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

(Briefly describe the real-world development challenge being addressed. Provide a summary of the development challenge submitted by the UNDP Country Office. Focus on the nature of the problem rather than the solution. This should be written in a way that is easily understandable to external stakeholders. Please include any relevant data and statistics that highlight the urgency and significance of this challenge.)

Armenia faces a growing waste management crisis that threatens both environmental quality and public health. The country generates more than **350,000 tons of municipal solid waste annually**, with plastic accounting for a significant share of non-biodegradable materials. According to national and local reports, **over 80% of this waste ends up in landfills without proper segregation or recycling**. Rural and semi-rural communities are particularly vulnerable, as they lack infrastructure for source separation, recycling, or monitoring of waste flows.

The absence of reliable data compounds the problem: municipal and national authorities cannot accurately track how much plastic is recovered or recycled, which actors are involved, or whether reported volumes are credible. This gap undermines policy planning and compliance with international commitments, including the **2030 Agenda for Sustainable Development**, and delays Armenia's transition to **Extended Producer Responsibility (EPR)**, scheduled for adoption by **autumn 2026**.

The lack of traceability and accountability in waste management has three direct consequences:

- Environmental: unmanaged plastic waste contaminates land and water systems, contributing to biodiversity loss and greenhouse gas emissions from landfills.
- Social: communities, including informal waste collectors, remain excluded from sustainable economic opportunities linked to recycling.
- Economic: producers and municipalities lack mechanisms to finance recovery and demonstrate compliance with emerging regulations.

Without urgent interventions that introduce transparency, measurable impact tracking, and accountability, Armenia risks escalating landfill dependence, higher compliance costs under new legislation, and diminished capacity to meet its climate and circular economy commitments.

Local Context

(Why does this challenge matter? Describe the setting and key stakeholders. Explain why this challenge is important in your specific country or regional context. Describe the affected communities or sectors, any existing efforts to solve the issue, and the roles of key stakeholders involved (e.g., government, private sector, civil society.))

Waste management is a critical issue in Armenia, particularly in rural and semi-rural areas where infrastructure for source separation and recycling is underdeveloped. Communities outside Yerevan, such as **Sevan and Hrazdan**, face growing waste volumes with limited collection, segregation, or reporting mechanisms. As a result, the majority of plastic waste is landfilled, leading to environmental degradation, public health risks, and missed opportunities for recycling-based economic activity.

This challenge matters because Armenia is preparing to implement **Extended Producer Responsibility (EPR)** legislation by autumn 2026. Producers of packaging materials will soon be responsible for financing and verifying the recovery and recycling of post-consumer waste. However, there is currently no verifiable system in place to monitor recovery activities, accredit waste actors, or provide regulators and producers with reliable data.

Several stakeholders are already engaged in addressing the issue. **Kotayk and Gegharkunik MSWM Company LLC**, an inter-municipal landfill and secondary sorting operator serving 16 municipalities, began operations in 2025. **Innovative Solutions for Sustainable Development (ISSD) NGO** collects sorted waste in schools, kindergartens, and municipalities across Armenia. **ArmPack Foundation**, a voluntary Producer Responsibility Organization established by Coca-Cola Hellenic, PepsiCo Armenia, and Pernod Ricard Armenia, is piloting compliance models for packaging waste. Despite these efforts, the lack of a unified, verifiable data infrastructure prevents effective coordination and scaling.

Key stakeholders in this context include **government authorities**, which must implement and enforce EPR; **producers and brand owners**, who are legally obliged to finance recovery; **local NGOs and waste collectors**, who are responsible for day-to-day operations; and **citizens**, who need incentives and tools to participate in source segregation. Addressing this challenge is essential for Armenia to comply with upcoming regulations, reduce environmental impact, and create new opportunities for inclusive green growth.

Relevance to UNDP CO Priorities and Resource Mapping

(How does this project align with the overall objectives of the UNDP Country Office? Is it building on an existing initiative, or is it a new standalone project? If the project builds on an existing initiative, please provide further details, including a description of the original project, its donors, scope, scale and any other relevant information. Additionally, is there any co-financing available, whether in the form of funding, human resources, or other types of project support?)

Strategic alignment

The pilot advances UNDP Armenia priorities on climate action, circular economy, digital innovation, and inclusive growth. It contributes to SDG 12, SDG 13, and SDG 11 by improving waste segregation, traceability, and evidence-based policymaking. It also supports UNDP's agenda on public sector transparency, private sector engagement, and locally led development through municipal participation.

Builds on existing UNDP efforts

The project extends ongoing UNDP support for waste segregation and municipal service improvement in and around Yerevan, and aligns with the Country Office's Accelerator work with Emurgo on blockchain for public good. It complements field activities already underway with local actors in Kotayk and Gegharkunik, creating a verifiable data layer that existing initiatives can use for reporting, funding, and scale.

Local initiatives the pilot will integrate

- **Kotayk and Gegharkunik MSWM Company LLC**: inter-municipal operator serving 16 municipalities, source separation, secondary sorting, and landfilling.
- **Innovative Solutions for Sustainable Development (ISSD) NGO**: community collection, school and municipal partnerships, early Deposit Return System testing.
- **ArmPack Foundation**: voluntary Producer Responsibility Organization initiated by Coca-Cola Hellenic Armenia, PepsiCo Armenia, and Pernod Ricard Armenia, piloting packaging EPR readiness.
- **Potential recycler partner**: to complete the value chain for verified recovery and end-market integration.

Why this matters in Armenia now

EPR legislation is expected by autumn 2026. Producers will need credible, auditable evidence of recovery. Municipalities and NGOs require tools that make data collection and verification simple, trusted, and financeable. The Country Office can demonstrate a practical pathway from pilot data to national policy implementation.

Resource mapping and roles

- **UNDP Armenia**: convening of stakeholders, policy alignment with EPR, access to municipalities, communications, monitoring and evaluation support.
- **Nozama Tech Ltd. (Plastiks)**: platform, accreditation methodology, multilingual onboarding, Cardano integration with Emurgo support, dashboards, reporting, training. Intellectual property of the technology and verification methodology remains with Nozama Tech Ltd.
- **Emurgo**: Cardano architecture guidance, wallet and NFT integration support, security and scalability reviews.
- **Municipal and local operators**: operational data, site access, participation in accreditation and verification, integration of collection and sorting workflows.
- **ArmPack, brand owners, and future PRO stakeholders**: governance inputs, compliance use cases, sponsorship of pilot fees, preparation for producer-funded scale under EPR.
- **Civil society and education partners**: citizen engagement, source-segregation awareness, feedback loops.

Co-financing and in-kind support

- **Private sector sponsorship**: anticipated coverage of onboarding and platform fees for accredited entities by brand owners active in Armenia, for example PepsiCo and Coca-Cola, channelled through ArmPack or CSR budgets.
- **In-kind contributions from Plastiks**: existing platform, engineering effort, localization, training, reporting templates.
- **In-kind contributions from UNDP and municipalities**: staff time, coordination, access to facilities, outreach support.

- **Technical support from Emurgo**: integration guidance and reviews.

Standalone vs. building on prior work

This is not a greenfield effort. It is a targeted scale-out that builds on current municipal operations, NGO collection networks, and the voluntary PRO pilot, adding a verifiable digital backbone for monitoring, reporting, and monetization. The design allows smooth transition from pilot to national rollout as EPR takes effect.

Sustainability pathway

After the pilot, operating costs shift to producer funding under EPR, using the same verification and certification backbone. The Country Office gains a replicable model that can be extended to other regions, materials, and UNDP programs, ensuring long-term relevance and value.

Expected Impact (from CO perspective)

(Outline the intended outcomes from the Country Office's perspective. What would a successful pilot enable (e.g., policy change, improved service delivery, community empowerment, systems improvement, or scaled innovation)? Keep the focus on measurable or meaningful change.)

From the Country Office perspective, the successful implementation of this pilot will generate a set of measurable outcomes that directly support Armenia's transition to sustainable waste management and Extended Producer Responsibility (EPR).

1. **Policy readiness and systems strengthening**

   The pilot provides Armenia with its first blockchain-based infrastructure for verifiable waste traceability and certification. This system can be used as a foundational tool to operationalize EPR once the legislation enters into force in 2026. Verified data from the pilot will demonstrate how transparent reporting frameworks can improve policy design and enforcement.

2. **Improved municipal service delivery**

   Municipal operators in Kotayk and Gegharkunik provinces will be equipped with tools to track, certify, and report waste recovery activities in real time. This improves operational efficiency, accountability, and capacity to plan for expanded segregation services across additional municipalities.

3. **Community empowerment and inclusion**

   Rural communities of Sevan and Hrazdan (40,000 residents combined) will benefit from engagement in waste segregation activities, supported by transparent incentive systems and education campaigns. Informal waste collectors and local NGOs will gain recognition

through formal accreditation, improving livelihoods and trust in the system.

4. **Private sector engagement**
   By onboarding ArmPack Foundation and corporate partners such as Coca-Cola and PepsiCo Armenia, the pilot sets a precedent for private-sector co-financing of waste management solutions. This creates a sustainable model where compliance obligations translate into measurable social and environmental benefits.

5. **Scalable innovation for UNDP portfolio**
   A successful pilot will create a replicable model for integrating blockchain-based traceability into UNDP's wider environment and governance portfolio. It will demonstrate how digital public goods can improve service delivery and compliance in waste management, with potential applications across other sectors and countries.

Target SDGs and SDG Indicators

(List up to three specific Sustainable Development Goal (SDG) indicators that your challenge and proposed solution will directly contribute to. Be specific and focus on the indicators your work actively addresses, rather than those it only indirectly supports.)

Target SDGs and SDG Indicators

1. **SDG 12: Responsible Consumption and Production**

   - *Indicator 12.5.1*: National recycling rate, tons of material recycled.
     Contribution: The pilot tracks and certifies recovered plastic waste in two rural communities, enabling measurable increases in Armenia's recycling rate and providing verifiable data for national reporting.

2. **SDG 13: Climate Action**

   - *Indicator 13.2.2*: Total greenhouse gas emissions per year.
     Contribution: Verified recycling activities reduce plastic sent to landfills and associated GHG emissions, providing data that supports climate action reporting and the basis for issuing Carbon Credits.

3. **SDG 11: Sustainable Cities and Communities**

    - *Indicator 11.6.1*: Proportion of municipal solid waste collected and managed in controlled facilities out of total municipal waste generated, by city.
      Contribution: The project equips local municipalities with tools to track waste collection, segregation, and management, improving service delivery and accountability in rural communities.

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

(Describe the key user or beneficiary of your solution. Include relevant characteristics such as role, environment, goals, and challenges they face. This helps keep the solution user-centered.)

The key beneficiaries are **local waste operators and community-level waste collectors** in rural Armenia (e.g., Sevan and Hrazdan). These users operate in environments with limited infrastructure, low trust in data systems, and minimal financial incentives. Their goals are to comply with emerging waste regulations, access stable financing, and gain recognition for their environmental contributions. Their main challenges include lack of verifiable systems to demonstrate impact, absence of formal accreditation, and limited digital tools to connect with regulators, producers, and markets.

User Story

(Frame the user needs in a simple narrative format that links the user, their goal, and the value the solution delivers. Use the format: "As a [user], I want to [goal], so that [value].")

- As a local waste operator, I want to **record and verify the plastic waste I collect and recycle** so that **I can gain recognition, secure financing from producers, and comply with future EPR legislation.**

- As a community member, I want to **segregate my waste and contribute to recycling** so that **I can earn incentives, support a cleaner environment, and build trust in municipal**

services.

- As a producer subject to EPR, I want to **access verifiable recovery data and credits** so that **I can meet compliance obligations and demonstrate ESG performance transparently.**

Key Stakeholders/Partners

(Please list all the partners involved in this project. List all relevant parties who will interact with, benefit from, or influence the solution (this may include government agencies, NGOs, community members, or tech partners.))

- **UNDP Armenia:** Institutional lead, stakeholder convening, alignment with national policy, communications, and monitoring.
- **Government of Armenia (Ministry of Environment, Ministry of Economy):** Policy alignment, preparation for EPR enforcement.
- **Kotayk and Gegharkunik MSWM Company LLC:** Inter-municipal landfill and sorting operator, responsible for waste aggregation.
- **Innovative Solutions for Sustainable Development (ISSD) NGO:** Community-level collection, education, and deposit return pilots.
- **ArmPack Foundation (Voluntary PRO):** Pilot initiative by Coca-Cola Hellenic Armenia, PepsiCo Armenia, and Pernod Ricard Armenia to test EPR models.
- **Potential recycler partner (TBD):** To establish an end-to-end recovery-to-recycling value chain.
- **Plastiks (Nozama Tech Ltd.):** Technology provider, IP holder of methodology and verification, developer of app.plastiks.io.
- **Emurgo/Cardano Ecosystem:** Blockchain integration, smart contract infrastructure, scalability support.
- **Private sector brands (e.g., PepsiCo, Coca-Cola):** Expected sponsors, future obligated producers under EPR.

- **Citizens (20,000 per community):** Waste segregation participants, token beneficiaries, and community-level stakeholders.

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

(Provide a description of your solution and explain how it addresses the development challenge. Highlight its uniqueness and relevance.)

Plastiks, in partnership with UNDP Armenia, proposes a blockchain-powered waste traceability and impact certification system for two rural communities of 20,000 residents each (Sevan and Hrazdan). The solution addresses Armenia's waste management challenge by introducing a **verifiable, transparent digital infrastructure** to accredit waste actors, certify recovery activities, and tokenize verified data into impact credits.

Built on **Cardano blockchain**, the system anchors all recovery and accreditation data immutably, ensuring trust among regulators, producers, recyclers, and citizens. By connecting stakeholders through a single platform, the pilot supports Armenia's preparation for **Extended Producer Responsibility (EPR)** legislation (expected in 2026) and creates a framework for monetizing verified environmental action through Plastic and Carbon Credits.

The uniqueness of this solution lies in combining **blockchain traceability** with a **modular accreditation methodology**, multilingual user interface, and incentive systems that empower communities, producers, and municipalities simultaneously.

Core Functionalities

(List the key features or capabilities of your solution with descriptions. These should align with the user needs and the challenge described earlier.)

Feature 1 – Accreditation and Verification Flow

A three-step accreditation module for waste actors (documentation, operational validation with geo-tagged evidence, and on-chain authorization). Ensures only verified entities can issue digital impact certificates.

Feature 2 – Tokenization of Environmental Impact
Each verified kilogram of recovered plastic is anchored on Cardano as a Plastic Credit NFT. These tokens contain immutable metadata (date, actor, volume, verification authority) and can be monetized via marketplaces or CSR sponsorships.

Feature 3 – Real-Time Dashboards and Reporting
Custom dashboards for UNDP Armenia, municipalities, and producers show live recovery data, accredited actors, issued tokens, and impact metrics. This provides regulators with audit-ready data and producers with ESG reporting evidence.

Feature 4 – Community Incentives and Engagement
Citizens who segregate waste can be rewarded with digital tokens linked to verified recovery actions. This creates local incentives for sustainable behavior while expanding Cardano wallet adoption at the community level.

Tech Stack Overview

(Briefly list the main tools, technologies and external integrations used to build your solution. Mention front-end and back-end elements, data sources, etc.)

Front-End: Web2-friendly React-based interface (app.plastiks.io) with multilingual support (Armenian, English, Russian).

Back-End: Node.js and secure databases for document storage, integrated with role-based access control and GDPR compliance.

Blockchain Layer: Cardano blockchain for NFT issuance, anchoring, and smart contracts. NFT minting infrastructure supported by **Emurgo/Cardano-native tools**.

External Integrations:

- Wallet integrations (Nami, Eternl, Lace) for token issuance and user interaction.
- GitHub repositories for open-source smart contracts and accreditation logic.
- APIs for marketplace interaction and ESG reporting systems.

Data Sources: Evidence uploaded by waste actors (documents, photos, videos, geolocation), verified by Plastiks methodology and accredited on-chain.

Cardano-Specific Elements

(Describe how your solution leverages the Cardano blockchain (e.g., use of verifiable credentials (VCs), token minting, Plutus smart contracts, metadata tagging, etc.))

The solution is designed to leverage the Cardano blockchain as the **trust and verification layer** for Armenia's waste management ecosystem. Key blockchain-specific elements include:

1. NFT-Based Impact Certificates (Plastic Credits):
   Each verified kilogram of recovered waste is represented as a Cardano-native NFT. These tokens include immutable metadata such as provider ID, type and quantity of waste, timestamp, and verification authority. They serve as tamper-proof digital evidence of environmental action.

2. Smart Contracts for Verification and Rewards:
   Plutus smart contracts are used to govern the accreditation workflow, ensuring that only validated actors can issue tokens. They also automate reward distribution, linking verified segregation events to tokenized incentives for communities and waste providers.

3. Metadata Tagging for Compliance and ESG Reporting:
   Cardano's native metadata standards are used to attach environmental attributes (waste type, recovery volume, location) to each transaction. This creates an auditable record aligned with Extended Producer Responsibility (EPR) requirements and ESG frameworks.

4. Wallet Integration and Identity Management:
   Waste actors and community members will interact with the system through Cardano wallets (e.g., Nami, Eternl, Lace). These wallets allow traceable transactions, identity-linked accreditation, and transparent financial flows.

5. Open APIs for Ecosystem Interoperability:
   The system will expose APIs to connect with Cardano marketplaces and other ReFi applications. This enables Plastic Credits to be traded, pre-financed, or integrated into donor and CSR sponsorship programs.

6. Energy-Efficient Consensus Mechanism:
   Cardano's proof-of-stake architecture ensures that the environmental cost of running the system remains minimal, aligning directly with the sustainability goals of UNDP and

Armenia's green transition.

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

(State what your team aims to build and validate during the sprint. Keep it focused, achievable, and linked to the broader MVP vision.)

The goal of the 10-day sprint is to develop and validate a **functional prototype** of the accreditation and tokenization flow. This includes building a simple multilingual form for onboarding waste actors, connecting the form to a Cardano testnet smart contract, and issuing the first NFT-based Plastic Credit with SDG-aligned metadata. The prototype will be tested with local stakeholders (waste operators, UNDP staff, and municipal representatives) to gather feedback for the full MVP.

Expected Outputs

(List the minimum outputs required for a successful prototype. These should be specific, measurable, and demo-ready.

- One working interaction:
  A waste actor successfully completes the accreditation form and receives approval status.

- On-chain or hashed output with SDG metadata:
  At least one Plastic Credit NFT minted on Cardano testnet, embedding metadata aligned with SDG 12 (responsible consumption and production).

- User interface:
  Demo-ready, multilingual web form (Armenian/English) for accreditation and dashboard mock-up to display accredited status and token issuance.

- Stakeholder feedback:
  At least three structured feedback sessions conducted:

- One with UNDP Armenia
- One with a local waste operator (e.g., Kotayk/Gegharkunik MSWM)
- One with a private-sector PRO representative (e.g., ArmPack or corporate sponsor)

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.)

Day	Description	Outcome
1	Define scope & SDG Indicators	Scope clarity
2	UX & flow design	Figma/Flow ready
3	UI implementation	Frontend in place
4	Chain integration	VC/token tested
5	Mid-review & QA	Testing link ready
6-7	Stakeholder testing	Feedback gathered
8-9	Iteration & polish	Demo-ready version
10	Final submission	All deliverables done

Sprint Timeline (10 Working Days)

Day	Description	Outcome
1	Define prototype scope, user stories, and SDG indicators	Clear scope aligned with UNDP needs and SDG 12/13
2	UX flow design for accreditation form and dashboard	Figma wireframes and user flow approved
3	UI implementation of multilingual accreditation form (Armenian/English)	Frontend demo-ready form
4	Smart contract integration on Cardano testnet (NFT issuance logic)	First Plastic Credit NFT minted on testnet
5	Mid-sprint QA and internal review	Working link and stable demo version
6	Stakeholder testing with UNDP Armenia	Initial feedback collected
7	Stakeholder testing with local waste operator (e.g., Kotayk/Gegharkunik MSWM)	Practical user insights documented
8	Iteration based on feedback, refine flows and metadata tags	Improved UI + blockchain integration
9	Final polish, ensure GDPR compliance and data security checks	Demo-ready, validated prototype
10	Final presentation and submission	Deliverables submitted: prototype, NFT output, user demo, and feedback summary

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.

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

Category & Metrics

- **Blockchain Interaction:** At least one Plastic Credit NFT minted on Cardano testnet, embedding SDG 12 metadata.
- **User Interface:** One multilingual accreditation form and one dashboard view functional in demo mode.
- **Stakeholder Testing:** Minimum of three testing sessions (UNDP Armenia, Kotayk/Gegharkunik MSWM, ArmPack PRO).
- **SDG Integration:** Metadata and reporting screens explicitly reference SDG 12.5.1 (national recycling rate) and SDG 13.2.2 (emissions avoided).

- **Demo Readiness:** Demo link or recorded walkthrough of accreditation → verification → token issuance flow prepared by Day 10.

Custom Plastiks Metrics for Sprint Phase:

- Minimum **500 kg waste data simulation** tokenized for demo purposes.
- At least **10 Cardano wallets** created for test participants.

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.

Post-Sprint Refinement (MVP Phase)

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

Focus Area & Metrics

- **Feedback Integration: At least two user-driven changes implemented in accreditation flow or dashboard UX.**
- **MVP Stabilization: End-to-end testing with stable NFT issuance, no major logic errors, and GDPR compliance validated.**

- **Stakeholder Alignment: One follow-up working session with UNDP Armenia to confirm MVP integration into pilot.**

Custom Plastiks Metrics for MVP Phase:

- **Minimum 3 accredited actors onboarded in sandbox/test environment.**
- **At least 50 NFTs issued representing verified waste in the MVP environment.**
- **Integration of UNDP Armenia dashboard for monitoring recovery metrics.**

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)

Focus: Preparing the solution for deployment and scaling.

Goal Areas & Metrics

- **Institutional Buy-In:**
    - UNDP Armenia and municipal partners (Kotayk & Gegharkunik MSWM, ISSD NGO, ArmPack Foundation) formally confirm interest in pilot exploration.
    - Early draft of an MoU or pilot agreement in discussion, specifying roles of UNDP, Plastiks, and local stakeholders.
- **Solution Readiness:**
    - MVP tested in a live or extended environment with at least three accredited waste actors (landfill operator, NGO, and PRO).
    - First verified Plastic Credit NFTs issued and visible on Cardano testnet/mainnet.
    - Feedback from users integrated into accreditation workflow and dashboard.
- **Sustainability Path:**
    - Draft post-program ownership plan, including financing through Extended Producer Responsibility (EPR) fees from producers (PepsiCo, Coca-Cola, etc.).
    - Preliminary roadmap for national scale-up (covering additional 16 municipalities served by Kotayk & Gegharkunik MSWM).
    - Outline of long-term technical governance, confirming Nozama Tech Ltd. as IP holder and Emurgo/Cardano as blockchain infrastructure partners.

Cumulative Tracking Suggestions

To monitor progress week by week, the project will track:

- **% of prototype milestones completed (target: 100% by end of sprint).**
- **% of users tested (target: 80% of pilot actors tested MVP).**
- **% of stakeholder feedback items received & integrated (target: ≥70%).**

- **% SDG contribution implemented** in technical flows (SDG 12, SDG 13, SDG 11).

- **Progress toward pilot validation** (tracked on a 0–100 scale, with pilot-ready status achieved at 100).

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	[e.g., Form built]	[e.g., Add mobile layout]
Blockchain	[e.g., Hash created]	[e.g., Add QR or on-chain write]
SDG Tags	[e.g., Displayed]	[e.g., Make filterable]
Feedback	[e.g., 3 sessions]	[e.g., Expand to 5+ users]

MVP Planning Table

Component	Prototype Status	Improvement for MVP
UI/UX	Multilingual accreditation form (Armenian/English) and simple dashboard mock-up built	Add mobile-responsive layout, full Armenian localization, and role-based dashboards for UNDP, PRO, and municipal users
Blockchain	First Plastic Credit NFT minted on Cardano testnet with basic metadata	Deploy to Cardano mainnet, integrate Plutus smart contracts for verifier workflows, and add wallet connectivity (Nami, Eternl, Lace)
SDG Tags	SDG 12 (recycling rate) displayed in NFT metadata	Expand to include SDG 13 (emissions avoided) and SDG 11 (municipal waste managed), make metrics filterable in dashboards
Feedback	3 stakeholder sessions conducted (UNDP Armenia, waste operator, PRO representative)	Expand testing to 5+ users including recyclers and citizens, integrate feedback loops directly into UI design
Accreditation Module	Three-step workflow designed and demoed (docs, evidence upload, on-chain authorization)	Implement secure storage with GDPR compliance, add verifier dashboard and automated notifications
Marketplace	Conceptual flow defined for token listing and CSR purchase	Activate test marketplace environment, enable one real monetized Plastic Credit transaction with a pilot sponsor

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
[e.g. 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
(Name of your team or organization)

Plastiks (developed by Nozama Tech Ltd.)

Team Members & Roles
(Briefly list team members and their core roles or responsibilities)

- André Vanyi-Robin – Founder & CEO
  Leads strategic direction, partnerships, and overall project execution. Experienced entrepreneur in sustainability, circular economy, and impact-driven business models.

- Ana Aguilar Meca – Chief Operating Officer (COO)
  Responsible for operational coordination, milestone delivery, budget management, and regulatory compliance. Oversees implementation and ensures alignment with ISO-certified processes.

- Trym Lyngset – Chief Product Officer (CPO)
  Manages product roadmap, platform features, and user experience design. Ensures that app.plastiks.io is adapted to local needs and integrated with Cardano.

- Udai (Singh) Solanki – Tech Lead, Blockchain & Web3
  Leads blockchain integration on Cardano, including smart contract deployment, token logic, and wallet interoperability. Experienced in fintech, scalable Web3 infrastructure, and enterprise blockchain.

- Delfina Achinelly – Head of Methodology & Verification
  Designs and manages verification frameworks, accreditation logic, and impact

measurement methodology:Accreditation and Verification, aligned with ISO 9001:2015 standards. Ensures environmental and social integrity of all verified data.

-
- Estefania Brito – Quality and Admin Controller
- Oversees quality assurance processes, administrative compliance, and operational documentation. Supports alignment with ISO 9001:2015 standards and ensures accuracy across verification workflows.

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 Armenia Country Office

Team Members & Roles:
(List key representatives and their roles

- Nelli Minasyan – Programme Analyst
- Milica Dimitrijević – Innovation Specialist
- Katarina Antic– Accelerator Program Coordinator

Area of Focus:
(Brief statement summarizing the thematic area, e.g., financial inclusion, public service transparency)
UNDP Armenia focuses on advancing **environmental sustainability, circular economy transition, and digital innovation** as part of its broader mission to support Armenia's achievement of the Sustainable Development Goals. Within this pilot, the Country Office is particularly focused on improving waste management systems, preparing for Extended Producer Responsibility (EPR) legislation, and enabling verifiable, transparent data systems that enhance public accountability and private sector participation.

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.

(Examples:

- *"Users found the onboarding form too long."*
- *"Stakeholders appreciated transparent SDG contribution."*
- *"Potential opportunity to integrate with local registry in next phase.")*

"Users found the onboarding flow simple but suggested additional guidance in Armenian language to support first-time digital users."

Stakeholders appreciated that SDG contributions (e.g., SDG 12 recycling rates) were visible directly in the token metadata, which they said increases credibility for donors and policymakers.

Local operators emphasized the importance of **offline or low-connectivity functionality**, as some rural areas face unstable internet access.

The accreditation process was positively received, but NGOs requested **shorter document requirements** to reduce administrative burden.

Private sector partners (e.g., ArmPack representatives) noted strong potential for **Plastic Credits to attract co-financing** from multinational brands, provided there is transparent reporting.

UNDP staff highlighted the opportunity to link the system with **future national EPR registries** once legislation enters into force in 2026.

Community-level actors expressed interest in token-based incentives but requested **clear education campaigns** to explain how wallets and digital rewards function.

Early testing showed the need to **strengthen GDPR-compliant storage** for sensitive accreditation documents before scaling to full pilot.

Opportunity identified to expand the model beyond plastics to **glass, paper, and cartons**, ensuring the methodology remains modular and adaptable.

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)

(Describe what success would look like in a real-world pilot. What key outcomes would you aim to demonstrate?)

Within one year, the pilot will deliver a **functional, verifiable waste traceability and certification system** in Armenia, fully integrated with Cardano blockchain. Success will be measured by:

- At least **3 accredited waste actors** (landfill operator, NGO, PRO) onboarded and verified.
- More than **100 tons of plastic waste** digitally certified through the platform.
- **50,000–100,000 Plastic Credits** issued on Cardano with SDG-linked metadata.
- **Community-level incentives** tested in Sevan and Hrazdan, engaging up to 40,000 citizens.
- A **dashboard for UNDP Armenia and municipalities** displaying real-time impact metrics.
- Clear alignment with **EPR legislation** expected in 2026, showcasing the pilot as a pre-compliance infrastructure.

Target Users or Communities for Pilot

(Indicate who will benefit from the pilot deployment, specific regions, stakeholder groups, or institutions.)
Communities: Sevan and Hrazdan, representing 40,000 residents combined.

Institutions: Kotayk & Gegharkunik MSWM Company LLC, Innovative Solutions for Sustainable Development (ISSD) NGO, and ArmPack Foundation.

Producers & Brands: Multinational FMCGs (PepsiCo, Coca-Cola, Pernod Ricard) via ArmPack as early compliance participants.

Regulators: Ministry of Environment and Ministry of Economy, preparing for EPR implementation.

Citizens: Local residents engaged through awareness campaigns and digital incentives.

Scalability Plan

(Explain how you envision scaling the solution after the pilot. What elements are reusable or adaptable across contexts?)

The system is designed to be **modular and replicable**. After the pilot:

- **National scale:** Expand to the 16 municipalities already served by Kotayk & Gegharkunik MSWM, covering over 200,000 residents.
- **Cross-material expansion:** Add other waste streams such as paper, glass, cartons, and aluminum packaging, aligning with ISO methodology.
- **Regional replication:** Share learnings with neighboring countries in the Caucasus and CIS region preparing for EPR (e.g., Georgia, Kazakhstan).
- **Cardano ecosystem integration:** Reuse open APIs, accreditation modules, and NFT logic across other Cardano-based ReFi and circular economy projects.

Support Needed

(Briefly outline any technical, policy, or funding support required to move forward with a pilot or scale-up.)

Technical: Continued collaboration with Emurgo/Cardano for smart contract deployment, wallet integration, and scalability.

Policy: Support from UNDP Armenia and national ministries to align the system with draft EPR legislation and integrate with future national registries.

Funding: Co-financing from private sector (FMCGs under PRO obligations) to cover accreditation and platform costs post-pilot.

Capacity building: Training programs for local NGOs, municipalities, and informal waste actors to ensure adoption and long-term sustainability.

Sustainability & Business Model (optional)

If relevant, describe how the solution can be sustained over time (financially, operationally, or institutionally).
Business or Funding Model
(Will your solution generate revenue, rely on grants, or operate through public partnerships?)
The solution is designed to transition from grant-supported pilot funding to a **self-sustaining, producer-financed model** under Armenia's upcoming Extended Producer Responsibility (EPR) legislation.

- **Short term (pilot phase):** Supported by grant funding (e.g., UNDP Accelerator, Emurgo/Cardano Catalyst) with in-kind contributions from Plastiks.

- **Medium term (12–24 months):** Corporate sponsors such as PepsiCo and Coca-Cola, through the ArmPack voluntary PRO, finance accreditation and platform usage fees.

- **Long term (post-2026):** Mandatory producer fees under EPR legislation cover ongoing costs of accreditation, verification, and Plastic/Credit issuance, ensuring sustainable financing at scale.

Key Resources & Partnerships

(What ongoing resources (e.g., cloud services, development talent, regulatory access) are needed to maintain and grow the solution?)

- **Technical resources:** Cardano blockchain infrastructure (smart contracts, NFT minting, wallet integrations) with support from Emurgo.

- **Cloud services & hosting:** Secure data storage with GDPR compliance for accreditation documents and operational evidence.

- **Human resources:** Plastiks' internal team (product, blockchain, methodology, quality, communications) plus local partner capacity (NGOs, landfill operators).

- **Regulatory access:** Ministry of Environment and Ministry of Economy guidance for aligning with EPR compliance frameworks.

- **Strategic partners:** UNDP Armenia (convening and policy alignment), ArmPack Foundation (producer engagement), and local waste operators (implementation).

Long-Term Ownership / Maintenance

(Who will manage and maintain the solution after the pilot, your team, a partner, or a public agency?)

Plastiks (Nozama Tech Ltd.) will retain intellectual property rights for the technology, methodology, and verification logic. Plastiks will manage ongoing development, maintenance, and upgrades of the platform.

UNDP Armenia and local municipalities will act as institutional partners to ensure integration with national systems and community adoption.

Private sector producers (via PROs such as ArmPack) will provide ongoing financing through EPR fees and corporate responsibility programs.

The system is structured to evolve into a **public-private digital infrastructure**, with Plastiks as the long-term technology provider and verifier, while producers and municipalities sustain its operation financially.

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
- ☐ Documentation / ReadMe
- ☐ SDG metadata logic
- ☐ Feedback summary
- ☐ 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

(Examples from the Challenge Owner's Perspective:

- *"We gained a deeper understanding of how blockchain can be applied to solve complex development issues within our country context."*
- *"Collaborating closely with technical teams helped us refine our challenge statement and prioritize features for maximum community impact."*
- *"This experience helped us develop internal capacity for innovation-focused partnerships, which we intend to scale.")*

Taking into account that EPR law is set to be adopted in 2026 in Armenia. The lessons learned from the pilot with Plastiks will be used to inform the design of the Monitoring system for EPR, attracting the PROs and recyclers into the system to ensure the transparency and traceability of plastic and other recyclable materials recovery.

The academy and PLastics brought the opportunities blockchain technologies have to felt on the ground rather than be an innovation not reachable for developing countries.

Solution Maker's Perspective

(Examples from the Solution Maker's Perspective:

- *"During user testing, we learned that trust and transparency were more important to stakeholders than we initially thought."*
- *"We pivoted from a token-based model to a VC-based flow after realizing regulatory complexity."*
- *"Building with Cardano was new for us, and we now feel more confident integrating blockchain in real-world systems.")*

During early discussions with UNDP Armenia and local stakeholders, we learned that **verifiable data and regulatory trust were valued more than incentives alone**. This confirmed the importance of anchoring every action on Cardano to create transparency.

We discovered that **user simplicity was critical in rural contexts**. Many stakeholders preferred a streamlined accreditation process with fewer steps, even if it meant postponing advanced features.

We confirmed that **tokenization of waste activities created strong interest from private-sector partners**, who saw value in linking verified credits to ESG reporting and financing.

Working with Cardano tools was new for some of our team. Through this process, we became more confident in **using Plutus smart contracts, NFT standards, and metadata tagging** to deliver real-world environmental verification.

We realized the need to **integrate multilingual onboarding and offline-friendly workflows** earlier than planned, given Armenia's diverse user base and infrastructure limitations.

A key learning was that **alignment with EPR policy timelines** makes the project more sustainable. By ensuring compatibility with Armenia's upcoming 2026 law, we gained credibility with government and private sector actors.