SDG BLOCKCHAIN ACCELERATOR

ROADMAP TEMPLATE

Challenge Definition

This section sets the foundation for understanding the development problem your solution aims to address. Be clear and concise, focusing on the problem itself, the environment in which it exists, and the intended outcomes of addressing it.

UNDP Challenge Summary

Tanzania has set ambitious climate goals, including a pathway to net-zero. However, one of the biggest barriers to progress is the absence of a secure, transparent system to track climate finance flows and carbon credit activity.

Currently, there is no national infrastructure to show how funds from donors, investors, or buyers move into projects, how carbon credits are issued, or whether those credits are ultimately retired. This lack of traceability creates three urgent challenges:

Some key data showing why this is urgent:

- *In 2023 Tanzania's total greenhouse gas emissions were approximately **89.8 million tonnes CO_2 equivalent**, up from about 87.6 million in 2022.*

- *Tanzania's fossil CO_2 emissions reached about **16.98 million tonnes in 2022**, an increase of 2.65 percent compared to the previous year.*

- *Between 2001 and 2022 Tanzania lost about **3,021,000 hectares of tree cover**, a net decrease of roughly 14.5 percent.*

These statistics highlight the real challenge: emissions are still increasing, forestry loss is reducing carbon sinks, and without a transparent registry there is a risk of double counting, misreporting, or inefficient use of carbon credit instruments.

*There is also an important opportunity. Under **Article 6.2 of the Paris Agreement**, countries can cooperate through the transfer of internationally transferred mitigation outcomes (ITMOs). For Tanzania, this could unlock significant finance and international demand for its mitigation activities. However, readiness requires robust systems to measure, report, and verify credits in line with international expectations. Without such infrastructure, Tanzania risks being excluded from these emerging markets.*

This challenge is therefore not just technical. It is about building confidence for donors, the Tanzanian government, project developers, and local communities. It is about ensuring that

climate finance is not only pledged but transparently tracked, delivered, and verified so that Tanzania can meet its international obligations, attract investment, and ensure climate action delivers real benefit for its people.

Q: Do you have any data on the number of credits you wish to issue?
Q: Can I get a quote from the CO?

Local Context

*Carbon markets represent a major opportunity for Tanzania. The country's vast forests, renewable energy potential, and community-based projects could generate high-quality carbon credits that attract both compliance and voluntary buyers. With global carbon markets projected to exceed **50 billion USD by 2030**, Tanzania has the potential to unlock significant climate finance that can support national development and adaptation priorities.*

However, without a transparent, government-led registry and marketplace, Tanzania faces serious risks:

- ***Exclusion from international markets.** Article 6 of the Paris Agreement requires rigorous systems to account for internationally transferred mitigation outcomes (ITMOs). Without readiness, Tanzania cannot participate at scale.*

- ***Loss of investor confidence.** Buyers and donors demand verifiable issuance and retirement of credits. A lack of infrastructure undermines trust and slows capital inflows.*

- ***Double counting and reputational risk.** Without tamper-proof records, credits could be misreported or sold twice, damaging Tanzania's credibility in global markets.*

- ***Communities left behind.** If benefits from projects cannot be traced, local people, especially women and youth, risk being excluded from finance and livelihoods linked to carbon projects.*

Key stakeholders include:

- *Government of Tanzania*, which must oversee issuance and retirement to safeguard national interests.

- *Project developers*, who require secure infrastructure to bring credits to market.

- *Private sector investors and buyers*, who are looking for credible African carbon credits to meet their climate targets.

- *Local communities and civil society*, who depend on equitable benefit-sharing and social safeguards.

While Tanzania has developed climate strategies and is preparing for Article 6 participation, the absence of a robust carbon credit registry is a critical gap. Addressing it now will allow Tanzania to seize early-mover advantages, build trust with international partners, and ensure that climate finance flows equitably to the people and projects delivering real impact.

Relevance to UNDP CO Priorities and Resource Mapping

*This project aligns directly with the UNDP Country Office's core priorities in Tanzania, which include climate action, sustainable finance, and inclusive development. The Country Office has already taken steps to develop carbon credit projects in partnership with government and local stakeholders. However, there is currently no infrastructure to **centralise, manage, and transparently track these projects**, nor to **offer the resulting credits to buyers in domestic and international markets**. Without such a system, Tanzania risks fragmented governance, inefficiencies, and missed opportunities in both Article 6 and voluntary markets.*

*The collaboration with Thallo builds on UNDP's **Climate Promise initiative**, which supports Tanzania in implementing its Nationally Determined Contribution (NDC). A key focus of the Climate Promise is strengthening measurement, reporting, and verification (MRV) systems and unlocking finance for climate action. The carbon registry and marketplace directly advance these goals by providing a transparent and auditable system for tracking carbon credit issuance and retirement.*

This project also supports the Country Office's ongoing work on sustainable finance and private sector engagement. By creating the infrastructure needed for international

*participation under **Article 6 of the Paris Agreement**, the project helps Tanzania attract new sources of climate finance, increase accountability, and ensure that benefits reach vulnerable groups, including women and youth in rural communities.*

*In terms of resources, the collaboration is supported through the **SDG Blockchain Accelerator**, with Thallo contributing technical expertise, platform development, and blockchain operations to UNDP. Co-financing is currently provided in the form of in-kind resources, human capital, and technology infrastructure, but additional donor and government support will be needed for scaling beyond the pilot. The project establishes the foundation necessary to secure these resources by proving readiness and demonstrating transparency.*

*This initiative is not a standalone project. It is a **strategic extension of UNDP Tanzania's climate programmes**, complementing existing project pipelines while providing the national infrastructure required to mobilise finance at scale and deliver measurable, inclusive climate impact.*

Expected Impact (from CO perspective)

From the perspective of the UNDP Country Office in Tanzania, a successful project would deliver both immediate and longer-term impacts:

1. *Systems Improvement*

   - *Establish Tanzania's first government-led digital registry and marketplace for carbon credits.*

   - *Provide a transparent, auditable platform to track issuance, sale, and retirement of credits in line with international best practices.*

2. *Policy and Governance Readiness*

   - *Strengthen national readiness for participation in **Article 6.2 of the Paris Agreement**.*

   - *Provide government with real-time oversight tools to monitor credits and report transparently to international stakeholders.*

3. *Mobilisation of Climate Finance*

    ○ *Demonstrate the ability to issue **50,000 credits in Year 1**.*

    ○ *Build confidence that can unlock larger flows of finance into forestry, clean cooking, and e-mobility projects.*

4. **Community Empowerment and Equity**

    ○ *Ensure project benefits are traceable, including visible benefit-sharing for women and youth in regions such as Arusha and Tanga.*

    ○ *Engage **50–100 active users** in the first year, including government, project developers, and private buyers.*

5. **Innovation and Scalability**

    ○ *Test blockchain-based infrastructure in a real-world government context, creating a scalable model for other African countries.*

    ○ *Generate quarterly reports with transparent data to inform both Tanzania's national climate strategies and UNDP global programming.*

Target SDGs and SDG Indicators

This project directly supports Tanzania's ambition to mobilise climate finance and strengthen readiness for international carbon markets under Article 6 of the Paris Agreement. By building a transparent, government-led carbon credit registry and marketplace, the platform ensures that carbon credits are issued, sold, and retired in a way that is traceable, auditable, and aligned with the country's Nationally Determined Contribution (NDC).

The project contributes to multiple Sustainable Development Goals by addressing climate action, forest conservation, clean energy adoption, and inclusive partnerships. Below are the SDGs and specific indicators most directly supported:

SDG 13: Climate Action

- *Indicator 13.2.1* – *Number of countries that have communicated the establishment or operationalisation of an integrated policy/strategy/plan which increases their ability to adapt to climate change and foster low greenhouse gas emissions development.*

- *Contribution: The registry supports Tanzania's NDC by providing the digital infrastructure to measure, report, and verify carbon credit issuance and retirement in line with Article 6.2.*

SDG 15: Life on Land

- *Indicator 15.2.1* – *Progress towards sustainable forest management.*

- *Contribution: By enabling transparent issuance of forestry and conservation credits, the platform supports sustainable forest management and combats deforestation.*

SDG 7: Affordable and Clean Energy

- *Indicator 7.1.2* – *Proportion of population with primary reliance on clean fuels and technology.*

- *Contribution: The platform helps mobilise finance for clean cooking and e-mobility projects, accelerating adoption of clean energy technologies in Tanzania.*

SDG 17: Partnerships for the Goals

- *Indicator 17.17.1* – *Amount in United States dollars committed to public–private and civil society partnerships.*

- *Contribution: The project demonstrates an innovative partnership between government, UNDP, and private sector actors to deliver transparent carbon market infrastructure as a digital public good.*

User & Problem Mapping

Understanding the users and stakeholders affected by the challenge is essential for building impactful and context-aware solutions. This section helps articulate who the primary users are, what they aim to achieve, and which other actors are involved or impacted.

Primary User Persona

PERSONA

Role: Project Manager Net Zero Nature Positive Project, Tanzania Forest Services (MNRT), Government of Tanzania
Background: Experienced in climate policy and reporting under Tanzania's Nationally Determined Contribution (NDC). Works closely with UNDP, local project developers, and international partners.

Goals:

- *Establish a **national carbon credit registry** that can track issuance, sales, and retirements in one place.*

- *Ensure Tanzania is ready for **Article 6.2 transactions**, enabling the country to benefit from international carbon markets.*

- *Attract **greater flows of climate finance** to support forestry, clean cooking, and e-mobility projects.*

- *Build trust with investors and communities by showing transparent, tamper-proof records of all credits.*

Challenges:

- *Current systems are **fragmented and manual**, making it hard to oversee projects consistently.*

- ***Investor confidence is low** without transparent data, limiting the ability to mobilise finance.*

- Risk of **double counting or misreporting**, which could harm Tanzania's international credibility.

- **Pressure from multiple stakeholders** — government, donors, communities, and project developers — but with limited tools to manage them all.

- Ensuring that **local communities, especially women and youth**, see fair and traceable benefits from carbon finance.

Environment:
The project manager works in a busy government office with limited technical staff. He manages reporting to international climate bodies and is responsible for ensuring Tanzania's compliance with its NDC. His work requires balancing policy, finance, and community needs,

User Story

As a government officer, I want to establish a national carbon credit registry **so that Tanzania can transparently issue, track, and retire credits in line with international standards**.

As a government officer, I want to demonstrate readiness for Article 6.2 transactions **so that Tanzania can access international carbon markets and mobilise climate finance**.

As a government officer, I want to provide oversight of all project developers and credits **so that I can build investor confidence and avoid risks of double counting**.

As a government officer, I want to ensure benefit-sharing is visible and traceable **so that women and youth in local communities see the tangible impact of carbon finance**.

Key Stakeholders/Partners

Government of Tanzania

- **Vice President's Office (Division of Environment)**: *Coordinates national climate policy and NDC implementation.Lead agency responsible for carbon market governance and oversight.*

- *Ministry of Energy*: Relevant for clean cooking, e-mobility, and renewable energy projects.

- *Tanzania Forest Service Agency (TFS)*: Oversees forestry and conservation activities linked to carbon projects.

- *National Environmental Management Council (NEMC)*: Regulator for environmental compliance and safeguards.

UNDP and Development Partners

- *UNDP Tanzania Country Office*: Accelerator host, aligning project with Country Programme and Climate Promise.

- *UNDP Global Climate Team*: Provides technical expertise on Article 6 readiness and carbon markets.

- *SDG Blockchain Accelerator*: Facilitates innovation and technical development for the registry.

- *International Donors and Multilateral Funds*: Potential financiers (for example, Green Climate Fund, bilateral donors).

Technology and Delivery Partners

- *Thallo*: Climate infrastructure provider, delivering the registry, marketplace, and blockchain integration.

- *Cardano Ecosystem Partners*: Blockchain infrastructure for tokenisation, transaction validation, and on-chain transparency (for example, IOHK, Cardano Foundation, tool providers like Ogmios and Kupo).

- *External Verification Bodies or Oracles*: Independent auditors ensuring project and credit data integrity.

Private Sector Buyers and Investors

- *Domestic Corporates in Tanzania: Seeking offsets to meet sustainability commitments.*

- *International Corporates and Traders: Looking for credible African carbon credits for voluntary and compliance purposes.*

- *Financial Institutions: Potential facilitators of climate finance and carbon transactions.*

Project Developers

- *Forestry and Land Use Organisations: Managing reforestation, conservation, or REDD+ projects.*

- *Clean Cooking and E-Mobility Enterprises: Generating credits from energy access solutions.*

- *Agriculture and Rural Development NGOs: Developing carbon-relevant sustainable practices.*

Communities and Civil Society

- *Local Communities in Project Areas (Arusha, Tanga, and beyond): Direct beneficiaries of project revenues and climate finance.*

- *Women and Youth Groups: Priority beneficiaries of equitable benefit-sharing.*

Solution Overview

This section describes your proposed solution in a clear and structured way. Focus on what the solution is, how it works, and how it uses blockchain and Cardano tools to deliver impact.

Solution Summary

*The proposed solution is the creation of Tanzania's first **national carbon credit registry and marketplace**, a government-led digital infrastructure that brings full transparency, accountability, and efficiency to the management of carbon markets.*

*This solution directly addresses the development challenge of **limited climate finance flows caused by market opacity and lack of trusted infrastructure**. At present, Tanzania does not have a system to track how carbon credits are issued, sold, and retired, which undermines investor confidence, slows finance, and risks excluding local communities from the benefits of net-zero projects.*

With this platform:

- *The **Government of Tanzania** can securely issue, track, and retire carbon credits in line with international best practices and Article 6.2 of the Paris Agreement.*

- ***Project developers** can bring credits to market through a transparent and accessible system, unlocking finance for forestry, clean cooking, e-mobility, and conservation projects.*

- ***Private sector buyers and investors** gain confidence that every credit purchased is verifiable and retired on the Cardano blockchain, eliminating risks of double counting.*

- ***Communities**, particularly women and youth in project regions such as Arusha and Tanga, benefit from traceable benefit-sharing mechanisms, turning social impact from a promise into proof.*

Uniqueness and relevance

- ***End-to-end infrastructure**: Unlike fragmented or manual processes, this solution integrates issuance, marketplace trading, and retirement into one system.*

- ***Blockchain-backed trust**: By using the Cardano blockchain, every transaction is immutable, low-cost, and publicly auditable, creating credibility in both domestic and international markets.*

- ***Alignment with UNDP priorities**: The platform complements UNDP's Climate Promise and ongoing NDC support by strengthening measurement, reporting, and verification systems.*

- ***Scalable model**: The pilot in Tanzania provides a foundation that can be expanded nationally and replicated across other countries seeking Article 6 readiness.*

Thallo's solution provides Tanzania with the missing infrastructure to mobilise climate finance at scale, strengthen governance of carbon markets, and ensure that the benefits of climate action are equitably distributed.

Core Functionalities

- *Feature 1: Centralised Carbon Credit Registry*

  A single, government-led registry that allows Tanzania to issue, track, and retire carbon credits in one place. Every credit is tokenised on the Cardano blockchain, creating an immutable and auditable record that eliminates double counting and strengthens readiness for Article 6.2 participation.

- *Feature 2: Integrated Marketplace for Buyers and Developers*

  A transparent exchange where project developers can list credits and buyers can search, filter, and purchase based on attributes such as project type, SDG alignment, or vintage year. This functionality connects supply with demand, mobilises climate finance, and ensures Tanzanian projects gain access to international markets.

- *Feature 3: Blockchain Traceability and Reporting*

  Each issuance, transfer, and retirement is recorded on the Cardano blockchain, providing a tamper-proof record that can be audited at any time. Dashboards and automated reports allow the Government of Tanzania and UNDP to monitor market activity in real time, ensuring full transparency and credibility.

- *Feature 4: Low-Cost, Scalable Transactions*

  By using Cardano's proof-of-stake blockchain, the system benefits from low transaction costs and scalability, ensuring it can handle growth in the Tanzanian carbon market without prohibitive expenses.

Tech Stack Overview

Front-End

- **Web-based User Interface**: Dashboard for government, project developers, and buyers to issue, list, purchase, and retire credits.

- **Responsive Design**: Accessible from standard browsers and devices with optimisation for low-bandwidth environments.

Back-End

- **Thallo Platform Services**: Core logic for registry management, marketplace transactions, and reporting.

- **APIs for Project Intake and Data Validation**: Allow developers or administrators to submit project details (project type, volume, SDG alignment).

- **Role-Based Access Control**: Permissions for government oversight, developer submissions, and buyer transactions.

Blockchain Layer

- **Cardano Blockchain**: Used for tokenising credits, recording sales, and managing retirements with immutability and transparency.

- **Smart Contracts (Aiken)**: Define rules for minting, burning, and transferring carbon credit tokens.

- **UTxO Model**: Tracks ownership and prevents double counting.

- **Blockchain Tools**:

  - **Ogmios** for transaction monitoring and chain-sync.

  - **Kupo** for UTxO indexing.

  - **cardano-cli** for validation and deployment.

Data and Reporting

- *On-chain Data*: All credit issuances, transfers, and retirements recorded immutably on Cardano.

- *Off-chain Services*: Backend aggregation and dashboards for reporting to government and UNDP.

- *Exportable Reports*: CSV and PDF outputs including transaction IDs for external audits.

External Integrations

- *Verification Bodies or Oracles*: Optional integration with third-party verification data providers for project validation.

- *UNDP and Government Systems*: Potential API integration for importing existing project data or aligning with Tanzania's climate reporting frameworks.

Cardano-Specific Elements

*The carbon credit registry and marketplace is built on the **Cardano blockchain**, which provides the transparency, security, and low-cost scalability required for Tanzania's carbon market infrastructure. The system uses multiple Cardano-native capabilities to ensure that every credit is verifiable, auditable, and tamper-proof:*

1. Token Minting and Burning

- *Each carbon credit is represented as a **native token** on Cardano, minted at issuance and burned at retirement.*

- *This ensures every credit has a unique, immutable identity and prevents double counting or reuse.*

- *Token supply reflects the exact number of credits in circulation and retirement.*

2. Smart Contracts (Plutus / Aiken)

- *Validator scripts* enforce rules for issuance, transfers, and retirement.

- *Aiken smart contracts are used for efficiency and lower execution costs, with testing and debugging already carried out on Cardano's Preview testnet.*

- *Contracts validate that only authorised government wallets can mint new credits and that retirements are final and irreversible.*

3. Metadata Tagging

- *Each token carries **metadata** linked to the underlying project, including project ID, type (forestry, clean cooking, e-mobility), vintage year, and SDG alignment.*

- *Metadata makes credits searchable and filterable in the marketplace and ensures transparency for buyers and regulators.*

4. UTxO Model for Traceability

- *Cardano's **UTxO model** ensures that ownership of tokens is always traceable from issuance through transfer to retirement.*

- *This provides a full audit trail that can be reconciled with government and UNDP dashboards.*

5. Monitoring and Verification Tools

- ***Ogmios** is used for transaction monitoring and syncing with off-chain services.*

- ***Kupo** indexes UTxOs to provide quick queries and reporting.*

- *These integrations allow on-chain activity to feed directly into dashboards and reports for government and UNDP oversight.*

Prototype Plan (Sprint-Based)

This section outlines your team's rapid prototyping plan. The goal is to build a functional and demonstrable version of the solution within 10 working days, with user feedback integrated.

Prototype Goal

During this sprint, our team aims to **build and validate the core components of Tanzania's carbon credit registry and marketplace**, *focusing on functionalities that demonstrate both technical feasibility and alignment with government and UNDP needs.*

Specifically, we will:

1. **Deploy a test version of the national carbon credit registry** *where government administrators can issue credits into a custody wallet.*

2. **Run a live tokenisation transaction on the Cardano blockchain**, *minting test credits with project-level metadata.*

3. **Enable credits to be listed and viewed in the platform's marketplace**, *showing how buyers would access Tanzanian projects.*

4. **Demonstrate retirement of credits on-chain**, *validating the integrity of the system and proving that credits cannot be reused or double counted.*

5. **Provide real-time reporting dashboards** *that display issued, listed, sold, and retired credits, ensuring transparency for oversight.*

This sprint is designed to deliver a **working proof-of-concept MVP** *that proves the registry's functionality, showcases the traceability benefits of Cardano blockchain integration, and demonstrates readiness for future scaling. The outcomes will confirm that Tanzania can manage credits transparently, laying the foundation for Article 6.2 participation and larger-scale climate finance mobilisation.*

Expected Outputs

Expected Outputs of the Sprint

1. *On-chain transaction*
   - *One successful token mint-and-retire cycle on the Cardano blockchain.*

2. *Metadata attached to tokens*
   - *Credits issued with project details and SDG tags recorded on-chain.*

3. *Front-end user interface*
   - *Basic forms for project intake and issuance.*
   - *Dashboard to display issued credits and marketplace listings.*

4. *Back-end integration*
   - *Link between front-end actions and Cardano blockchain transactions.*
   - *Database and reporting functions to track credits issued, listed, and retired.*

5. *Stakeholder validation*
   - *Minimum three demo sessions with government, developers, and UNDP to test usability and gather feedback.*

Sprint Timeline

(Break down the 10-day sprint into tasks and outcomes. Use this as a working plan for the team to stay aligned and focused. The table below is just an example. Please feel free to adapt the tasks and outcomes based on your solution's specific needs and development approach.)

Description	Outcome
Scope & Design (Days 1–2)	Define sprint goals, map core user flows, and create simple wireframes.
Front-End Build (Days 3–4)	Implement intake form, dashboard, and basic marketplace interface.
Blockchain Integration (Days 5–6)	Mint and retire test tokens on Cardano with metadata attached.

Back-End Setup (Days 7–8)	Connect front end to database, enable reporting and credit tracking.
QA & Iteration (Day 9)	Internal testing, bug fixes, and polish for stability.
Final Demo Prep (Day 10)	Deliver a working prototype with one full token lifecycle demonstrated.

Success Metrics & Milestones

Tracking progress throughout the accelerator is key to building momentum and measuring real impact.

Below is a set of baseline success metrics that all teams are expected to work toward during the sprint, MVP refinement, and pilot-readiness phases. These ensure a consistent level of development and stakeholder engagement across all projects.

Teams are also encouraged to define additional metrics that are specific to their solution, context, and strategic goals. These custom metrics can relate to: social or environmental impact, technical milestones, community adoption, strategic partnerships, innovation outcomes.

Sprint Phase

Focus: Rapid prototyping, initial user testing, and validation of core functionality.

Category	Baseline Metric
Blockchain Interaction	One meaningful blockchain function implemented (e.g., token minting, VC issuance, on-chain hash).
User Interface	At least one working UI screen or flow (e.g., form, dashboard, display screen).
Stakeholder Testing	Minimum 3 live or async testing/feedback sessions with relevant users or stakeholders.
SDG Integration	Incorporate SDG logic or tags into the metadata, user interface, or output, focusing on indicators your solution actively addresses.

Demo Readiness	Demo link or video walkthrough prepared and submitted by Day 10.

Post-Sprint Refinement

Focus: Iterating based on feedback, improving functionality, and aligning with pilot opportunities.

Focus Area	Baseline Metric
Feedback Integration	Minimum two user- or stakeholder-driven changes implemented in logic or UX.
MVP Stabilization	Functional testing completed with consistent results and no major blockers.
Stakeholder Alignment	At least one follow-up session with a CO or stakeholder to discuss next steps.

Pilot Readiness

Focus: Preparing the solution for deployment and scaling.

Goal Area	Suggested Metric
Institutional Buy-In	CO expresses interest in pilot exploration; early MoU or agreement in discussion.
Solution Readiness	MVP tested in an extended or external environment; improvements implemented.
Sustainability Path	Initial plan for post-program ownership or funding drafted.

Cumulative Tracking Suggestions

Consider using a simple dashboard or milestone tracker across the weeks to monitor:

- % completion of prototype milestones

- % of users tested
- % of stakeholder feedback items received & integrated
- % SDG contribution implemented in technical flow
- Progress toward pilot validation (e.g., 0–100 scale)

MVP Planning Table

After the prototype sprint, you'll begin shaping the full MVP. This table helps identify what's already been built, what needs improvement, and how each component will evolve into a pilot-ready version.

Component	Prototype Status	Improvement for MVP
UI/UX	Basic Intake form for dashboard	Add search, filters, and cleaner design
Blockchain	Failed blockchain integration	Issues and challenges fixed. Block minted to test and mainnet
SDG Tags	Metadata attached to credits	Make tags filterable and standardised on platform
Feedback	Simple dashboard and CSV export	

Risk & Assumptions

Every project has uncertainties. Use this table to proactively identify key risks and assumptions and describe how your team plans to address them.

Risk/Assumption	Description	Risk Level	Risk Mitigation Strategy
Limited Cardano experience	The team lacks deep technical knowledge of Cardano-specific components.	Low	Pair devs with mentors
Low user engagement	Users may not participate in testing or provide meaningful feedback.	Medium	Pre-schedule testing calls

Team Profile

This section provides a comprehensive overview of the individuals and organizations behind the development and implementation of the proposed solution. It highlights the complementary expertise of both the Solution Makers and the Challenge Owners, underscoring the collaborative foundation of the accelerator.

Solution Makers

Introduce the team behind the solution, highlighting relevant skills and backgrounds that contribute to your ability to execute this project successfully.

Team Name
Thallo

Team Members & Roles

- *Joseph Hargreaves – Founder, project manager*
- *Brandon Nazek – Blockchain developer and solutions architect*
- *Simonas Jakubonis - Full stack developer*

Challenge Owners

The Country Office or institutional partners who defined the development challenge and provided critical context, feedback and collaboration throughout the accelerator.

Challenge Owner Organization Name: (UNDP Tanzania)

Team Members & Roles:

- Mariestella Kago – Challenge Lead
- Elia John – Co - challenge Lead
- Gertrude Lyatuu – Team Member
- Tulalumba Bangu – Team Member
- Chizuru Horiba – Team Member

Area of Focus:

This solution directly contributes to increased transparency, verifiability, and efficiency in climate-related public investments, ensuring that financial flows and carbon credit transactions are traceable, accountable, and aligned with national priorities. By embedding immutable records of climate actions and ecosystem service outcomes, the platform enhances the credibility of Tanzania's carbon market and strengthens stakeholder confidence. The intervention aligns with SDG 13 (Climate Action) by enabling accurate tracking and reporting of greenhouse gas reductions, SDG 15 (Life on Land) by supporting sustainable forest and ecosystem management, and SDG 17 (Partnerships for the Goals) through fostering collaboration between government institutions, local communities, private sector actors, and technology partners. Importantly, the solution unlocks new financing channels by applying digital innovation using blockchain and tokenisation to create transparent, verifiable credits that are attractive to investors and donors. This digital traceability not only improves compliance with international reporting standards but also ensures equitable benefit-sharing with local communities engaged in conservation and low-carbon initiatives.

Notes & Insights

Use this section to capture key learnings, challenges, or insights discovered during prototyping. This could include quotes from stakeholders, reflections on usability, or ideas for future iterations.

- *Emugo team suggested that IFPS data should be tagged to the on-chain credits to ensure better traceability.*
- *Potential opportunity to integrate with local projects in the next phase.*
- *Alignment with government stakeholders and universities critical for the next stage.*

Pilot Vision & Scalability Plan

This section looks beyond the prototype to outline the long-term vision for piloting and scaling your solution.

Pilot Vision (6–12 months)

The pilot will demonstrate Tanzania's first government-led carbon credit registry and marketplace in a real-world setting. Success would mean:

- *Government administrators can **issue credits into a central custody wallet**, with every issuance recorded on the Cardano blockchain.*

- *At least **50,000 credits issued** and **10,000 retired** in the first year to prove system integrity (assuming project availability).*

- *A functioning **marketplace** where project developers list credits and buyers can search and purchase transparently.*

- *Automated **reporting dashboards** providing real-time oversight to the Government of Tanzania and UNDP, including SDG-linked metadata.*

- *Clear evidence that credits are **traceable from issuance to retirement**, proving readiness for Article 6.2 participation and voluntary market demand (assuming project availability).*

Target Users or Communities for Pilot

- ***Government of Tanzania**: Ministry of Environment, Vice President's Office (Division of Environment), and other agencies requiring oversight.*

- ***Project developers**: Forestry, clean cooking, and e-mobility projects, particularly those in Arusha and Tanga.*

- ***Private sector buyers**: Domestic corporates and international investors seeking trusted African carbon credits.*

- ***Communities**: Local projects that are developing projects and need avenues for sale.*

- ***UNDP Tanzania Country Office**: Strengthening delivery of the Climate Promise and NDC implementation.*

Scalability Plan

The pilot will serve as a foundation for scaling nationally and regionally. After demonstrating a working registry in Tanzania, the solution can expand by:

- *Onboarding **more project types** beyond forestry (for example, energy, agriculture and conservation).*

- *Increasing the number of users from dozens to hundreds, including government, developers, and buyers.*

- *Adapting the same infrastructure for other African countries preparing for Article 6.2, using Tanzania as a **regional model**.*

- *Leveraging the **modular architecture**: blockchain integration, reporting dashboards, and metadata standards are reusable across contexts with minimal customisation.*

Support Needed

To move from pilot to scale, the project will require:

- ***Technical support**: Continued blockchain integration, enhanced reporting tools, and role-based access for multiple stakeholders.*

- ***Policy support**: Government frameworks that embed the registry into Tanzania's national climate strategy and Article 6.2 readiness.*

- ***Funding support**: Resources to onboard projects, cover transaction and hosting costs, and provide training for government staff.*

- ***Partnership support**: Engagement with UNDP, donors, and private sector actors to mobilise finance and ensure long-term sustainability.*

Deliverables Checklist

Use the checklist below to ensure all relevant final materials are prepared and submitted for review.

These are the suggested key outputs from the prototype sprint, not all items may apply to every team or solution, so please adapt as needed based on your project's scope and stage.

Please link all deliverables in a dedicated shared folder for your team for easy access by the program team and stakeholders.

- ☑ ~~Prototype demo link~~
- ☑ ~~Source code / GitHub repo~~
- ☑ ~~Video walkthrough~~
- ☑ ~~Feedback from Country Office~~
- ☑ ~~Next steps agreed (e.g., pilot planning?)~~

Team Reflection

Use this space to share key takeaways and reflections from both the Challenge Owner and Solution Maker teams. This dual perspective helps document alignment, evolution of understanding, and mutual growth during the accelerator journey.

Challenge Owner's Perspective

Through the Accelerator, we gained a deeper understanding of how blockchain can be applied to address complex development challenges in Tanzania particularly in enhancing transparency, ensuring equitable benefit sharing, and mobilizing climate finance for our national priorities such as the Net Zero Nature Positive Project and the Building Resilience Project

Collaborating closely with technical teams and our solution partner (Thallo) enabled us to refine the challenge statement for Tanzania's carbon markets and prioritize features with the highest potential.

Solution Maker's Perspective

- Building with Cardano was new for us, and we now feel more confident integrating blockchain in real-world systems.
- Working closely with the CO's was extremely helpful in understanding the pain points. More time collaborating with the direct team and the various other government bodies will be critical to maximising value.