chain/off-chain tracking
Mitigation: Automated blockchain sync operations and transaction reconciliation via syncV6ProjectStatus
- **Risk:** Smart contract validation failures
Mitigation: Comprehensive error parsing and user-friendly error messages via parseV6Error
- **Risk:** Donor contribution tracking gaps
Mitigation: Atomic donor contribution records with notification system and archive/restoration capabilities