



The trusted information layer for global **agricultural supply chains** — on Cardano.

5am.earth Foundation is building open infrastructure that gives smallholder farmers a verifiable identity and connects them to credit, insurance, and fair pricing for the first time.

TREASURY ASK

10,000,000 ADA

PROGRAMME DURATION

18 months

STATUS

Final

13 May 2026

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SECTION 01

Executive Summary

5am.earth Foundation is building an open trust layer for agricultural supply chains on Cardano. Farmers, farms, land records, crop information, credentials, and transaction histories are verified once and reused many times by different applications, with appropriate privacy and governance. The Foundation is the neutral steward of the shared infrastructure; commercial partners build on top of it. Verify Once. Use Many. Transform Lives.

This proposal asks the Cardano Treasury for 10,000,000 ADA over 18 months (July 2026 – December 2027). The ask is a hard cap and is structured around three milestone-gated payments. It is designed to stand up the 5am.earth Foundation, close the loop with end-to-end use cases, and accelerate the flywheel which carries this initiative to a self-sustainable future.

The 18-month programme delivers across India, Cambodia, and Kenya and contributes directly to Cardano's Vision 2030 KPIs — monthly active users on the application layer, on-chain transaction volume across finance and traceability, and TVL through stablecoin-rail loans. The headline commitment is 500,000 registered farmers by programme end, reached through a three-milestone arc: from M1 stand-up at Month 6, through M2 closed loop at Month 12 — named application pilots with Zengate, Andamio, and Seedstars — to M3 self-sustaining at Month 18, with the Foundation sustained by institutional backing and commercial revenue.

The evidence base is already live. Project Swaminathan operates on Cardano Mainnet across six districts of Amravati, Maharashtra, registering farmers and farms with self-sovereign identity and on-chain land records. As of May 5, 2026, 10,500 registrations have been created, with 500 per day. Public on-chain evidence is presented.

The field network behind this evidence has institutional depth: Syngenta Foundation India already works with 3 million farmers and is partnering with IFC and the World Bank on a path to 100 million. Seedstars enables the microfinance layer — loan origination, credit scoring from verified trust-layer data, and the operational infrastructure for farmers to access finance on Cardano stablecoin rails.

By the end of the funded period, Cardano receives a live agricultural trust layer with real users, real field operations, real applications, and a credible path along the 2030 trajectory.

SECTION 02

Core Thesis and Problem

Many agricultural use cases are each building their own information layer. Traceability platforms, finance providers, compliance tools, carbon projects, food companies, farmer applications, and government programmes all need trusted information about farmers, farms, production, and transactions. If each one verifies separately and stores separately, the result is fragmentation: duplicated cost, repeated farmer onboarding, isolated databases, and limited ability for one application to rely on another.

5am.earth's thesis is that agricultural trust becomes more valuable as shared infrastructure. Farmers, farms, land records, crop information, sustainability data, credentials, and transaction histories can be verified once and reused many times by different applications, with appropriate privacy and governance. This creates better economics for the whole ecosystem: no single use case has to carry the full cost of verification, and every new use case increases the value of the trust layer for everyone else.

Agricultural supply chains already depend on trust, but the trust infrastructure is fragmented. A lender needs to know whether a farmer exists, what land they farm, what they grow, and whether they have a credible production history. A food company needs to know where supply comes from and whether it meets quality, sustainability, and compliance requirements. An insurer needs to understand farm-level risk. A carbon or biodiversity project needs evidence that a claim is real. A government programme needs to know that benefits are reaching the right farmer.

Much of this depends on the same underlying information: farmer identity, farm location, land boundaries, crop data, production history, sustainability indicators, service relationships, and transaction records. Today that information is collected separately by each programme, company, or application. The same farmer is onboarded multiple times. The same land is mapped multiple times. The same crop or sustainability claim is checked multiple times. Each actor stores the result in its own system, under its own rules, for its own use case.

This creates four problems. Verification is expensive because the same facts are checked again and again. Farmers carry the burden of repeated onboarding without gaining a portable record they can reuse. Applications cannot easily build on each other's information because the data is locked in separate systems. Trust does not compound across the ecosystem, because every use case starts from its own database.

The cost of onboarding and verifying farmers and farms can be prohibitive for a single application. A microfinance product, an insurance product, a carbon project, a traceability system, or a certification tool may each need the same farmer and farm data, but none of them can efficiently pay to build full coverage alone. This limits coverage, slows adoption, and keeps many agricultural use cases stuck in narrow pilots instead of reaching the scale where they become economically meaningful.

The result is a market full of useful projects, but without shared infrastructure underneath them. Traceability, credit, insurance, carbon, certification, government programmes, and supply chain applications all need trusted agricultural information. Without an open trust layer, each one has to recreate part of the foundation for itself. 5am.earth proposes that foundation: an open, governed, Cardano-anchored trust layer that any qualifying application can rely on.

SECTION 03

Bootstrap Opportunity and Project Swaminathan

The hardest part of building an agricultural trust layer is not writing records to a blockchain. It is getting reliable information from the field at meaningful scale. The agri-entrepreneur model solves that.

Agri-entrepreneurs are the human last-mile layer for agricultural transformation. They work directly with farmers, collect and validate information, provide services, support adoption, and connect farmers to markets, finance, inputs, and knowledge. They are already present in the real-world relationships where trust is created. For 5am.earth, AEs are not only a distribution channel — they are the human trust layer that connects farmers, farms, field validation, services, and market access.

The Global AE Academy turns this model into a scalable global platform. Founded by IFC – The World Bank Group, Corteva Agriscience, and SAFIA, the Academy equips rural youth, especially women, with technical, business, and leadership capabilities to deliver climate-smart, regenerative, and market-linked agricultural services in their communities. The Academy is the institutional vehicle for replicating the AE model across emerging markets, with a multi-country scale plan in collaboration with the World Bank targeting 100 million farmers.

In India, Syngenta Foundation India has demonstrated the AE model at significant scale: 26,000+ agri-entrepreneurs, 2.6M-2.7M farmers reached, and 400,000-500,000 new farmers added per year. This network gives 5am.earth an immediate bootstrap path. The trust layer can grow from real farmer relationships and field operations rather than from abstract user acquisition.

Cambodia and Kenya during the funded period are the first two countries beyond India in this scale path. The architecture, governance, and technical components of the trust layer are sized for multi-country deployment from the start.

Project Swaminathan is where the thesis becomes real. It is the first deployment showing how the AE model bootstraps an agricultural trust layer on Cardano. Working with Syngenta Foundation India, Project Swaminathan registers farmers and farms on Cardano Mainnet across six districts of Amravati, Maharashtra: Achalpur, Anjangaon Surji, Chandurbazar, Daryapur, Morshi, and Katol. Each registered farmer receives a self-sovereign identity, and each farm registration creates an on-chain record of verified land and crop details.

The pilot phase ran January–March 2026 and validated 1,056 farms on Cardano Mainnet across three phases with a 100% blockchain success rate. Scale-up began on April 1, 2026. Field operations capture 500+ farmer registrations per day. A same-day critical patch was deployed during pilot Phase 3 with zero downtime — operational evidence that the field-to-Mainnet pipeline can absorb real-world incidents. As of May 5, 2026, 10,500 farmers/farms have been registered on Mainnet, with 500 registrations per day.



Project Swaminathan in the field — AEs registering farmers and farms on Cardano Mainnet across Amravati, Maharashtra.

Project Swaminathan turns AE-supported field activity into Cardano-native records. Field teams and AEs onboard farmers, capture farmer and farm information through the application, record land and crop details, and submit the information into the technical pipeline that creates verifiable Cardano Mainnet records. AEs are also trained on the application and introduced to the blockchain scope of the programme, making them part of both the operational field network and the human trust layer behind the infrastructure.

This matters because it moves the proposal out of theory. The field network exists. Farmers are being onboarded. Farm information is being captured. Cardano records are being created. This proposal is not asking the Cardano community to fund a concept before there is evidence that it can touch the real world. It is asking the Treasury to help scale a live path from field relationships to verifiable infrastructure.

Public on-chain evidence is available through CardanoScan at the Project Swaminathan address:

<https://cardanoscan.io/address/01e9b56233ca537ab6b3096e886f4a54fbd2fb92b4b3bf52d8e1e71c2a83c16d3d0350fd7927937389b91419299f913ee8515168ab3fa6e5dd>

The Project Swaminathan pilot report (SFI) documents the field operating model, validation methodology, and pilot-phase outcomes:

https://docs.google.com/document/d/1icY_OPMBYlptkgxN47egvOTa_9o4-3fi/edit

Sample transactions, policy IDs, and the smart contract address are accessible through the CardanoScan address above.

Project Swaminathan also originated as the Cardano Catalyst Fund 13 project (project ID 1300178) — a satellite oracle combining Earth Observation data with Cardano-based blockchain infrastructure for smallholder farmers. Catalyst Milestone 4 is currently in delivery. The Use-Case Research Report and the Design Document and Project Plan are public on the project's GitHub repository.

The commercial activity around the network is already moving. Syngenta Foundation India brings the agri-entrepreneur and farmer network. PepsiCo has committed full two-year funding for 2,200 agri-entrepreneurs. Cargill and other food companies are active supply chain partners in the AE programme. Maharashtra State Government has identified an agricultural information trust layer as a public good and is actively following the implementation. Treasury funding does not replace this commercial and institutional activity; it funds the open trust layer that allows the activity to become verifiable, interoperable, and Cardano-native — and by joining a live project rather than building from scratch, the trust layer onboards farmers at a fraction of greenfield cost.

SECTION 04

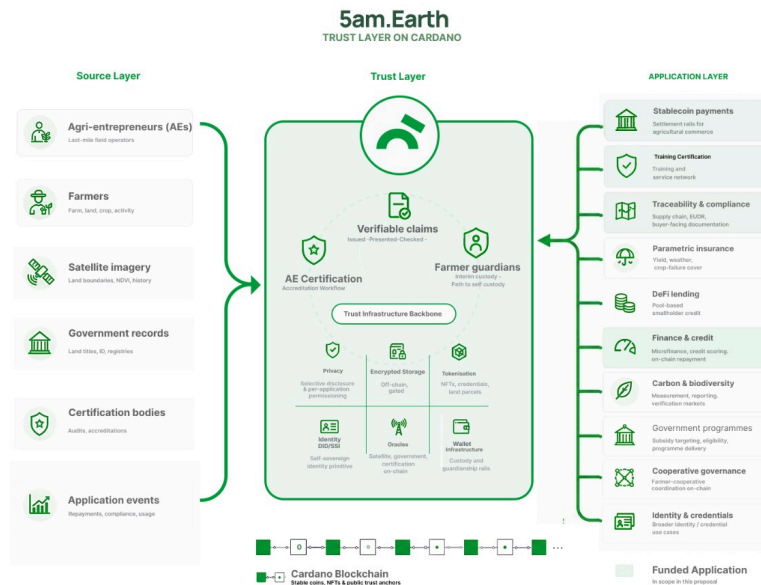
Shared Trust Layer Architecture

Project Swaminathan establishes that the field-to-Mainnet path is real. The next question is what shape the trust layer takes once it has to serve many applications, many countries, and many partners — not just one live deployment.

The trust layer is the technical and governance infrastructure that lets agricultural information become verifiable without being captured by one company. It records and verifies information on Cardano so that supply chains, lenders, insurers, governments, and farmers can rely on the same answers to basic questions: Who is the farmer? What land is being farmed? What crop or production activity is connected to that land? What commitments, certifications, services, or financial products are attached? What evidence exists, and who can rely on it?

5am.earth is not proposing a public database of farmer data. The trust layer makes the important claims verifiable, auditable, and usable by applications, while sensitive information remains private or selectively disclosed. Cardano serves as the public verification anchor; the rest of the stack handles private storage and permissioned access.

The architecture is structured in three layers.



Three-layer trust layer architecture: Source Layer → Trust Layer → Application Layer.

Field / Source Layer

The source layer is where information enters the system. Sources include agri-entrepreneurs, farmers, farm and land records, crop details, field validation activity, satellite observations, AE training and credential records, and application events such as traceability, credit scoring,

repayments, or compliance updates.

The source layer is open by design. Satellite providers, government records, certification bodies, financial partners, buyers, and future applications can all become sources of trusted agricultural information, provided they meet the trust layer's verification, permission, and governance rules. This prevents the system from becoming another closed data platform and lets the trust layer improve as new sources are added. In Project Swaminathan, this already begins with AE-supported farmer onboarding, farm registration, land record capture, crop details, and Cardano Mainnet records.

Trust / Verification Layer

The verification layer turns raw inputs into trusted information. It links farmers, farms, AEs, land records, crop information, satellite observations, credentials, services, and application events into a coherent record. It creates verifiable claims, anchors the necessary proofs or records on Cardano, manages privacy and permissions, and preserves the audit trail applications need in order to rely on the information.

The Cardano components for this layer are already implemented and operational, not speculative builds. The trust layer assembles components that have been built and proven on Cardano:

- **Smart contract architecture, oracle integration, and on-chain data pipeline** — Cardano-side smart contracts, application-layer API integrations, satellite-to-Cardano oracle path, on-chain data pipeline, and developer tooling, developed by AIQuant and Anastasia Labs. Operational on Project Swaminathan today.
- **Satellite imagery and remote sensing** — land boundary verification, NDVI crop monitoring, 12-year crop history, four verifications per farm per year, provided by DigiFarm.
- **Self-sovereign identity (DID/SSI)** — farmer identity linked to land, credentials, and financial records, using the Veridian DID stack. Mature DID/SSI implementation on Cardano.
- **AE credentials and reputation** — training credentials, contribution tracking, and accreditation workflow, using Andamio. Production credential infrastructure.
- **Tokenisation (NFT)** — minting for land parcels, farmer credentials, or harvest batch certificates, using NMKR.

The maturity of these components is what makes the 18-month timeline credible. The work is integration and scaling, not greenfield development.

Cardano plays two distinct roles in this architecture. As a DID-side reference layer, Cardano anchors trust snapshots — trusted issuers, active AEs, approved schemas — providing tamper evidence, timestamping, and auditability without storing the DIDs or credentials themselves. As an asset settlement layer, Cardano carries stablecoin payments, land parcel NFT representations, and on-chain transaction records. The two roles have different scaling and design concerns; the architecture keeps them distinct so identity operations remain off-chain (Veridian / KERI) while Cardano contributes trust transparency and asset settlement.

Self-sovereignty is the architectural target. The trust layer recognises that full key custody by a smallholder farmer is rarely the most practical first step, so it supports guardianship — where a trusted institution or AE holds keys on the farmer's behalf — as a necessary interim approach with a defined path toward farmer-held self-custody over time.

Application / Access Layer

The access layer is how applications use trusted information. Applications do not rebuild farmer onboarding, farm verification, land boundary checks, or AE reputation from scratch. They connect to the trust layer through APIs, credentials, selective disclosure, and application-specific workflows. The first application paths — Andamio for AE certification, Zengate for traceability and compliance, and Seedstars SIGMA for finance and credit — are detailed in the next section.

On-Chain, Off-Chain, Selectively Disclosed

The handling principle that holds the architecture together:

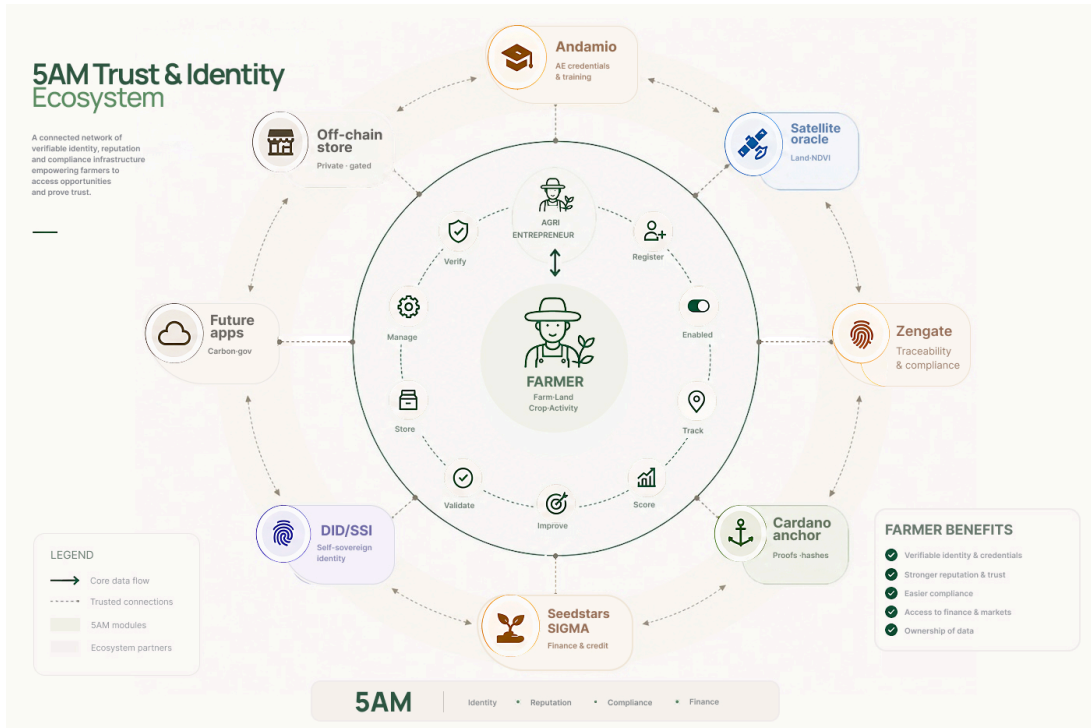
- **On-chain** — proofs, hashes, credentials, transaction events, policy IDs, selected records, verifiable anchors that require public auditability.
- **Off-chain / private** — sensitive farmer personal data, detailed financial data, documents, raw images, and any information that should not be publicly exposed.
- **Selectively disclosed** — identity attributes, farm attributes, credit-relevant signals, compliance evidence, or credentials shared with authorised applications under agreed permissions.
- **API / application access** — approved applications access permitted information and proofs through the application layer rather than scraping a public database.

This is the single sharpest answer to the most common misread of the proposal: the trust layer is not a public database of farmer data; it is a verification and access layer.

A Worked Example

A farmer in Amravati joins Project Swaminathan through their AE. Their identity, farm location, land boundary, and crop information are captured and verified — pre-captured from satellite imagery via DigiFarm, validated by the AE in the field, and registered against the farmer's self-sovereign identity. Cardano anchors the proofs, hashes, credentials, and transaction events; sensitive personal and financial data remains off-chain, private, or selectively disclosed. From this single verified base, the farmer gains a verifiable identity, a growing reputation, easier compliance, and access to finance and markets. Andamio recognises and certifies the AE training behind the relationship; Zengate uses the verified farm-origin information for traceability to buyers; Seedstars SIGMA uses the same base for credit scoring, underwriting, and repayment history that strengthens the farmer's financial reputation. Future applications reuse the same record without re-onboarding the farmer.

This is the architecture behind "verify once, use many times".



The farmer-centric trust and identity ecosystem: a single verified base supports identity, reputation, compliance, and finance across applications.

Existing in Project Swaminathan vs Expanded by the Treasury Programme

Project Swaminathan already includes AE-supported farmer onboarding, farm registration, self-sovereign identity, Cardano Mainnet records, AE field workflows, and the first working connection between agricultural activity and on-chain infrastructure. The Treasury programme expands this into a reusable trust layer: stronger DID/SSI architecture, enhanced decentralization across identity, storage, and governance, satellite/oracle verification at production scale, AE credentials and reputation, privacy and selective disclosure, application APIs, and first application integrations for traceability/compliance and finance/credit. Detailed technical implementation will be locked with relevant cohort partners during M1. The funded-period application paths that consume this trust layer — AE certification, traceability and compliance, and finance and credit — are the subject of the next section.

SECTION 05

Application Layer

5am.earth is not a single app. It is infrastructure for many applications. The Foundation keeps the shared layer open and credible so that many partners can build on it without one partner controlling the underlying trust system.

A shared trust layer changes the economics of agricultural applications. The cost of onboarding and verification is carried once, then reused across many use cases. A farmer or farm record created for one purpose can also support finance, insurance, traceability, certification, carbon, government programmes, and other applications without each one rebuilding the same trust base from scratch. A single application may not be able to justify the full cost of onboarding a large farmer base; when many applications can rely on the same verified information, the cost becomes shared and the value of coverage compounds. The principle is: verify once, use many times.

A verified farm boundary collected for farm registration can later support crop insurance, sustainability monitoring, carbon measurement, certification, buyer traceability, loan underwriting, and government programme eligibility. A verified farmer identity used for onboarding can become the basis for wallet access, training credentials, credit history, repayment records, and future financial services. Each new use case adds value to the same base record. Each new verified record makes more applications possible.

Funded-Period Application Paths

During the funded period, 5am.earth focuses on three concrete application paths. These three paths demonstrate the multi-application thesis without committing to deliverables that partners cannot yet confirm.

1. AE CERTIFICATION AND REPUTATION — ANDAMIO

Andamio is the education and reputation path for agri-entrepreneurs. AEs are not only a distribution channel; they are part of the trust infrastructure. Their training, onboarding activity, field validation contributions, and service history can become verifiable credentials and reputation records.

Andamio issues on-chain AE training credentials, records training completion, farmer onboarding, and field validation contributions, and links AE reputation with Seedstars credit and repayment data over time. If the system knows which AE onboarded a farmer, what training that AE completed, how much field activity they performed, and what outcomes are associated with their farmer portfolio, the human trust layer becomes visible and reusable.

2. TRACEABILITY AND COMPLIANCE — ZENGATE GLOBAL

Zengate Global is the traceability, compliance, and trade application partner. Zengate converts verified farm-origin information into supply chain workflows that serve buyers, brands, traders, and compliance requirements. The Zengate path delivers regulatory-compliant B2B trade infrastructure on the 5am.earth trust layer: export documentation, EUDR and sustainability standards, commodity

trading rails, OpenFoodChain integration, and end-to-end traceability from farm NFT to consumer QR code. Verified farm data becomes useful beyond registration. It supports compliant trade, buyer commitments, sustainability claims, and potential premium pricing for farmers.

3. FINANCE AND CREDIT — SEEDSTARS SIGMA

Seedstars is the finance intelligence, underwriting, and capital activation partner. SIGMA is Seedstars' AI-powered credit scoring and financial readiness platform. The Seedstars partnership operates on three components:

1. **AE financial education.** Seedstars equips AEs with operational workflows, financial-readiness tooling, and basic underwriting capabilities that bridge farmer relationships with lender-grade financing processes. AEs are the human layer that makes credit work in smallholder contexts.
2. **Credit scoring based on verified 5am data.** SIGMA ingests verified farmer, land, crop, identity, satellite, behavioural, and coaching data from the trust layer to generate credit scores, loan readiness assessments, and structured loan recommendations. These signals are longitudinal — built from operational, behavioural, coaching, and field-validation data collected through the AE network over time — which gives them lender-grade weight. The credit decision is grounded in verified field data, not self-reported claims. The combination of verified trust-layer data and SIGMA underwriting reduces the cost and risk of smallholder underwriting, enabling lending at ticket sizes traditionally considered uneconomical.
3. **Loans infrastructure.** Cardano-native stablecoin wallet rails for disbursement; on-chain repayment monitoring; SIGMA updates credit scores after each repayment and writes back to the trust layer. Loan capital comes from partner banks, MFIs, DFIs, and DeFi lending pools.

The intended loop is direct:

verified farmer → SIGMA-scored → loan structured → financed → monitored → repaid → credit history on-chain.

The integration is expected to add roughly **+10 transactions per farmer** — origination, repayment, score updates, wallet activity — turning verified field data into financial inclusion at scale. A 2027 India finance pilot operates from the verified farmer base built through the AE network, with a 5,000-10,000 farmer initial cohort, input loans and working capital (\$100-\$500 initially, scaling to \$1,000), and partner banks, MFIs, DFIs, and DeFi lending pools as lenders. Seedstars contributes back to the trust layer over time: credit scores, repayment performance, and portfolio behaviour become verified data points that enrich farmer and AE profiles.

Treasury funding supports the infrastructure and integration rails: verified farmer data, SIGMA integration, lender APIs, wallet/stablecoin rails, on-chain repayment monitoring, and data write-back to the trust layer. Treasury funding does not provide loan capital. Loan capital comes from partner banks, MFIs, DFIs, DeFi pools, and other financial partners.

ADDITIONAL APP-LAYER INTEGRATIONS VIA APIS DURING THE FUNDED PERIOD

The funded-period commitments above (Andamio, Zengate, Seedstars SIGMA) are the named application paths. The trust layer's open API surface enables additional app-layer integrations during the same timeline as partners come online — insurance, carbon and biodiversity, government programme delivery, cooperative governance, broader identity applications. Where ecosystem partners are ready to integrate within the 18-month window, the technical surface to do so already exists; what's required is integration work, not infrastructure build.

A Worked Example: One Verified Record, Many Uses

A farmer is onboarded through Project Swaminathan. The AE captures farmer identity, farm location, land boundary, crop information, and field validation data. The trust layer anchors the verifiable claims on Cardano while sensitive information remains private or selectively disclosed. That same verified farmer/farm record can support multiple use cases:

- **AE Certification and Reputation:** the AE's onboarding and validation contribution is recorded as part of their credential and reputation history.
- **Traceability and Compliance:** Zengate uses verified farm-origin information for buyer workflows, compliance documentation, and supply chain traceability.
- **Finance and Credit:** Seedstars SIGMA uses verified identity, land, crop, satellite, and service data to support credit scoring and underwriting.
- **Insurance:** the same farm boundary, crop data, and satellite indicators support future risk models and parametric insurance.
- **Carbon and Sustainability:** the same land and crop records support future monitoring, reporting, and verification.
- **Government Programmes:** the same verified farmer/farm record supports future eligibility checks, subsidy targeting, or programme monitoring.

The first application justifies the initial verification, but each additional application increases the value of the same base record. This is the practical meaning of "verify once, use many times".

Future Ecosystem Pathways

The trust layer enables a wider set of future Cardano ecosystem applications, framed as enabled pathways rather than funded-period commitments. These include DeFi lending pools; parametric insurance; carbon and biodiversity markets; government subsidy and programme delivery; farmer cooperative governance; and broader identity and credential applications.

This distinction matters. Reviewers will ask "what is actually delivered in 18 months?" The funded period commits to Andamio, Zengate, and Seedstars SIGMA. The wider list describes what becomes possible once the trust layer exists and is open for additional applications to plug into.

SECTION 06

Sustainability and the 2030 KPI Path

By the end of the 18-month funded period, 5am.earth has moved from a live proof in India to a scalable, governed infrastructure layer with enough coverage to become self-sustaining. The central success target is 500,000 registered farmers across India, Cambodia, and Kenya. That number matters because it is the bridge between proof and scale: at this level the trust layer is large enough to support meaningful application use, commercial partnerships, finance pilots, institutional co-funding, and continued expansion beyond Treasury support.

These funded-period commitments are delivery obligations. The 2030 figures that follow are projections — a path enabled by the funded infrastructure, not additional 18-month Treasury deliverables. This proposal keeps three things visibly separate: commitments (18-month registered-farmer targets, application pilots, governance, audits, on-chain evidence), projections (2030 MAU, transactions, TVL, protocol revenue), and dependencies (commercial partnerships, institutional support, AE network expansion, finance adoption, wallet adoption, application integrations).

VISION 2030 KPI CONTRIBUTION BY 2030

3M

Farmers on the trust layer

112.5M

Annual transactions

\$900M

Total value locked

2030 Projection

METRIC	18-MONTH FUNDED PERIOD	2030 PROJECTION
Registered farmers	500,000	3,000,000
Active AEs	5,000	30,000
Trust-layer transactions	2,000,000	24,000,000 / year

| Farmer loan transactions | 50,000 | 16,500,000 / year || Total annual transactions | 2,000,000 | 112,500,000 / year |

| Loan TVL on Cardano | minimum \$2M | \$750,000,000 || Total TVL | measured during delivery | \$900,000,000 || Protocol revenue | 500,000 ADA | 16-20M ADA / year |

The transaction model decomposes cleanly across **two distinct layers** of impact — the infrastructure layer (trust-layer verification activity) and the application layer (wallet activity and finance activity). Both are Treasury-attributable, but they show up on Cardano differently and serve different parts of the Vision 2030 strategy.

Infrastructure layer: trust-layer transactions come from recurring verification events — satellite/oracle updates, AE ground-truth records, credential events, and related trust-layer updates — the exact mix is implementation-dependent. At 3M farmers, this produces **24 million trust-layer transactions per year**. This is direct trust-layer infrastructure throughput on Cardano (Pillar 1 — Infrastructure & Research).

Application layer: the trust layer enables farmer wallet activity and finance activity: - Farmer loan transactions: 1.5M farmers borrowing, with origination plus repayment activity = **16.5 million transactions per year**.

That gives **88.5 million application-layer transactions per year**, plus \$900M TVL (\$750M loans) and 16-20M ADA in annual protocol revenue (Pillar 2 — Adoption & Utility).

Total: 24M (infra) + 88.5M (app) = 112.5M annual transactions. Splitting impact this way matters because reviewers see the proposal as contributing to two Vision 2030 pillars simultaneously, not just one.

ANNUAL TRANSACTIONS — BOTH VISION 2030 PILLARS

24M

Infrastructure layer (trust-layer verification)

88.5M

Application layer (wallets + finance)

112.5M

Total annual transactions

TVL Composition

The \$900M TVL projection is driven by farmer loans: 1.5M farmers borrowing at \$1,000 average, with 50% of loan exposure represented on Cardano = \$750M. These are 2030 projections tied to finance adoption; they are not 18-month commitments.

Protocol Revenue

The 16-20M ADA annual protocol revenue projection assumes an average effective fee of 0.14-0.18 ADA across 112.5M annual transactions: $112.5M \times 0.14 = 15.75M$ ADA at the low end; $112.5M \times 0.18 = 20.25M$ ADA at the high end. The fee assumption is internally consistent with the headline range and matches the conservative on-chain impact model.

Cardano Vision 2030 KPI Mapping

KPI	VISION 2030 TARGET	5AM.EARTH 2030	COVERAGE
Monthly Active Users	≥ 1M	path to 3M	up to 300% of target
Monthly Transactions	≥ 27M	~9.4M	35% of target from this initiative alone
TVL	≥ \$3B	\$900M	30% of target from this initiative alone

KPI	VISION 2030 TARGET	5AM.EARTH 2030	COVERAGE
Annual Protocol Revenue	≥ 16M ADA	16-20M ADA	meets target

These are conservative baseline estimates covering only three core use cases: trust layer, wallets, and loans. Insurance, carbon markets, government programmes, and additional dApps targeted at M3 are not included.

Foundation Self-Sustainability

By M3, the Foundation has a credible path to fund further expansion through commercial partnerships, institutional support, and revenue from trusted information services rather than returning to the Treasury for operating costs. The workbook self-sustainability model points to loan-related commission becoming meaningful from 2028 onward: at \$1.5B loan volume by 2030, total commission of \$150M maps to roughly \$3M Foundation revenue plus \$1.5M AE fee revenue. Foundation operating costs at full scale are covered by loan-related fees alone, with data access fees, dApp protocol access fees, premium certification and ESG data, and government programme delivery as additional revenue streams scaling with adoption.

Treasury funding establishes the establishment phase, not a permanent operating model. Once the trust layer reaches meaningful coverage, the Foundation funds further expansion through partner contributions, institutional support, transaction-linked revenue, trusted information services, and finance-related fees. By the time the funded period closes, 5am.earth has both the coverage and the application evidence needed to continue expansion without returning to the Treasury for ordinary operating costs.

What Cardano Receives

By M3, Cardano receives more than a successful pilot. It receives a live agricultural trust layer with real users, real field operations, real applications, and a measurable path toward the 2030 Vision targets. Each subsequent year extends the path: the AE network expands toward 30,000 active AEs, finance adoption grows the loan and repayment activity, additional dApps connect, and the trust layer’s value compounds with each new application that relies on the same verified base.

SECTION 07

Why Cardano

Agricultural trust infrastructure works only if many different actors believe that the base layer is not owned by one of their competitors. Farmers, agri-entrepreneurs, food companies, lenders, insurers, governments, NGOs, and application builders all need to participate in the same information environment without giving one commercial platform too much power over the system. Cardano is a strong ecosystem for this because it has spent years building around identity, governance, financial inclusion, emerging markets, formal methods, and long-term infrastructure rather than only short-term speculation. The Cardano community already understands that blockchain can be used for coordination, accountability, and access, not just trading.

This matters for 5am.earth because we are not just asking for a chain to host transactions. We are asking for an ecosystem that can help carry a public-good infrastructure layer into real agricultural markets. Cardano has builders, governance participants, identity projects, education projects, DeFi builders, and community members who are aligned with this kind of work. Smallholder agriculture is not a purely technical market — it depends on local trust, patient adoption, institutional credibility, and long-term relationships. Cardano is one of the few ecosystems where this kind of real-world, mission-driven infrastructure can be understood as core to the ecosystem's purpose rather than as a side experiment.

There is also a governance fit. 5am.earth proposes infrastructure that must be open, auditable, and governed for the benefit of an ecosystem, not captured by a single application. Cardano's governance culture makes it possible to discuss this kind of infrastructure as a shared public investment, with community scrutiny, milestone accountability, and long-term ecosystem value. The Constitution that took effect on January 24, 2025 strengthens that posture by giving every Treasury Withdrawal Action a structural compliance review and a clear evidence framework — the conditions under which a public-good infrastructure proposal can be evaluated honestly.

The AE model fits Cardano's social character. AEs are a human network for onboarding, education, trust, and service delivery. Cardano has always required more than software adoption; it has depended on communities, local champions, educators, and long-term belief in financial inclusion. 5am.earth extends that pattern into agricultural supply chains.

Cardano's two technical roles in this architecture (described in §4) — DID-side reference layer for trust snapshots and asset settlement layer for stablecoin payments and land parcel NFTs — also match the chain's strengths. Identity, reference, and settlement separate cleanly; each scales on its appropriate substrate.

Finally, the ask aligns with the Cardano Vision 2030 KPI framework. By 2030, the 5am.earth trust layer projects 3 million farmers participating, 112.5 million annual on-chain transactions, \$900M TVL, and 16-20M ADA in annual protocol revenue. These are conservative projections covering only three core use cases (trust layer, wallets, loans); insurance, carbon markets, government programmes, and additional dApps are not included. This positions a single infrastructure

programme to contribute meaningfully across all five pillars of the 2030 strategy: Infrastructure & Research, Adoption & Utility, Governance, Community & Ecosystem Growth, and Ecosystem Sustainability.

SECTION 08

Treasury Funding and Budget

The Foundation asks the Cardano Treasury for 10,000,000 ADA over 18 months to build and govern the open trust layer that no single commercial partner should own. The ask is a hard cap — exactly 10,000,000 ADA, not a target amount with implied flexibility above it.

Payment Structure

10,000,000 ADA HARD CAP — MILESTONE-GATED TRANCHEs

5M ADA

On approval

2M ADA

After M1 Stand-Up

3M ADA

After M2 Closed Loop

Payments are milestone-gated, in three tranches:

- **Payment 1:** 5,000,000 ADA on approval.
- **Payment 2:** 2,000,000 ADA after M1 Stand-Up.
- **Payment 3:** 3,000,000 ADA after M2 Closed Loop.
- **M3 Self-Sustaining:** final accountability — not a payment trigger.

Front-loading 5M on approval funds programme launch. Gating 2M on M1 confirms Foundation stand-up and operating readiness. Gating 3M on M2 confirms the closed-loop proof — that the trust layer has moved from registration to named application pilots — before the final tranche. Splitting disbursement at M2 keeps the programme funded through delivery while still gating release on observable evidence. Releasing the final tranche on M3 would mean the team delivers the 18-month programme with no remaining Treasury funding to burn against M3 evidence; the structure avoids that.

Why Treasury Is the Right Funding Source

The trust layer being built is a public-good layer for the Cardano ecosystem. It must be open, shared, auditable, and governed neutrally. It cannot be owned by one buyer, lender, software company, or implementation partner. Commercial partners fund their own commercial activity on top of the trust layer; Treasury funding does not subsidise a private supply chain product. It creates the shared infrastructure through which many commercial and institutional actors can participate while generating real usage and revenue for Cardano.

What Treasury Funds

- reusable decentralized trust layer infrastructure;
- farmer/farm coverage expansion toward 500,000 registered farmers;
- AE onboarding support and human trust layer enablement;
- satellite data and extensible oracle infrastructure;
- identity, credential, privacy, and API components;

- first application integrations (Andamio, Zengate, Seedstars SIGMA);
- Foundation governance, reporting, audit, and administration;
- on-chain transaction costs during the funded establishment period.

What Treasury Does Not Fund

- private commercial product subsidies;
- loan capital;
- brand operating costs;
- unrelated partner business development;
- permanent Foundation operating dependency after the funded period.

The distinction is especially important for finance. Treasury funding supports the rails that make agricultural lending possible: verified farmer records, credit-scoring integrations, wallet and stablecoin infrastructure, lender APIs, and on-chain repayment monitoring. It does not provide the loan capital itself. Loan capital comes from partner banks, MFIs, DFIs, DeFi lending pools, and other financial partners. The same logic applies across the proposal: Treasury funding establishes the shared infrastructure; commercial, institutional, and government partners use that infrastructure to deliver services.

18-Month Public Budget Allocation

BUDGET LINE	18-MONTH TOTAL	%
Farmer Growth (AE programmes)	\$625,000	22%
Satellite Data and Extensible Oracle Infrastructure	\$575,000	21%
Info Trust Layer (core build)	\$600,000	22%
Cardano dApp Integration	\$300,000	11%
On-Chain Transaction Costs	\$240,000	9%
Foundation Support	\$225,000	8%
Admin & Audit	\$200,000	7%
Total	\$2,765,000	

Note: the table is shown in USD for budget transparency at the line level. The public ask is 10,000,000 ADA. The line totals reflect 18-month working budget structure; the difference between the line total and the equivalent of the ADA ask is absorbed by partner co-funding rather than by an increased Treasury request.

Coverage Expansion as the Treasury Logic

Treasury funding supports coverage expansion to 500,000 registered farmers across India, Cambodia, and Kenya. This coverage is not a vanity metric. It is the scale at which the trust layer becomes useful enough for commercial partners, finance partners, government programmes, and institutional funders to justify deeper participation. By reaching this level of coverage, 5am.earth can move from Treasury-funded establishment to self-sustaining expansion through commercial partnerships, institutional support, and revenue from trusted information services rather than returning to the Treasury for operating costs.

Treasury Discipline

The 10,000,000 ADA ask is a fixed cap, not a target. Internal workbook detail supports operational planning; the public commitment is the cap, the milestone-gated payment structure, and the funded-period delivery commitments.

If a surplus arises against the 10,000,000 ADA hard cap, the Foundation retains up to \$3.5M to fund scope elasticity within the programme's existing objectives. Surplus above \$3.5M returns to the Treasury. If milestone delivery fails materially, scope is abandoned, or fraud is identified, undisbursed tranches are not paid and tranches already disbursed are subject to refund per the governance and treasury rails described in §12.

SECTION 09

Work Packages

The 18-month programme is organised into six work packages. We expand farmer and farm coverage; build the reusable decentralized trust layer; record AE training and field contributions on-chain; integrate traceability and compliance workflows; enable finance and credit on verified records; and govern the open layer through the 5am.earth Foundation. We will deliver 500,000 registered farmers across India, Cambodia, and Kenya by programme end.

WP1 — Coverage Expansion

Scope. Expand farmer and farm coverage through AE-supported field operations and partner networks. The work begins from Project Swaminathan's live deployment in India and extends across India, Cambodia, and Kenya during the funded period. The expansion is field execution through the AE model, not abstract user acquisition. Registration and verification activity feeds the shared trust layer.

Deliverables. - Each farmer onboarded receives a Cardano-anchored DID and identity credentials linked to their farm and crop records. - Each AE active in the programme receives a DID and onboarding credentials linking them to their farmer book. - Each farm registration creates a verifiable on-chain record with farm boundaries confirmed through the satellite oracle. - Optional land-parcel ownership NFTs mintable per farm via NMKR. - Coverage milestones: 200,000 cumulative farmers by M1 Stand-Up (Month 6), 350,000 cumulative farmers by M2 Closed Loop (Month 12), 500,000 cumulative verified farmers by M3 Self-Sustaining (Month 18), across India, Cambodia, and Kenya.

Evidence. On-chain data — transaction hashes, policy IDs, DID records, NFT mint records, and registration counts visible on Cardano Mainnet; field reports from AE deployments and partner-country operations; independent audits at M2 and M3.

Dependencies. WP2 (trust layer registration architecture); WP3 (AE credentialing layer); Project Swaminathan (live deployment as starting base); SFI India AE network; partner-country operating arrangements for Cambodia and Kenya.

Budget Scope. Primary draw on Farmer Growth (AE programmes) for AE deployment and field operations across three countries; Satellite Data and Extensible Oracle Infrastructure for farm-boundary verification at registration; On-Chain Transaction Costs for Mainnet registration writes; proportional Foundation Support overhead. Indicative scope: ~30-35% of the 18-month programme budget.

WP2 — Decentralized Trust Layer Infrastructure

Scope. Expand the Project Swaminathan infrastructure into a reusable decentralized trust layer that serves multiple applications and geographies. The funded programme turns the Swaminathan deployment path into shared infrastructure: identity, farm registration, satellite data and extensible oracle verification, credentials, privacy, selective disclosure, APIs, and developer access for

approved applications. The trust layer must be reusable beyond one deployment, one country, or one application, while keeping an open source-layer architecture so additional trusted sources can be integrated over time.

Deliverables. - A reusable decentralized identity and farm-registration architecture (DIDs with Cardano trust anchors) and a trust-layer linker that joins farmer, farm, AE, field, and satellite data into a single verifiable record. - A satellite data path with extensible oracle verification, open to additional trusted data sources over time. - A privacy and selective-disclosure model with off-chain encrypted storage, on-chain proofs, and per-application permission controls. - An API and integration surface that lets approved applications (Andamio, Zengate, Seedstars SIGMA, future apps) consume verified records without re-onboarding the farmer. - Optional tokenisation primitives for land parcels, credentials, and harvest batch certificates. - Schemas, permissions, audit trails, and partner-integration documentation sufficient for application teams and independent audit review.

Evidence. On-chain data — smart contract addresses, transaction hashes, policy IDs, schema registrations, and integration events visible on Cardano Mainnet; integration reports from WP3, WP4, and WP5 application teams; independent technical audits at M2 and M3.

Dependencies. WP1 (registration volume that exercises the trust layer); WP3 (AE credential layer); WP4 and WP5 (application integrations as the consumption side); Project Swaminathan operating base; M1 architecture lock and partner procurement (selects the identity, oracle, privacy, storage, tokenisation, and credential component providers).

Budget Scope. Primary draw on Info Trust Layer (core build) for architecture and integration work, and Satellite Data and Extensible Oracle Infrastructure for the oracle and satellite-data path; partial draw on Cardano dApp Integration for the API layer; On-Chain Transaction Costs for trust-layer activity on Mainnet; proportional Foundation Support overhead.

WP3 — AE Credentials and Human Trust Layer

Scope. Make the AE network part of the trust infrastructure. AEs are not only a distribution channel; they are the human layer through which farmer onboarding, field validation, training, and service relationships become trustworthy. This work package records AE training, onboarding activity, field validation contributions, and reputation signals so that the people creating and validating trusted field information also become visible in the trust layer. Andamio is the first concrete application path for AE certification and reputation.

Deliverables. - A credential model for AEs covering training completion, onboarding activity, field-validation contributions, and reputation signals — issued as verifiable credentials linked to each AE's DID. - On-chain linkage between an AE's DID and the farmer DIDs they onboarded, so the human trust layer is visible and auditable alongside the field data. - Andamio partnership operational for AE training, certification, and contribution tracking, delivering the funded-period AE-credential application layer; the trust layer remains open to additional credential providers over time. - Reputation signals derived from coverage outcomes, repayment performance (via WP5), and partner-validated activity, written back to each AE's credential profile. - Initial AE cohort credentialed at M1 Stand-Up (2,000 AEs), expanding through M2 and M3 as coverage grows.

Evidence. On-chain data — AE DIDs, credential issuances, AE-to-farmer linkage records visible on Cardano Mainnet; field reports from AE training and certification cohorts; independent audits at M2 and M3.

Dependencies. WP1 (AE deployment in the field); WP2 (credential and DID architecture); WP5 (financial-education and repayment-performance feedback into reputation).

Budget Scope. Primary draw on Cardano dApp Integration for the credential application integration, Info Trust Layer for the credential schema and linkage architecture, and Farmer Growth (AE programmes) for AE training and onboarding cost; On-Chain Transaction Costs for credential issuance writes; proportional Foundation Support overhead.

WP4 — Traceability and Compliance Integration

Scope. Integrate the trust layer into supply chain traceability and compliance workflows. Verified farm origin, land records, production information, sustainability indicators, and compliance evidence become useful for buyers, brands, and trade partners. Zengate Global is the first concrete application path. The funded-period goal is named pilot evidence, not a claim that every buyer or compliance workflow is operating at full commercial scale.

Deliverables.

- A traceability and compliance integration path that lets verified farm-origin records (boundaries, crop information, AE field validation, satellite indicators, sustainability signals) flow into buyer-facing workflows without re-onboarding the farmer.
- EUDR and export-compliance documentation generated from the trust layer.
- A live pilot with at least one anchor brand by M2 Closed Loop, demonstrating end-to-end traceability from farm-level evidence to buyer-facing claims.
- Optional NFT-based supply chain artifacts (farm NFTs, harvest batch certificates) for buyers that want chain-of-custody anchoring.
- Documentation of data-sharing rules (what's public, what's selectively disclosed, what's anchored on Cardano) and permission-model details for application teams.
- Zengate Global partnership operational for traceability, EUDR compliance, and buyer workflows, delivering the funded-period traceability/compliance application layer; the trust layer remains open to additional traceability and compliance applications over time.

Evidence. On-chain data — NFT mints, traceability events, schema-validated compliance records visible on Cardano Mainnet; anchor-brand pilot reports and field artifacts; independent audits at M2 and M3.

Dependencies. WP1 (verified farm records and AE field validation); WP2 (trust layer APIs and permission model); anchor-brand partners willing to operate the pilot.

Budget Scope. Primary draw on Cardano dApp Integration for the traceability application integration; partial draw on Info Trust Layer for compliance schema and permission-model work; On-Chain Transaction Costs for traceability events and any NFT mints; proportional Foundation Support overhead.

WP5 — Finance and Credit Integration

Scope. Integrate the trust layer into finance and credit workflows. Verified farmer identity, farm records, crop information, satellite indicators, AE/service history, and repayment records become useful for credit scoring, underwriting, loan offers, repayment tracking, and portable financial reputation. Seedstars SIGMA is the first concrete application path. The partnership operates on three components: (1) **AE financial education** — Seedstars equips AEs with operational workflows, financial-readiness tooling, and underwriting support capabilities that connect farmer relationships with scalable financing processes; (2) **credit scoring based on verified 5am data** — SIGMA ingests verified farmer / land / crop / satellite / behavioural / coaching data from the trust layer — longitudinal data collected through the AE network and coaching process — to generate lender-grade credit scores and loan readiness assessments; (3) **loans infrastructure** — Cardano-native stablecoin wallet rails for disbursement, on-chain repayment monitoring, and SIGMA write-back to the trust layer after each repayment. Treasury funds the rails — verified data, SIGMA integration, lender APIs, wallet/stablecoin rails, on-chain monitoring, and write-back — not the loan capital, which comes from partner banks, MFIs, DFIs, DeFi pools, and other financial partners. The funded-period goal is named pilot evidence, not full production-scale financial deployment.

Deliverables.

- AE financial-education curriculum delivered, with credentialed cohort outcomes feeding back into AE reputation (linkage to WP3).
- A credit-scoring layer integrated with verified trust-layer records (farmer identity, farm boundaries, crop history, satellite indicators, AE-validated activity), producing loan-readiness scores grounded in field evidence rather than self-reported claims.
- Cardano-native stablecoin wallet rails for loan disbursement, with each farmer's wallet linked to their DID.
- On-chain repayment monitoring, with credit scores written back to the trust layer after each repayment event — making repayment performance a portable financial reputation signal.
- First loans disbursed via Cardano stablecoin rails by M2 Closed Loop (5,000-10,000 farmer cohort).
- Open Cardano stablecoin rails for general farmer payments and settlement during the funded period — wallet payments, farmer-to-buyer settlement, and farmer-to-Agri-Entrepreneur transfers — extending the same wallet infrastructure beyond credit to a broader payments and settlement layer.
- Seedstars SIGMA partnership operational across all three components (AE financial education, credit scoring, loans infrastructure), delivering the funded-period finance/credit application layer; the trust layer remains open to additional finance partners over time.

Evidence. On-chain data — stablecoin disbursement transactions, repayment events, credit-score write-back events visible on Cardano Mainnet; AE financial-education cohort completion reports; finance-pilot field reports from partner lenders; independent audits at M2 and M3.

Dependencies. WP1 (verified farmer and farm records as the credit-scoring base); WP2 (trust layer APIs and per-application permissions for financial data); WP3 (AE financial-education and credentialing layer that gates AE participation in finance workflows); lender partners (banks, MFIs, DFIs, DeFi pools) for loan capital; stablecoin partner for the disbursement rails; legal and privacy framework for financial data.

Budget Scope. Primary draw on Cardano dApp Integration for the credit-scoring and loans-infrastructure integration; Info Trust Layer for finance-data schemas and write-back architecture; On-Chain Transaction Costs for the high-volume finance activity (disbursements, repayments, score updates); proportional Foundation Support overhead.

WP6 — Foundation Governance and Self-Sustainability

Scope. Establish the 5am.earth Foundation as the neutral steward of the open layer. The Foundation governs access, privacy, reporting, auditability, partner participation, and long-term resilience. Foundation legal/governance setup is required at M1 Stand-Up. By M3 Self-Sustaining, the Foundation has a credible path to fund further expansion through commercial partnerships, institutional support, and revenue from trusted information services rather than returning to the Treasury for operating costs.

Deliverables.

- Foundation legal entity registered by M1 Stand-Up, with operational board and secretariat in place.
- Access, privacy, and partner-participation rules published — defining who can read, write, and connect to the trust layer under what conditions.
- Independent audit framework in place by M1, conducting milestone audits at M2 and M3.
- Custody and treasury rails for the disbursement tranches, operated under the governance model described in §12.
- Public milestone reports at M1, M2, and M3, plus monthly Forum updates and quarterly dRep-facing reports during the funded period.
- Self-sustainability evidence by M3 — commercial, institutional, and trusted-information-service revenue commitments sufficient to fund continued expansion without returning to the Treasury for operating costs.

Evidence. On-chain data — Foundation treasury wallet activity, custody multisig signatures, refund/return events visible on Cardano Mainnet; field reports — Foundation registration and legal-setup documents, governance and access-rule publications, partner participation agreements; independent audits at M2 and M3.

Dependencies. WP1, WP2, WP3, WP4, WP5 (coverage and application evidence sufficient to support the sustainability case); legal setup arrangements; partner agreements (consortium MOUs and scoped responsibilities).

Budget Scope. Primary draw on Foundation Support for Foundation operating cost and governance/secretariat work; Admin & Audit for the audit framework; proportional draw on Info Trust Layer for governance schemas and partner-participation tooling.

SECTION 10

Milestones and Acceptance

Delivery is structured around three milestones across the 18-month funded period. Each milestone has named acceptance evidence; M1 and M2 release the gated Treasury payments, and M3 closes the funded period with self-sustainability evidence.

MILESTONE	TIMING	COVERAGE	PAYMENT RELEASED
M1 Stand-Up	Month 6 (~December 2026)	200,000 cumulative farmers on Mainnet	Payment 2 – 2,000,000 ADA
M2 Closed Loop	Month 12 (~June 2027)	350,000 cumulative farmers	Payment 3 – 3,000,000 ADA
M3 Self-Sustaining	Month 18 (~December 2027)	500,000 cumulative verified farmers	Final accountability – not a payment trigger

M1 — Stand-Up (Month 6)

By M1, we carry forward farmer and farm coverage on the back of Project Swaminathan's live India deployment, while extending the design from a single-deployment infrastructure into a reusable decentralized trust layer that serves multiple applications and geographies – identity and farm registration, satellite data and extensible oracle verification, privacy and selective disclosure, and APIs that approved applications consume. At the same time, M1 lays the foundations for the rest of the funded period: the AE credentialing layer for human trust, the first traceability and finance application integration paths, and the 5am.earth Foundation operating as the neutral steward of the open layer. Project Swaminathan independently targets 100K farmers by August 2026; the Treasury-funded programme accelerates AE deployment to reach 200K by ~December 2026.

DELIVERABLE	WP	EVIDENCE TYPE
200,000 farmers registered on Mainnet	WP 1	On-chain data + field reports
Foundation legal entity registered with operational board and secretariat	WP 6	Reports
Trust-layer architecture locked	WP 2	Design document
Core trust-layer components operational on Mainnet (DID/SSI, privacy layer, on-chain hash registry)	WP 2	On-chain data

DELIVERABLE	WP	EVIDENCE TYPE
2,000 AEs credentialed on-chain via Andamio	WP 3	On-chain data + field reports
Satellite data and oracle verification live on Mainnet	WP 2	On-chain data
Independent audit framework in place	WP 6	Reports
Public M1 milestone report	WP 6	Reports

M1 acceptance is mixed-evidence: on-chain artifacts for activity that is on-chain, field reports for farmer and AE activity, design documentation for the locked trust-layer architecture, and reports for governance and audit deliverables. The formal gate is operational readiness, not transaction volume.

M2 — Closed Loop (Month 12)

By M2, the trust layer is no longer just registration — it is closed-loop proof. Coverage has grown from M1's 200,000 to 350,000 farmers across India, Cambodia, and Kenya. The three named application paths are operating against verified trust-layer records: Andamio is issuing AE training and reputation credentials linked to onboarded farmers; Zengate's traceability and compliance workflows are live for at least one anchor brand; and Seedstars SIGMA is generating credit scores from verified field data with first stablecoin-rail loans disbursed and tracked through on-chain repayment. Initial deployment focuses on input financing and working-capital loans for smallholder farmers. AE credentialing has expanded with the network. Foundation governance is fully operational, with the first independent audit at M2.

DELIVERABLE	WP	EVIDENCE TYPE
350,000 cumulative farmers on Mainnet	WP1	On-chain data + field reports
4,000 active AEs credentialed on-chain via Andamio	WP 3	On-chain data + field reports
Trust-layer transaction run-rate of 1.5M–2M annually	WP 2	On-chain data
Zengate traceability/compliance pilot live for one anchor brand	WP 4	On-chain data + reports
Seedstars SIGMA generating credit scores from verified trust-layer records	WP 5	On-chain data + reports

DELIVERABLE	WP	EVIDENCE TYPE
First loans disbursed via Cardano stablecoin rails (5,000–10,000 farmer cohort)	WP 5	On-chain data
Repayments tracked on-chain; credit scores written back to the trust layer	WP 5	On-chain data
Foundation governance formally established (board, published reporting)	WP 6	Reports
First independent audit	WP 6	Reports
Public M2 milestone report	WP 6	Reports

M2 is the funded period's most important evidentiary point and the Payment 3 trigger. The mixed-evidence model — coverage, named application pilots, on-chain finance activity, written-back credit scores, and independent audit — gives reviewers substantive verification that no single missing artifact can invalidate, and that no paperwork-only submission can satisfy.

M3 — Self-Sustaining (Month 18)

By M3, the trust layer has reached the scale at which it becomes self-sustaining. Coverage stands at 500,000 verified farmers across India, Cambodia, and Kenya. The three named application paths have generated substantive on-chain activity — loans disbursed via Cardano stablecoin rails, traceability records anchored for export-relevant supply chains, and AE training and reputation credentials maturing across the network. The wider Cardano ecosystem is plugging in: additional dApps beyond the funded-period commitments are connecting to the trust layer. The 5am.earth Foundation is operating on commercial revenue and institutional backing, with concrete commitments in place to fund continued expansion rather than returning to the Treasury for operating costs.

DELIVERABLE	WP	EVIDENCE TYPE
500,000 cumulative verified farmers across India, Cambodia, and Kenya	WP 1	On-chain data + field reports
Zengate traceability and compliance workflows operational across funded-period anchor brands	WP 4	On-chain data + reports
EUDR and export-compliance documentation generated from the trust layer for funded-period commodities	WP 4	Reports
AE financial-education curriculum delivered to active AE cohort, feeding into AE reputation	WP 5	Reports

DELIVERABLE	WP	EVIDENCE TYPE
Credit-scoring layer integrated with verified trust-layer records, generating scores for the active borrower base	WP 5	On-chain data + reports
On-chain repayment monitoring and credit-score write-back loop operating across the borrower cohort	WP 5	On-chain data
\$1.5M+ total loan volume disbursed via Cardano stablecoin rails	WP 5	On-chain data
TVL of \$1.6M+ from wallets and loans	WP 5	On-chain data
AE credentials and reputation signals operating across the network	WP 3	On-chain data + field reports
Foundation revenue model active (commercial, institutional, and trusted-information-service revenue commitments)	WP 6	Reports

| Final independent audit | WP6 | Reports | | Public final M3 milestone report | WP6 | Reports |

M3 closes the funded period. The combined evidence — coverage at scale, three application paths operating against verified records, finance activity on Cardano, AE network credentialed, Foundation revenue model active, and independent audit — demonstrates that the trust layer has reached the operating maturity needed to continue expanding without further Treasury support.

SECTION 11

Consortium and Partner Roles

This proposal is being promoted by the consortium working to establish the 5am.earth Foundation. The Foundation is the intended long-term steward of the open trust layer. It holds the public-good infrastructure, protects the neutrality of the system, governs access and privacy, and ensures the trust layer can serve many applications and partners rather than one commercial owner. The consortium exists to bring the Foundation into being and deliver the first phase of the trust layer — the field network, technical stack, application partners, commercial demand, and Cardano governance vehicle that move the work from Project Swaminathan to shared infrastructure.



5am.earth Foundation

FOUNDATION STEWARD · WP6

A Cardano-anchored agricultural information trust foundation being established as the neutral steward of the open layer. Holder of the public-good infrastructure; operational by M1.



Eik GMBH

PROPOSAL CO-SPONSOR · FOUNDATION CO-PROMOTER

A Swiss-based company focusing on blockchain adoption. Proposal co-sponsor and Foundation co-promoter; business development, strategic alliance management, brand and government engagement.



HashPoint Consulting

PROPOSAL CO-SPONSOR · FOUNDATION CO-PROMOTER · PROJECT COORDINATOR

A Swiss-based consultancy active at the intersection of technology and finance, specializing in scaling real-world decentralized ecosystems. Proposal co-sponsor and Foundation co-promoter; coordinator of Project Swaminathan.



Andamio

APPLICATION PATH · AE CREDENTIALS · WP3

A Cardano-native platform for on-chain training credentials, contribution tracking, and reputation. Partnership operational across the funded period; the trust layer remains open to additional credential providers over time.



Zengate Global

APPLICATION PATH · TRACEABILITY & COMPLIANCE · WP4

A traceability, compliance, and trade infrastructure provider for agricultural supply chains, with EUDR / sustainability standards / commodity trading rails / OpenFoodChain integration. Partnership operational across the funded period; the trust layer remains open to additional traceability and compliance applications over time.



Seedstars

APPLICATION PATH · FINANCE & CREDIT · WP5

An emerging-markets investor and operator delivering AI-powered underwriting, financial readiness, and lender-integration infrastructure for smallholder finance through its SIGMA platform. Partnership operational across all three components — AE financial education, credit scoring, and loans infrastructure — across the funded period.



Syngenta Foundation India

FIELD OPERATIONS · WP1, WP3

An Indian-registered foundation operating the AE model at scale (26,000+ AEs reaching 2.6M-2.7M farmers, 400,000-500,000 new farmers per year) as the founding India chapter of the Global AE Academy. Field operations and AE mobilisation through Project Swaminathan turn farmer relationships into verified Cardano records.

Strategic Anchors

Syngenta Corporation — engaged with and supportive of the project since early development — is a strategic global anchor across 90+ countries, with the CROPWISE platform and smallholder/Good Growth commitments providing scale-side strategic alignment distinct from SFI's field role. Maharashtra State Government — administering programmes that touch 4.5M farmers — is engaged on the agricultural information trust layer as a public good and is following the Project Swaminathan implementation.

Institutional Partners

The Global AE Academy was co-founded by IFC — The World Bank Group with SAFIA and Corteva Agriscience. The Academy is the institutional vehicle for replicating the AE model across emerging markets, with a multi-country scale plan in collaboration with the World Bank targeting 100 million farmers. UNDP has expressed interest in the smallholder finance and agricultural infrastructure agenda; WFP — the World Food Programme — is in active discussion.

International Expansion

Cambodia and Kenya are confirmed funded-period expansion countries. Beyond the funded period, Organto Foods (TSX-V: OGO; \$130M+ annual sales) connects smallholder growers to European retailers including Carrefour and is a LATAM expansion partner.

Trust-Layer Component Cohort

The trust layer architecture draws on a cohort of Cardano-native components, with the architecture lock and partner procurement at M1 confirming which providers operate in funded-period scope: Veridian (decentralized identifiers), NMRK (NFT), DigiFarm (satellite imagery and remote sensing), and AIQuant (Cardano-side smart contracts and integration).

Cardano Ecosystem Components

The architecture also draws on additional Cardano ecosystem tools — Mesh (wallet SDK), TxPipe (data infrastructure), Charli3 / Orcafax / Pyth (oracles), Midgard / Hydra (scaling), Fida Finance (parametric insurance), Landano (land rights), Clarity DAO (governance), AgroLabs (ERP traceability), OpenFoodChain (consumer transparency), and Plastiks (impact tokens) — that may be integrated as the trust layer expands.

AE Network Scale Trajectory

The AE network grows from 2,000 in 2026 toward 30,000 by 2030: 2,000 (2026) → 5,000 (2027) → 13,000 (2028) → 21,000 (2029) → 30,000 (2030). Each new AE cohort is brand-funded — anchor brands sponsor training in exchange for verified sourcing access. Treasury funding does not subsidise that commercial activity; it funds the trust layer that makes the activity verifiable, interoperable, and Cardano-native.

Demand Environment

The trust layer is being built into an existing demand environment. Brands need verified supply chains — PepsiCo India is contributing a two-year training programme for 2,200 agri-entrepreneurs, and Cargill is an active AE-programme funder and commodity supply chain partner. Institutions need scalable smallholder infrastructure. Governments need trusted agricultural information. Farmers need access to better services through finance, traceability, and credentials. The field network is not expanding on speculation; it is being pulled forward by partners who need verified, sustainable, traceable supply chains.

SECTION 12

Governance, Legal, and Treasury Rails

This Treasury Withdrawal Action embeds its constitutional posture and operational architecture — custody, audit, refund triggers, immutable document, pre-consultation — inside its own metadata, in line with the January 24, 2025 constitution that consolidated all justification material into the TWA itself.

Cardano Constitutional Compliance (Article II §3, §6, §7)

We meet each requirement of the Cardano Constitution effective January 24, 2025:

§3(2) — Overlapping role disclosure. Zengate Global, one of the consortium-named entities, operates an active Stake Pool on Cardano. This is disclosed in line with Article II §3(2); no §3(2) voting conflict arises because Treasury Withdrawal Actions under Article II §7 do not extend voting rights to SPOs. No other consortium-named entity (5am.earth Foundation, Elk GMBH, HashPoint Consulting, Andamio, Seedstars, Syngenta Foundation India) holds an active DRep, SPO, or Constitutional Committee role that would create a conflict under Article II §3(2). The third-party assurer selected through M1 procurement (§7.4) will be required to provide equivalent non-conflict confirmation as a procurement condition.

§7.1 — Refund circumstances. We commit to returning Treasury ADA in five circumstances: unspent ADA at programme end; material milestone failure; fraud; scope abandonment; and ADA appreciation surplus in excess of the \$3.5M scope-elasticity threshold. Final reconciliation is published as part of the oversight reporting cycle. Operational detail in *Refund Conditions* below.

§7.2 — 24-month prior-receipt disclosure. Neither the 5am.earth Foundation nor any consortium-named entity has received ADA from the Cardano Treasury through Treasury Withdrawal Actions under Article II §7 in the prior 24 months. All consortium-named entities have, however, received funding through Project Catalyst — the community-grants mechanism that pre-dates the Article II §7 Treasury Withdrawal Action regime — including the Catalyst Fund 13 grant for Project Swaminathan (project ID 1300178), that involved multiple consortium partners and is the initial baseline work that led to the scale opportunity through this proposal.

§7.3 — Within Net Change Limit. The 10,000,000 ADA ask sits well within the ratified 350,000,000 ADA Net Change Limit.

§7.4 — Audit allocation. A combined Admin & Audit allocation is included in the §8 budget table, covering Intersect's standard administration fee and a separately procured independent third-party assurer. The third-party assurer is selected through a competitive procurement process at M1, with audit reviews at M2 and M3 in line with the milestone-gated disbursement schedule. Operational detail in *Audit & Oversight* below.

§7.5 — Named administrator. Intersect is the named administrator on its standard terms. Operational detail in *Contract Management* and *Auditable Accounts & Fund Delegation* below.

§7.6 — Custody plan. Funds withdrawn under this TWA are held on-chain via Intersect's standardized Treasury Reserve Smart Contract (TRSC) and Project-Specific Smart Contracts (PSSCs) developed by Sundae Labs. The TRSC and PSSCs cannot be staked with an SPO and are delegated to the auto-abstain predefined DRep. Operational detail in *Auditable Accounts & Fund Delegation* below.

§6 — Immutable off-chain document. The signed CIP-100/108 anchor metadata is pinned to IPFS — its CID is the on-chain anchor and provides the immutable reference. The metadata embeds the blake2b-256 hash of the proposal PDF (hosted at a stable public URL), so the hash chain on-chain anchor → IPFS metadata → PDF allows any served PDF to be byte-verified against the immutable record regardless of where it's hosted.

Contract Management

A written off-chain Legal Contract will be created between Elk GMBH and HashPoint Consulting — as pre-Foundation co-promoters of the 5am.earth Foundation — and the Cardano Development Holdings (CDH), as mandated by the Constitution, and will be administered by Intersect. The contract will be transferred from the pre-Foundation co-promoters to the 5am.earth Foundation upon its registration at M1. This will include details of the project delivery schedule and dispute resolution.

Project Delivery

All milestones, acceptance criteria, payment amounts and expected delivery dates will be agreed between the 5am.earth Foundation (and its pre-Foundation co-promoters Elk GMBH and HashPoint Consulting until M1) and Intersect, acting on behalf of the CDH. The Foundation will deliver according to the agreed-upon project schedule within the Legal Contract, of which the necessary information will be made public via the budget management platform via transaction metadata.

Defined by the milestones within a Legal Contract, the 5am.earth Foundation will submit and attest milestone acceptance to the community, Intersect or 3rd Party Assurer.

Project progress will be monitored via Intersect's delivery assurance function which will be communicated to the community.

Acceptance of the work will be supported by a 3rd Party Assurer, who will be responsible for reviewing and signing off the work completed at each project milestone against the corresponding milestone deliverables detailed within the Legal Contract. This work is funded from a portion of this treasury withdrawal.

Auditable Accounts & Fund Delegation

BUDGET MANAGEMENT TOOLING

To administrate treasury funds on-chain, Intersect will utilize the treasury management smart contract framework developed by Sundae Labs. The smart contracts have been extensively tested including audits from TxPipe and MLabs.

Final mainnet validation test can be seen via the Disburse action within transaction:
0f591dc544ae14102dbb4a74d5311a6acffc1772b163d8b7a9656b9525950b17.

This withdrawal will utilise Intersect's 2025 treasury reserve contract with address being: `stake17xzc8pt7fgf01c0x7eq6z7z6puhsxmzktna7d1uahnrj6g6ghh5qjr`. Funds will later be migrated to a 2026 treasury reserve contract once established.

BUDGET MANAGEMENT SPECIFICS

Intersect will utilize a single Treasury Reserve Smart Contract (TRSC), with many Project-Specific Smart Contracts (PSSC), managed by Intersect. Intersect's management consists of three 'admin' and two Intersect 'leadership' roles. An Oversight Committee consisting of five external, independent third-party entities will provide checks and balances on Intersect, and safeguard against errors and unilateral control. The administration of both TRSC and PSSCs will be managed by Intersect, with external oversight on certain actions from the Oversight Committee.

The 2025 TRSC Oversight Committee consists of Sundae Labs, Cardano Foundation, Dquadrant, Xerberus and NMKR. Their role is to independently verify key administrative actions using on-chain logic, ensuring accuracy and consistency without exercising discretion over governance decisions.

For all details on Intersect's configuration please see the Smart Contract Guide on the knowledgebase.

The high level permissions are as follows:

- **TRSC Fund and PSSC Modify** — Two of the three Intersect admins, two of the five trusted entities and one of the two Intersect leadership sign-off must authorize
- **TRSC Disperse** — Two of three Intersect admins, three of five trusted entities and two of two Intersect leadership sign-off must authorize
- **TRSC Pause and Resume** — Two of three Intersect admins, and one of two Intersect leadership sign-off must authorize
- **TRSC Sweep** — One of three Intersect admins, and one of two Intersect leadership sign-off must authorize
- **TRSC Reorganize** — Two of three Intersect admins and three of five trusted entities must authorize

PROCESSES

Upon enactment of this governance action, funding for this project will be directed into the TRSC's stake account. All instances of TRSC and PSSC can not be staked with a SPO and will be delegated to the auto-abstain predefined DRep. From here funds will be withdrawn into a UTxO remaining at the TRSC.

When a subsequent annual TRSC is established, the funding for this project will be migrated via the 'disburse' action.

When the Legal Contract is prepared and the 5am.earth Foundation (or its pre-Foundation co-promoters) is ready, funding for this project will be transferred using the Fund action to a PSSC. All milestones will be outlined within the metadata.

A dashboard will be available for the community to audit the TRSC or PSSC and track metrics related to this withdrawn ada as well as being immutably verifiable on chain.

Refund Conditions

All funds not disbursed by the end of the delivery period will be returned to the Cardano Treasury. A final reconciliation will be published as part of the oversight reporting cycle. In the event of partial delivery or scope reduction, unspent funds associated with cancelled or reduced deliverables will be returned proportionally.

Audit & Oversight

Audit and oversight costs are included within the overhead applied to this proposal. The Intersect administration fee covers administrative oversight and is reflected within the cost of this proposal. Independent oversight will be provided through Intersect and a competitively procured third-party assurer (selected at M1), including reporting obligations and milestone-based disbursement controls.

Standardized Format & Immutable Hosting

The signed CIP-100/108 anchor metadata is pinned to IPFS as the immutable on-chain reference. The proposal PDF is hosted at a stable, publicly accessible URL with its blake2b-256 hash embedded inside the IPFS-pinned metadata, so any served PDF can be byte-verified against the immutable hash record.

Foundation Governance

The 5am.earth Foundation is the neutral steward of the open trust layer. The Foundation is operational by M1 Stand-Up and governs access, privacy, reporting, auditability, partner participation, and long-term resilience of the open layer.

The Foundation's operational discipline includes:

- public milestone reports at M1, M2, and M3;
- independent audit at M2 and M3;
- a public on-chain KPI dashboard, refreshed monthly;
- quarterly narrative reports to Intersect;
- monthly Cardano Forum updates and quarterly dRep-facing reports throughout the funded period.

Foundation legal description, jurisdiction, registration timeline, board, and secretariat are M1 deliverables.

ADA-Price-Movement Policy

The ask is denominated in ADA. If the price of ADA rises against USD programme costs over the funded period, the Foundation retains up to \$3.5M for scope elasticity; surplus above \$3.5M returns to the Treasury. If the price of ADA falls, we continue managing the programme as we did during the Catalyst Fund 13 project (where the price of ADA dropped by over 50% mid-delivery) — coordinating closely with our project partners and the administrator. The programme is also designed to generate revenue and pursue additional finance opportunities independently of ADA price movement. The 10,000,000 ADA cap is hard.

Reporting and Transparency

Through the funded period we maintain the public on-chain KPI dashboard; Cardano-visible evidence at M2 and M3 (transaction hashes, policy IDs, smart contract references); public milestone reports at M1, M2, and M3 with their evidence catalogues; and independent audit reports at M2 and M3.

SECTION 13

Risk Management

Every infrastructure programme of this scope carries risk across multiple dimensions. We organise the programme's risks into five dimensions ordered by locus of control: from operational risks the consortium can directly manage, through partner and adoption risks where we have influence but not full control, to external risks the consortium cannot eliminate but can buffer.

For each dimension below, we describe the general shape of the risk and our approach. The registry table at the end lists specific programme risks with un-mitigated severity and the concrete mitigation we take.

Delivery & Coverage

The programme commits to 200,000 farms by M1, 350,000 cumulative by M2, and 500,000 by M3 — across India, Cambodia, and Kenya. Project Swaminathan's India deployment runs at 500+ daily registrations from the field operations team and gives a credible baseline for India delivery.

Cambodia and Kenya start from less mature AE networks; coverage growth there depends on partner-country operating arrangements and AE deployment timing. Foundation legal setup at M1 is the other delivery-level commitment; jurisdiction selection and registration timeline drive when M1 acceptance evidence becomes available.

Partner & Procurement

The programme commits three application paths (Andamio, Zengate, Seedstars SIGMA) and identifies a trust-layer component cohort to be locked at M1 procurement. The application partners have signed engagement; M1 procurement is where we lock the underlying components (identity, oracle, privacy, storage, tokenisation, credential providers). The M2 finance pilot has additional partner dependencies — stablecoin disbursement rails and lender participation (banks, MFIs, DFIs, DeFi pools) — that are not yet fully contracted. The M2 traceability pilot depends on at least one anchor brand being live in the Zengate workflow.

Application & Adoption

Application paths produce measurable on-chain activity only when farmers and partner workflows actually use them. Andamio AE credentialing scales with the AE network. Zengate traceability evidence depends on anchor brand workflows being executed, not just available. Seedstars SIGMA finance evidence depends on the 1,000–5,000 farmer pilot cohort actually borrowing and repaying. Farmer wallet adoption is gated by local digital readiness and AE support; the 2030 KPI trajectory rests on multi-year adoption growth that the funded period seeds rather than completes.

Technical & Infrastructure

The trust layer scales from Project Swaminathan's pilot deployment into a multi-application, multi-country reusable infrastructure. Architectural extensions (identity, oracle, privacy, storage, API surface) introduce integration risk: the components are individually mature, but their composition

under programme-scale load is part of what M1 architecture lock validates. On-chain custody, multisig operation, and smart contract behaviour in the finance flow are security-critical surfaces where formal verification and independent audits at M2 and M3 are the primary controls.

External & Market

Regulatory risk varies by jurisdiction and by activity. Personal data on farmers, AEs, and farm boundaries is processed across India (Digital Personal Data Protection Act), Cambodia, and Kenya (Data Protection Act 2019), with EU buyer-side exposure through Zengate's EUDR workflow. The privacy and selective-disclosure architecture — off-chain encrypted storage, on-chain proofs rather than raw data, per-application permissions — is designed to satisfy these frames rather than work around them. Smallholder credit and stablecoin disbursement bring additional regulatory surface: RBI lender rules in India, central-bank lender licensing in Cambodia and Kenya, KYC/AML across lenders, and stablecoin regulatory posture that varies by jurisdiction. The finance pilot is structured so lenders bring their own licensing and compliance, and SIGMA's scoring and the trust-layer integration are stablecoin-agnostic. ADA price volatility is the most visible market risk; the ADA-denominated ask, milestone gating, and ADA-price-movement policy in \$12 buffer it. Country-level operating conditions across the three deployment countries can affect deployment timing; the three-country scope itself diversifies single-country exposure. Cardano ecosystem-wide events (constitutional changes, treasury process changes) sit outside the programme's control and are accepted as residual.

Risk Registry

RISK	LEVEL	MITIGATION STRATEGY
Delivery & Coverage		
AE deployment slower than forecast in Cambodia and Kenya	M	India's existing AE network absorbs aggregate coverage shortfalls; M3 evidence model accepts active deployment per country as multi-country evidence, not per-country quantitative thresholds
Foundation legal entity not registered by M1	M	Jurisdiction and registration path pre-scoped; M1 acceptance accommodates operational-board-and-secretariat readiness as alternative to fully-incorporated state
Country-level operating disruption (political, climate, infrastructure)	L-M	Three-country scope diversifies exposure; AE network is decentralised by design
Partner & Procurement		
Lender (banks/MFIs/DFIs/DeFi pools) participation insufficient at M2	M	Lender pool diversified across at least three confirmed partners by M1; finance pilot scope (1,000–5,000 farmers) sized to be servable by any subset

RISK	LEVEL	MITIGATION STRATEGY
Trust-layer component procurement delays at M1	L	Cardano components are mature and individually vetted; architecture lock at M1 with named alternatives per category
Application & Adoption		
Andamio AE credentialing scaling slower than 2,000 at M1	L	Andamio integration runs against the verified AE registry from WP1; credential scaling tracks AE deployment directly
Zengate traceability pilot lacks an active anchor-brand workflow at M2	M	M2 evidence model accepts a single live workflow as sufficient; Zengate's commercial book diversifies the candidate pool across commodity categories
Seedstars SIGMA finance pilot generates lower-than-expected loan volume	M	Pilot cohort sized 1,000–5,000 with elastic upper bound; evidence model measures structural readiness (rails, scoring, repayment loop) not absolute loan volume
Technical & Infrastructure		
Composition risk under programme-scale load (multi-component integration)	M	M1 architecture lock validates composition; load-testing built into integration milestones; independent technical audits at M2 and M3
Compromise of operational signing keys (Foundation, AE, oracle, guardianship)	L-M	Per-role key separation across operational functions; HSM-backed storage for high-privilege keys; audit logging of signing operations; independent technical audits at M2 and M3
Smart contract bugs in the finance flow	L-M	Formal verification of finance-flow contracts; independent audit at M2 before scale
External & Market		
Data privacy and cross-border data flow restrictions across deployment countries	M	Privacy-by-design architecture: off-chain encrypted storage, on-chain proofs (not raw data), per-application permissions; per-country legal scoping completed before each country's deployment
Smallholder finance regulation	M	Lender partners bring their own licensing and compliance; SIGMA scoring and trust-layer APIs are lender-frame-agnostic; finance pilot operates within established MFI/DFI/bank compliance envelopes
Stablecoin regulatory posture varies by jurisdiction	L-M	Stablecoin choice configurable per country at deployment; SIGMA underwriting and disbursement APIs stablecoin-agnostic; alternative stablecoin acceptable per M2 evidence model

RISK	LEVEL	MITIGATION STRATEGY
ADA price depreciation against USD programme costs	M	ADA-price-movement policy in §12 – continued delivery via partner + administrator coordination, revenue + additional finance pathways; hard 10M ADA cap
Cardano ecosystem events outside programme control (constitutional changes, treasury process changes)	L	Accepted as residual; programme commits to operational independence and reporting cadence

We continuously assess these risks and additional ones as they emerge, reacting proactively to evolving conditions to ensure value delivery for the benefit of the Cardano ecosystem.

SECTION 14

Why We Can Execute

Four things support delivery: a live deployment already operating on Cardano Mainnet, a partner cohort that covers every layer of the system, mature Cardano capabilities ready for real-world integration, and demand that pre-exists the infrastructure.

Project Swaminathan is operating on Cardano Mainnet today. Field operations capture hundreds of farmer registrations per day across six districts of Amravati, Maharashtra; 1,056 farms were validated through pilot phase with 100% blockchain success rate; a same-day critical patch was deployed during pilot Phase 3 with zero downtime. The consortium has already executed against the model the Treasury programme expands.

The consortium covers every side of the system: field distribution through Syngenta Foundation India and the 26,000+ AE network; application paths through Andamio (AE credentials), Zengate Global (traceability, compliance), and Seedstars SIGMA (finance, credit); project coordination and technical integration through HashPoint Consulting; commercial and institutional pathways through Elk GMBH, Syngenta Corporation, the Global AE Academy, government engagement (Maharashtra State; expansion conversations in Cambodia and Kenya), and development finance conversations (IFC, UNDP, WFP); and neutral stewardship through the 5am.earth Foundation. The trust layer's technical components are sourced from a Cardano-native cohort — AIQuant, DigiFarm, Veridian, and NMKR — under contracted procurement at M1.

The Cardano components are not speculative builds. Identity, oracle, credential, privacy, and storage layers are already implemented and operational on Project Swaminathan today; the 18-month programme is integration and scaling, not greenfield development. The open API surface enables additional app-layer integrations as ecosystem partners come online — insurance, carbon and biodiversity, government programme delivery, broader identity applications.

Demand pre-exists the infrastructure. PepsiCo committed two-year funding for 2,200 AEs. Cargill funds AE programmes. Maharashtra State engages on the trust layer as a public good. Seedstars is preparing a 2027 India finance pilot with a defined cohort and lender conversations. The Treasury ask creates the open layer between existing field activity and existing application demand.

By the end of the funded period, Cardano receives shared infrastructure for many applications — built on a live foundation, delivered by a complete partner cohort, integrating mature Cardano capabilities, and consumed by pre-existing demand — under a hard ADA cap and milestone-gated payments.