



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 sequestered	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