



# SDG BLOCKCHAIN ACCELERATOR

## Impact Measurement Framework

## 1. Project Information

- **Project Name:** *AFRIKABAL*
- **Challenge & UNDP Office:** *Malaysia*
- **Document Version:** 1.0.0

## 2. SDG Alignment

- **SDG 9: Industry, Innovation and Infrastructure**
  - **Target (9.3):** “Increase the access of small-scale industrial and other enterprises, in particular in developing countries, to financial services, including affordable credit, and their integration into value chains and markets.”
  - **Afrikabal Context:** Afrikabal provides digital channels (web, mobile, USSD) that integrate underserved farmers and cooperatives into regional and global value chains, giving them verifiable transaction records that improve access to finance and markets.
  - **Official Indicator (9.3.2):** Proportion of small-scale industries with a loan or line of credit.
  - **Afrikabal Proxy Indicator:** Number of cooperatives/farmers accessing trade opportunities through Afrikabal’s platform and number of transactions verifiably logged.
- **SDG 16: Peace, Justice and Strong Institutions**
  - **Target (16.6):** “Develop effective, accountable and transparent institutions at all levels.”
  - **Afrikabal Context:** By anchoring trades on IPFS/chain and using escrow-like flows, Afrikabal provides tamper-proof, auditable records that ensure accountability and reduce fraud/disputes in agri-trade.
  - **Official Indicator (16.6.2):** Proportion of population satisfied with their last experience of public services.
  - **Afrikabal Proxy Indicator:** % of transactions settled transparently and % of users reporting satisfaction with Afrikabal’s accountability mechanisms.

- **SDG 10: Reduced Inequalities**

- **Target (10.2):** “Empower and promote the social, economic and political inclusion of all, irrespective of age, sex, disability, race, ethnicity, origin, religion or economic or other status.”
- **Afrikabal Context:** Afrikabal reduces inequality by giving smallholder farmers, women, and rural communities inclusive digital access to markets that were traditionally captured by middlemen.
- **Official Indicator (10.2.1):** Proportion of people living below 50% of median income, by age, sex and disability.
- **Afrikabal Proxy Indicator:** Number of smallholder farmers and cooperatives onboarded and actively trading, disaggregated by gender and region.

### 3. Key Performance Indicators (KPIs)

KPI	Measurement Method	Target / Threshold	Notes
End-to-end success rate (product)	Confirmed / submitted across product flows	$\geq 99\%$	Pilot evidence on Preview confirms deterministic pipeline
Median confirmation time (product p50)	Client timestamps vs chain confirm	$\leq 30\text{--}45\text{s}$ (network-dependent)	Preview p50 recorded in pilot; mainnet KPIs tuned per SLA
Service availability (product)	Uptime of API/gateway & orchestrator	$\geq 99.5\%$	Synthetic checks + provider status
Evidence completeness	Every run has logs + hash references	100%	Immutable hashes + screenshots retained

## 4. Tracking Methods

- **On-chain:**  
Policy/address/tx endpoints (Blockfrost or node-backed), confirmation timestamps, supply deltas.
- **Off-chain:**  
API gateway logs, orchestrator metrics, dashboards; regular KPI rollups.
- **Verification:**  
Cross-check on-chain vs off-chain; store run artifacts with hashes.

## 5. Baseline vs Projected Outcomes

Metric	Baseline	Projected Outcome
End-to-end success rate	Pre-pilot baseline	$\geq 99\%$
Median confirmation time (p50)	N/A	$\leq 30\text{--}45\text{s}$ (network-dependent)
Availability	N/A	$\geq 99.5\%$
Evidence completeness	Ad-hoc	100% of runs
Partner onboarding lead time	Varies	$\leq 1$ day

## 6. Monitoring & Reporting Plan

- **Frequency:** Quarterly reporting
- **Responsible Party:** Project Manager / Blockchain Ops Team
- **Format:** On-chain logs + dashboard summary + PDF report for stakeholders
- **Tools:** Ogmios, Kupo, internal reporting dashboards

## 7. Risks & Mitigation

- Risk: Delayed oracle updates
  - Mitigation: Redundant oracle feeds
- Risk: Data inconsistency between on-chain/off-chain
  - Mitigation: Weekly reconciliation script

## 8. Evidence from Previous Pilot / PoC

*This summarizes what we have already proven on Cardano Preview and the operational baselines we carry into the pilot.*

- On-chain execution path validated: build → sign → submit → confirm with  $\geq 96$ –100% success rate across latest runs.
- Native token lifecycle exercised: minted and later burned proof tokens (AFRIKABALPROOF) to validate policy control and ledger accounting.
- Operational evidence captured: deterministic builds, transaction logs with timestamps, provider responses, and cross-checks via explorer APIs.
- Address lifecycle: wallet generation, address derivation, and balance/UTxO queries confirmed; faucet funding and spend flow verified.
- Runbook readiness: standard commands for submit/mint/burn, environment setup (.env), and health checks (`/healthz`, `/readyz`) executed successfully.
- Screenshots and hashes archived: console logs, policy IDs, tx hashes, and explorer views captured and referenced in annex.

*Pilot-relevant KPIs already observed*

KPI	Observed (PoC)	How Verified
Tx success rate (submit→confirm)	96–100% across latest sequences	Provider response + explorer confirm time
Median confirm time (p50)	30–45s (Preview)	Client timestamp vs block time
Evidence completeness	100% for scripted runs	Log bundle + tx hash + screenshot
Operational readiness	Deterministic build & env scripts	Re-run reproducibility

## 9. Journey Ahead Plan (Q4 2025 → Feb 2026)

*What we do next to move from pilot to scaled operations; each milestone has an impact KPI and a clear verification method.*

When	Milestone	Impact KPI Target	Verification / Owner
Q4 2025 (Oct)	Mainnet-hardening kick-off (fees, retries, policy review)	Tx success $\geq 99\%$ , p95 submit $< 3s$	Load tests + live tx window / Backend SRE
Q4 2025 (Nov)	Partner onboarding wave 1 (buyers, co-ops, farmers)	$\leq 1$ day lead time; $\geq 60\%$ farmer activation $\leq 14d$	Onboarding logs + cohort report / Ops
Q4 2025 (Dec)	HA rollout validated in staging (Active-Active + semi-sync DB)	API uptime $\geq 99.9\%$ ; RTO $< 2m$ ; RPO $< 15s$	Failover drills + dashboards / DevOps
Q1 2026 (Jan)	Payments & settlement flows live (escrow release)	Disputes $\leq 2/100$ trades	Txs + case tracking / Product+Ops
Q1 2026 (Feb)	Impact analytics v1 (gender/region), evidence quality v1	$\geq 30\%$ female-led co-ops; evidence completeness 100%	M&E dashboards + CID sampling / PMO+QA

## 10. Assumptions & Dependencies

- Stable provider access (Blockfrost or fallback) within published rate limits.
- Partner data availability for KYC/onboarding within 24–48h of request.
- Regulatory clearance for pilot geographies (payments/KYC tier appropriate).
- Faucet/mainnet ADA availability for fees during test/pilot windows.

## 11. Key Risks & Mitigations

Risk	Mitigation
Network/provider instability	Exponential backoff, fee tuning, fallback path, clear user comms
Onboarding friction (wallet/DID)	Assisted onboarding + USSD for farmers + default wallet path
Data mismatch on/off chain	Weekly reconciliation jobs; idempotency; alert $> 1\%$ variance
Oracle gaps/latency	Redundant sources; cached LKG; stale-data alarms