



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.

A common challenge faced in UNDP solar projects focused on providing energy access to remote communities (including crisis countries) is related to the lack or limited initial funding or contingency amount for Operations & Maintenance to sustain those solar PV infrastructures. In particular, for solar microgrids/minigrids where the initial capital investment is very high (i.e. investment in the solar components and the construction of the infrastructure such as the entire electricity distribution).

By leveraging from the blockchain solution, the aim is to mobilize funding through crowdfunding to sustain the solar projects for the communities.

For the Roadmap, the following projects have been selected to pilot the blockchain solution:

- **Energy access and energy reliability in public facilities in Afghanistan by using Solar PV plants.**
- **Equipping Solar-Powered Schools with Digital Corners in Afghanistan.**
- **Solar Dryers for Cocoa beans in Samoa.**
- **Solar cold rooms for vegetables in the markets in Samoa.**
- **Pico-hydro plant in Vanuatu**
- **Construction, Management, Operation and Maintenance of Solar multiuser minigrids in Somalia.**

Due to lengths of each project it is considered practical to select one project, i.e. Afghanistan SESEHA project to provide detailed responses to each specific question of the Roadmap.

Afghanistan SESEHA Project:

Development Problem

Afghanistan suffers from severe energy poverty. Per capita electricity use is just 100 kWh—far below regional and global averages. Nearly 24.5 million people lack grid access, and only 36%

have clean cooking options. Most health and education facilities (~4,000 health, ~20,000 schools) have unreliable or no electricity, which especially harms women and girls.

Key issues:

- *Unreliable, insufficient, and imported electricity (80% imported).*
- *Political instability, sanctions, and loss of international aid.*
- *Weak infrastructure and widespread poverty.*

Context

- *Ongoing conflict and economic crisis.*
- *Poor infrastructure and limited investment in renewables.*
- *High vulnerability: 95–97% of Afghans risk poverty; women's participation is restricted.*

Intended Outcomes

The SESEHA project aims to:

- *Provide reliable, clean energy to public health and education facilities.*
- *Improve access for 1.4 million in health and 1.68 million in education.*
- *Promote gender equality and local job creation.*
- *Build resilience and reduce reliance on imports, supporting long-term development.*

As part of the solution feature, the aim of Blockchain piloting is to achieve also:

- *Tokenization of solar PVs as an asset to own by those communities, and*
- *Engagement the private sector in the implementation and operation of the solar facilities by using smart contracts based on agreed and measurable results achieved (in terms of energy delivered, energy reliability and accessibility)*

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.)

Commonly, for most of the solar PV projects the rural electrification faces several significant challenges, including:

- **Infrastructure Costs:** The high cost of setting up and maintaining infrastructure in remote areas makes it difficult to provide consistent and reliable electricity.
- **Financing:** Securing funding for rural electrification projects is often challenging due to the perceived high risk and low return on investment.
- **Energy Theft:** Unauthorized connections and energy theft are common issues that lead to financial losses and unreliable power supply.
- **Lack of Transparency:** The absence of transparent systems for tracking energy production, distribution, and consumption can lead to inefficiencies and corruption.
- **Maintenance and Operations:** Ensuring regular maintenance and efficient operations in remote areas is logistically challenging and costly.

Afghanistan SESEHA Project:

Summary of the Development Challenge

Afghanistan is experiencing a severe and persistent energy crisis that directly undermines the delivery of essential services, particularly in the health and education sectors. The country's per capita electricity consumption is only about 100 kWh per year—less than a tenth of neighbouring countries and far below the international recommended minimum of 150 kWh per person per year. As a result, nearly 24.5 million people are not connected to the national grid, and energy efficiency is significantly below global averages (1.8 MJ per US\$ PPP in Afghanistan vs. 4.8 MJ globally)

Key facts highlighting the urgency:

- **Only 36% of the population has access to clean cooking, and just 21% of final energy consumption comes from renewable sources.**
- **Most health and education facilities (about 4,000 health and 20,000 educational facilities) lack reliable electricity, even if they are technically connected to the grid.**
- **Women and girls are disproportionately affected, with limited access to health and education services due to energy poverty and social restrictions.**
- **Afghanistan imports about 80% of its electricity and almost all of its fuel, making it highly vulnerable to external shocks and supply disruptions.**
- **The country's electricity demand is projected to grow at 12–15% annually, resulting in a supply shortfall of over 6,000 MW by 2032.**

Consequences:

- **Hospitals and clinics are unable to provide basic or emergency care, especially during power outages. Doctors must sometimes choose which patients to save due to lack of electricity for essential equipment.**
- **Schools cannot offer safe, modern, or inclusive learning environments, and millions of children—especially girls—are excluded from education.**
- **The lack of reliable energy is a major barrier to economic opportunity, social development, and gender equality.**

In summary:

Afghanistan's chronic lack of reliable, affordable, and sustainable energy is a fundamental barrier to meeting basic human needs, protecting vulnerable populations, and supporting the country's recovery and development. The scale and urgency of the problem are reflected in the millions of people left without access to essential services, the country's dependence on imported energy, and the deepening humanitarian crisis

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.)

In general for all solar PV projects, it is critical to have basic access to electricity by the communities that are located in remote islands or far away from the main cities.

Energy access is foundational to human development. The lack of reliable electricity impedes access to basic health care, quality education, clean water, and economic opportunities. It exacerbates poverty, gender inequality, and social exclusion. Without electricity, hospitals cannot operate life-saving equipment, schools cannot support digital learning, and communities remain disconnected from vital services.

UNDP selected a few projects (Afghanistan, Samoa, Vanuatu and Somalia) and here is one for the examples for Afghanistan:

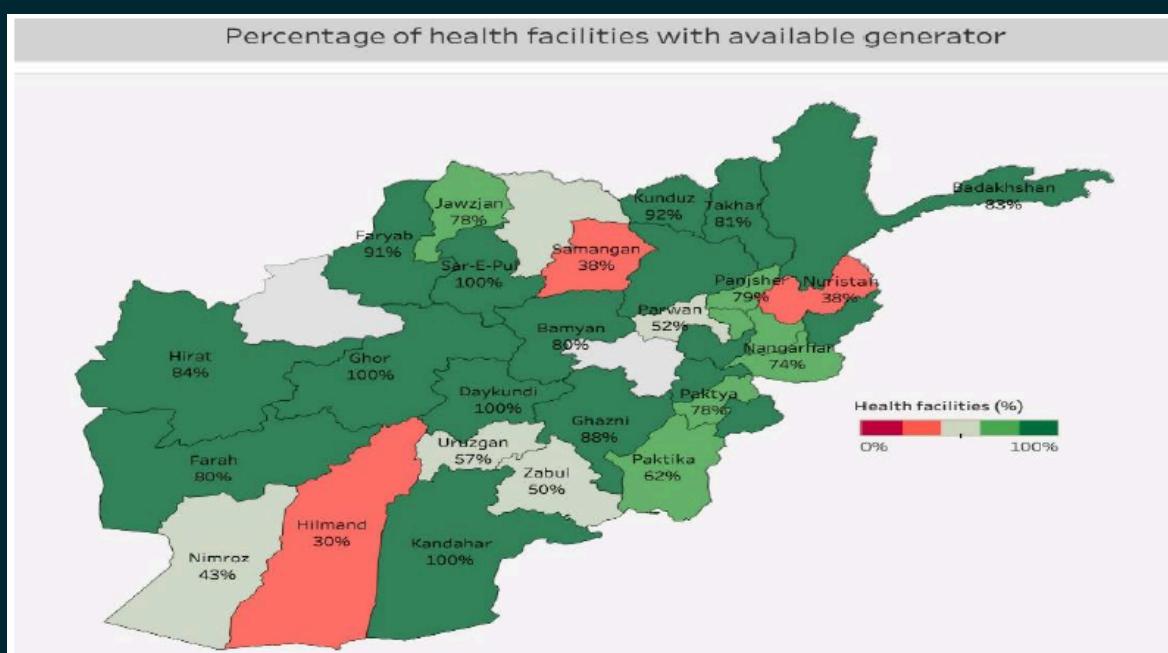
Afghanistan SESEHA Project:

Why This Challenge Matters

Afghanistan faces one of the world's most acute energy crises, with over 24 million people lacking access to reliable electricity. This severely undermines essential services — particularly in health and education, where ~4,000 health and ~20,000 educational facilities operate without dependable power. The lack of energy access exacerbates poverty, restricts women's participation, and deepens humanitarian vulnerabilities.

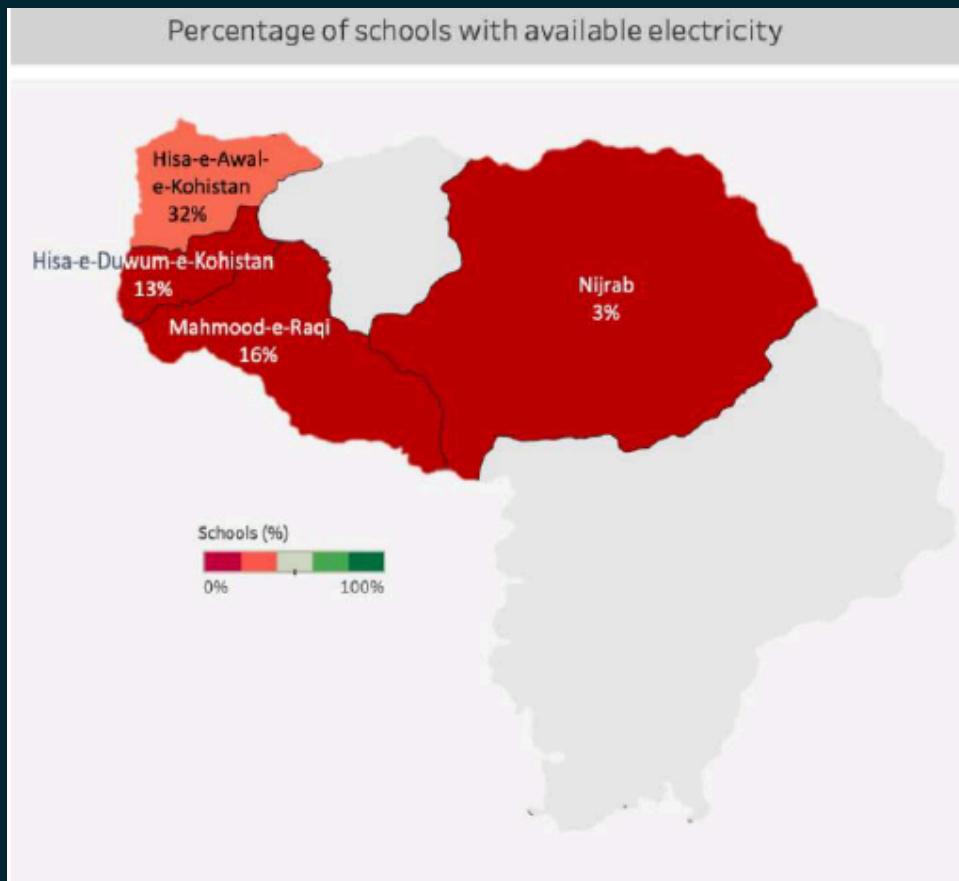
The complexity and severity of the ongoing crises have increased the need for health assistance by 20 percent, according to the Humanitarian Response Plan for Afghanistan 2022. There are currently 18.1 million people projected to need humanitarian health assistance alone in 2022. The priority is to ensure available and accessible routine, emergency, and specialised health care services, essential for meeting the needs of the most vulnerable.

Figure 1: Percentage of healthcare facilities with diesel generators in Afghanistan



Afghanistan's education system is among the poorest in the world. The majority of schools have no or limited access to electricity. A preliminary analysis of primary schools in Afghanistan show more than 5000 schools (for both boys and girls) that are operational are not having access to electricity.

Figure 3: Percentage of schools with access to electricity in Kapisa province of Afghanistan



Setting and Context

The challenge exists within a politically estranged and economically fragile environment. Since the Taliban takeover in 2021, Afghanistan has faced:

- Sanctions and withdrawal of international aid, which previously made up 75% of the national budget.

- Weak infrastructure, fragmented grid systems, and high dependency on imported electricity (80%) and fuel.
- Climate vulnerability, with untapped renewable energy potential, especially solar.

Affected Communities and Sectors

- *Women and Girls: Disproportionately impacted due to restrictions on education and employment, limited access to health services, and increased vulnerability to gender-based violence.*
- *Rural and Poor Households: Lack affordable and reliable energy, which limits access to education, health care, and economic opportunities.*
- *Internally Displaced Persons (IDPs): Over 3.5 million displaced individuals face extreme energy poverty and lack access to basic services.*
- *Public Facilities: Approximately 4,000 health facilities and 20,000 schools operate with unreliable or no electricity, compromising service delivery and safety.*

Key Stakeholders Involved

- UNDP Afghanistan: Leads coordination and implementation of energy and resilience projects.
- Civil society organisations (CSOs): Including women-led MSMEs and disability groups, engaged in consultations and service delivery.
- International partners: WHO, UNFPA, and donors like Norway support health, climate, and infrastructure initiatives.
- Community leaders: Clan and religious figures play a vital role in local engagement and project acceptance.
- Private sector: Involved in procurement, microfinance, and technical delivery through resilience programmes

Existing Efforts

- SESEHA Project: Targets renewable energy deployment in public facilities across 34 provinces.
 - Phase I targets 792 facilities (92 health, 700 education) in 18 provinces with 0–6 hours of electricity supply.
 - Phase II plans to reach 2,349 facilities in 16 provinces with 7–12 hours of supply.
- ABADEI Programme: Supports community resilience and livelihoods.

- **Early Recovery Clusters:** Address emergency development needs in politically estranged contexts.
- **Stakeholder consultations:** Held across provinces to identify needs and shape inclusive interventions.

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?)

All projects that we selected are from the COs where we directly provide procurement support, hence, those projects's objectives are aligned with UNDP COs and respective Governments that UNDP liaise with. Projects build on existing initiatives where additional funding, as outlined in the challenge section, is required. ProDoc for Afghanistan is attached to the Roadmap as an example.

Afghanistan SESEHA Project:

Alignment with UNDP Country Office Objectives

- **The SESEHA project is closely aligned with the UNDP Country Office's strategic priorities, particularly in supporting basic human needs through sustainable energy solutions. Its core objective is to adopt renewable energy and energy efficiency measures in public health and education facilities, ensuring reliable service delivery in underserved regions. This directly contributes to UNDP's goals of resilience-building, inclusive development, and climate action.**
- **The project also supports UNDP's coordination role with national and local authorities, as evidenced by its engagement with provincial and district directorates to clarify implementation modalities and selection criteria. These efforts are part of broader UNDP-led forums involving the Ministry of Economy and other UN agencies.**

Relationship to Existing Initiatives

SESEHA is not a standalone project—it builds upon previous and ongoing UNDP initiatives in Afghanistan. It is structured in two phases:

- *Phase I (2023-2028): Covers 19 provinces and focuses on solarisation of clinics and schools.*
- *Phase II (2024-2028): Planned expansion to 14 additional provinces.*

The project also integrates lessons from earlier energy access interventions and aligns with broader frameworks such as the Just Energy Transition Framework and SDG targets.

Donors, Scope, and Scale

The primary donor for SESEHA is BMZ, channelled through KfW (Kreditanstalt für Wiederaufbau). The total budget is substantial:

- EUR 59.99 million for Phase I
- EUR 75.00 million planned for Phase II

The project targets over 1,300 public facilities, including:

- 92 health facilities with 10.56 MWp installed capacity
- 700 education facilities with 7 MWp capacity

Co-Financing and Project Support

There are multiple forms of co-financing and support mechanisms:

- Green Energy Financing Facility (GEFF): Established with Afghanistan International Bank (AIB) to de-risk private sector investment and support sustainable operations and maintenance (O&M).
- Crowdfunding Strategy: SESEHA is being segmented into regional sub-projects to meet platform requirements and attract community-level contributions.
- NGO Engagement: UNDP is coordinating with NGOs such as WDIO and HVSO to facilitate fieldwork and installations at educational facilities, leveraging UNICEF's experience under a UN-to-UN agreement.

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.)

Afghanistan SESEHA Project:

Intended Outcomes from the Country Office's Perspective

From the pilot initiatives under the SESEHA Project and related operational rollouts, the Country Offices (COs) aim to achieve a range of transformative outcomes that are both measurable and meaningful across policy, service delivery, community empowerment, and systems improvement.

1. Policy Change and Systems Improvement

Successful pilots are expected to inform and influence national energy strategies and policy frameworks. For instance, the SESEHA pilot models—developed in coordination with local communities and presented to KfW—are designed to be scalable and replicable, with the potential to be integrated into national budgets and governance structures. Feedback mechanisms such as surveys and participatory monitoring are embedded to ensure that community insights feed directly into policy reform and programme updates.

2. Improved Service Delivery

The solarisation of health and education facilities has already demonstrated tangible improvements in public service delivery. In July 2025 alone, 29 facilities were solarised, adding 1,278 kW of installed capacity. This has led to enhanced patient care in hospitals and improved learning environments in schools, including access to safe water and computer labs. These outcomes are tracked through metrics such as number of beneficiaries reached (376,161 to date), gender-disaggregated data, and job creation figures.

3. Community Empowerment

Community involvement is central to the pilot design. Youth groups and local stakeholders are engaged in monitoring and maintaining infrastructure, fostering ownership and long-term

sustainability. In Comoros, for example, a pilot street lighting project not only improved safety and security but also catalysed additional funding from UNCDF to expand the initiative, thereby boosting local economic activity for SMEs.

4. Scaled Innovation

The pilots serve as testbeds for innovative service delivery models, including decentralised renewable energy systems and gender-inclusive operations and maintenance frameworks. Evidence-based models are being piloted with the intent to scale through public-private partnerships and co-financing arrangements.

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.)

The following SDGs will be directly or indirectly addressed in solar PV projects:

SDG 1: No poverty

SDG 3: Good health and well-being.

SDG 4: Quality Education

SDG 5 - Gender equality

SDG 6 - Clean water and sanitation

SDG 7 - Affordable and clean energy

SDG 11 - Sustainable cities and communities

SDG 13 - Climate action

SDG 17: Partnerships

Afghanistan SESEHA Project

SDG Indicators Directly Addressed by SESEHA

The SESEHA project—Sustainable Energy Services for Education and Health in Afghanistan—directly contributes to the following three SDG indicators through its core interventions:

SDG Indicator 7.1.1 – Access to Electricity

- *The project installs solar PV systems in schools and health clinics across Afghanistan, directly improving access to reliable electricity in underserved regions. This supports SDG 7.1.1 by increasing the proportion of the population with access to electricity, particularly in rural and conflict-affected areas.*

SDG Indicator 3.8.1 – Coverage of Essential Health Services

- *By electrifying health facilities, SESEHA enhances the delivery of essential health services, including maternal care, emergency response, and cold chain management for vaccines. This contributes to SDG 3.8.1 by improving service availability and quality in remote areas.*

SDG Indicator 4.a.1 – Proportion of Schools with Access to Basic Services

- *The project's energy installations in educational institutions directly support SDG 4.a.1 by increasing the number of schools with access to electricity, thereby improving learning environments and enabling digital education tools.*

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.)

Key User Personas

1. Global Impact Investors & Diaspora

- **Role & Environment:** Individuals with modest disposable income (€100–€5,000), motivated by both financial return and social/environmental impact. Includes diaspora who want to channel capital into trusted projects back home.
- **Goals:**
 - Make a measurable positive impact through sustainable infrastructure.
 - Earn a fair financial return while aligning with their values.
 - Access vetted, credible projects they can trust.
- **Challenges:**
 - Limited access to transparent, high-impact investment opportunities in developing countries.
 - Traditional platforms often region-restricted, slow, or costly.

2. Project Developers in Developing Countries (UNDP country offices)

- **Role & Environment:** Local or regional renewable energy project developers implementing small to mid-scale infrastructure such as microgrids, solar PV for

schools/hospitals, or solar refrigeration.

- **Goals:**

- Secure co-financing partners to cover critical gaps like operations & maintenance, distribution, or upfront capital not fully funded by grants or main donors.
- Build sustainable business models that ensure long-term viability of renewable projects.

- **Challenges:**

- Difficulty accessing traditional finance due to perceived risks and small project size.
- Reliance on fragmented donor funding that often leaves O&M uncovered.
- Lack of channels to connect with global supporters and investors.

Key Beneficiary Profile: SESEHA Project

Role

The primary users and beneficiaries of the SESEHA (Sustainable Energy Services for Education and Health in Afghanistan) project are:

- *Healthcare professionals and patients in public health facilities.*
- *Teachers and students in educational institutions.*
- *Local communities, especially in remote and underserved regions.*
- *Women and girls, who are explicitly prioritised in the project's gender-inclusive approach.*

Environment

- **Geographic Scope:** The project spans 33 provinces across Afghanistan, including Central Highlands, North, South, East, and Southeast regions.
- **Facility Types:** Includes Basic Health Clinics (BHCs), District Hospitals, Provincial Hospitals, and Primary and Secondary Schools.

- **Infrastructure Conditions:** Many facilities previously lacked reliable electricity, affecting service delivery and safety.

Goals

- Access to Reliable Energy: Enable consistent electricity supply through solar PV installations.
- Improved Service Delivery:
 - i. In health: Enhance patient care, reduce operating costs, and improve working conditions for medical staff.
 - ii. In education: Improve classroom comfort, enable digital learning, and increase attendance.
- Gender Equity: Ensure women and girls benefit from improved services and employment opportunities.
- Sustainability: Promote decentralised renewable energy and energy efficiency for long-term resilience.

Challenges

- Energy Insecurity: Many facilities operate with limited or no electricity, relying on costly and unreliable sources.
- Security Risks: UXO/EO contamination in some regions requires careful site selection and third-party risk assessments.
- Access Restrictions: De-facto authorities have limited access to some educational facilities, delaying implementation.
- Operational Sustainability: Ensuring long-term operation and maintenance (O&M) through private sector partnerships remains a work in progress.
- Gender Barriers: Cultural and logistical challenges in ensuring equitable access and participation for women and girls.

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].")

Investor user story:

"As a global impact investor or diaspora member, I want to invest small amounts into trusted

renewable energy projects, so that I can create measurable social impact while earning a fair return."

Project developer user story:

"As a renewable energy project developer, I want to access co-financing partners for O&M and uncovered costs, so that my projects can be implemented and sustained beyond initial donor funding."

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.))

Afghanistan SESEHA Project

Key Stakeholders Involved

- **UNDP Afghanistan: Leads coordination and implementation of energy and resilience projects.**
- **Civil society organisations (CSOs): Including women-led MSMEs and disability groups, engaged in consultations and service delivery.**
- **International partners: WHO, UNFPA, and donors like Norway support health, climate, and infrastructure initiatives.**
- **Community leaders: Clan and religious figures play a vital role in local engagement and project acceptance.**
- **Private sector: Involved in procurement, microfinance, and technical delivery through resilience programmes**
- **Unicorn: Solution developer building the Cardano-native platform for tokenizing renewable energy infrastructure.**
- **Global investors & diaspora communities: Users of the platform who provide capital by purchasing tokens, seeking both impact and financial returns.**

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

We propose a platform to tokenize renewable energy infrastructure vetted by UNDP OP-CCIT, including solar PV plants, microgrids, small hydro, and solar refrigeration in developing and least developed countries. To demonstrate the model, our first pilot will focus on the Afghanistan SESEHA project, bringing clean energy to healthcare and education facilities. The platform will enable global users to crowdfund these assets through tokens, introducing accessibility, funding, and transparency to renewable energy finance.

Here is how it will work: users connect a Cardano wallet to a standalone dApp, purchase tokens using ADA or USDA stablecoin, and finance the development of renewable energy infrastructure. These tokens represent fractional ownership or revenue rights, allowing token holders to claim a share of income generated from energy sales to local communities. All payments and flows are managed via smart contracts, ensuring transparency and trust.

The MVP focuses on token issuance and crowdfounding mechanics through existing Cardano wallets. Beyond the MVP, we will research zkFold integration to abstract crypto complexities, enabling email logins, fiat onramps, and eventual embedding into Unicorn's dAppstore for mainstream accessibility.

This solution introduces UNDP, Cardano and Unicorn as pioneers in renewable energy infra RWA, delivering real-world adoption and measurable community impact.

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.)

- **Tokenization of Renewable Energy Infra (RWA):** Each project issues Cardano-native tokens representing fractional ownership or revenue rights.

- **Crowdinvesting Mechanism:** Users purchase tokens using ADA or USDA, financing construction and expansion of renewable assets.
- **Revenue Distribution via Smart Contracts:** Token holders claim proportional revenues from energy sales, with all transactions verifiable on-chain.

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.)

Giveth is built as a large-scale decentralized application (dApp) with both front-end and back-end services, designed for scalability, reliability, and seamless blockchain integration.

Front-end

- **Frameworks & Languages:** Next.js 14 (React) with TypeScript for modular, performant, and type-safe development.
- **Styling:** Styled Components for CSS, enabling scoped, reusable, and dynamic design.
- **Blockchain Integration:** CIP-30 wallet standard via `@meshsdk/core` to handle Cardano interactions.
- **Hosting & Delivery:** Deployed via **Vercel** for fast, reliable global distribution.

Back-end

- **Framework:** Express (JavaScript) with TypeORM for structured API and database management.
- **Resolvers:** Custom resolver logic for Cardano donation transaction handling and on-chain verification.
- **Database:** PostgreSQL storing project, donation, and user data.
- **Blockchain Services:** Integration with **CardanoScan.io** for transaction verification and metadata retrieval.
- **DevOps & Infrastructure:** Docker containers with CI/CD pipelines for efficient deployment. Staging and production share a unified infrastructure for consistency and reliability.

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.))

- **Cardano-native tokens** to represent fractional ownership of renewable energy infra (RWA).
- **Smart contracts** manage investments and distribute revenue transparently.
- **ADA and USDA stablecoin** used for token purchases, ensuring global accessibility and stability.

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.)

Our goal for the 10-day sprint was to build and validate a **proof of concept for Cardano blockchain integration into Giveth's crowdfunding donation flows**. As a first step to be able to do crowdinvesting in Solar projects.

Specifically, we aimed to:

- Enable users to connect with popular **Cardano wallets** via CIP-30 integration.
- Allow donors to **select tokens from their wallet, enter donation amounts, and confirm transactions** directly within the existing Giveth dApp interface.
- Implement a **transaction resolver** on the backend to verify Cardano donations against on-chain data using CardanoScan.
- Ensure smooth alignment with Giveth's **current UX/UI**, requiring only minimal design adjustments while preserving established flows.

Expected Outputs

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

- One working interaction: Users connect a Cardano wallet and send ADA or USDA.
- On-chain output with SDG metadata: Each transaction send tokens to fund renewable energy supporting several SGDs, mainly SDG 7: affordable and Clean Energy and SDG 13: Climate Action.
- Basic user interface: Using Giveth as a platform to contribute ADA, confirmation display, token balance view and transaction to project page.
- Stakeholder feedback: At least three feedback sessions with potential users, Cardano community members, and UNDP contacts.

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

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	Users connect a Cardano wallet and send ADA or USDA.
User Interface	Using Giveth as a platform to contribute ADA, confirmation display, token balance view and transaction to project page.
Stakeholder Testing	Demo was presented to the UNDP OP CCIT/Country offices.
SDG Integration	Each transaction sends tokens to fund renewable energy supporting several SDGs, mainly SDG 7: affordable and Clean Energy and SDG 13: Climate Action.

Demo Readiness	<i>Demo link or video walkthrough prepared and submitted by Day 10.</i>
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Post-Sprint Refinement

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

<i>Focus Area</i>	<i>Baseline Metric</i>
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 CCIT/CO or stakeholder to discuss next steps.

Pilot Readiness

Focus: Preparing the solution for deployment and scaling.

<i>Goal Area</i>	<i>Suggested Metric</i>
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
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UI/UX	UI/UX is on a special Giveth site and limited to contribute ADA, confirmation display, token balance view and transaction to project page.	Full integration into the donation flow, project page and Cardano dashboards.
Blockchain	Users connect a Cardano wallet and send ADA or USDA.	Tokens get minted and sent to the user after the user sends ADA or USDA.
SDG Tags	-	Make filterable
Feedback	2 sessions	6+ sessions (at least 2 sessions per iteration)

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
Legal & Regulatory Compliance	Tokens may be classified as securities, or crypto activity may be restricted/banned in certain jurisdictions.	High	Engage legal counsel in key jurisdictions; design tokens as utility/revenue-sharing where possible; adopt measures to stay compliant; collaborate with UNDP, Emurgo and potentially regulators.

Non-Payment / Counterparty Risk	Local operators may fail to remit revenues due to malpractice, fraud, or political/economic instability.	High	Partner only with UNDP-vetted projects; smart-contract-controlled payment flows ; consider including insurance/guarantee mechanisms where feasible in the future; diversify across multiple projects/countries.
Technical & Security Vulnerabilities	Smart contract bugs, wallet exploits, or infrastructure downtime could compromise funds or user trust.	Medium	Conduct independent security audits ; phased rollouts with limited exposure; bug bounty program; rely on tested Cardano standards (CIP-30, USDA).
Adoption & User Accessibility	Users may struggle with wallet setup, token purchases, or crypto onboarding in target communities and among global investors.	Medium	MVP on Cardano; optimize for simplicity as we move forward. Explore zkFold and Unicorn dAppstore integration for email login and fiat ramps; step-by-step UX guidance; multilingual support.

Currency & Revenue Volatility	Fluctuations in ADA or local currency exchange rates may impact investment value and local project revenues.	Medium	Prioritize stablecoins (USDA) for fundraising;
Infrastructure / Project Delivery Risk	Renewable energy projects may face delays, cost overruns, or underperformance.	Medium	Work with UNDP OP-CCIT pipeline (proven due diligence); require milestone-based disbursement; third-party monitoring of energy output.
Reputation & Trust	Perception of “greenwashing,” failed projects, or unmet expectations could harm credibility of UNDP, Cardano, and Unicorn.	Medium	Transparent reporting of project performance; blockchain transparency in revenue flows; strong communication of successes and learnings.
Limited Cardano experience	The team lacks deep technical knowledge of Cardano-specific components.	Low	Pair devs with mentors
Wallet Compatibility Issues	Different Cardano wallets (Nami, Eternl, Yoroi) may behave inconsistently with CIP-30, leading to failed connections or user confusion. No re-authentication option on refresh.	Medium	Test across multiple wallets during development; provide fallback option to copy project address and send ADA manually.
Transaction Verification Reliability	Reliance on external Cardano indexers for transaction validation may result in downtime or inconsistent data.	Medium	Use redundant indexer services and design backend with retry/fallback logic; explore self-hosted Koios node if needed.

Low User Engagement During Testing	<i>Stakeholders and community testers may not provide sufficient feedback during the sprint, limiting iteration quality.</i>	Medium	<i>Pre-schedule at least 3 testing sessions with UNDP contacts and Cardano community members; provide clear test instructions and incentives.</i>
Mainnet Token's Transaction	<i>Choose and provide more tokens to testing team for main test</i>	Low	<i>Transaction inside Cardanonetwark are cheap but it has limit of minmail 1 ADA token per transaction, this can be solved by using PreProd network token to test.</i>

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

Unicorn

Team Members & Roles

(Briefly list team members and their core roles or responsibilities)

- Mitch - Team leader and product manager
- Ali - Backend developer
- Kresimir - Frontend developer
- Mo - Main designer
- Cotabe - Project Manager
- Griff Green - Founder and Director

Challenge Owners

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

The challenge owner is the Climate, Crisis and Infrastructure Team (CCIT) of the Office of Procurement, UNDP. Given multiple projects selected from multiple UNDP COs, CCIT will be taking the role as a lead.

Challenge Owner Organization Name:

(UNDP Country Office or other organization)

1. UNDP Office of Procurement (OP), Crisis Climate and Infrastructure Team (CCIT)
2. For the particular example of the project in Afghanistan: UNDP Afghanistan

Team Members & Roles:

(List key representatives and their roles

- UNDP OP CCIT
 - Bakhtiyor Khamraev - Team Lead
 - Maria Anzizu - Solar Expert and Procurement Analyst
 - Backup support from UNDP OP CCIT colleagues
- UNDP Afghanistan
 - Butchaiah Gadde - SESEHA Project Manager
 - Mohammed Sallam - Energy Technical Specialist

Area of Focus:

(Brief statement summarizing the thematic area, e.g., financial inclusion, public service transparency)

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.")

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?)

Success for the pilot means delivering a functional MVP that enables global users to crowdfund and crowdinvest in **UNDP-vetted renewable energy projects**, starting with solar projects for Afghanistan's healthcare and education facilities. Users will connect a Cardano wallet, fund projects with ADA or USDA, and receive fractional investment rights. We will also explore **donation crowdfunding vs. crowdinvesting trade-offs**, launching **at least 3 pilot experiments** to refine both the mechanism and the dApp.

Target Users or Communities for Pilot

(Indicate who will benefit from the pilot deployment, specific regions, stakeholder groups, or institutions.)

The pilot will focus primarily on Afghanistan, with potential extension to Samoa/Vanuatu/Somalia, targeting renewable energy access projects in healthcare and education or in communities.

Direct Beneficiaries: Selected public facilities in health and education (clinics, schools).

- Communities gaining reliable, clean energy access.
- Project workers, with priority for women, youth, marginalized groups, and those at risk of being left behind, fostering inclusive and equitable employment opportunities.

Indirect Beneficiaries

- Health and educational administrative authorities, improving service delivery.
- Private sector partners engaged in renewable energy development.

Donors & Investors

- Global Cardano wallet users contributing through donations or crowdfounding.
- Giveth's donor base, already engaged in supporting public goods and regenerative projects.
- Institutional and individual donors aligned with UNDP and SDG-driven energy access.

Other Stakeholders

- UNDP OP-CCIT and UNDP COs selected for this exercise providing oversight and validation.
- National and international organizations collaborating on renewable infrastructure delivery.

Scalability Plan

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

The dApp is designed to be **highly scalable**, with modular components that can be replicated across geographies and project types. After the pilot, the platform can be extended to the **dozens of renewable energy initiatives already vetted by UNDP OP-CCIT worldwide**, ranging from solar microgrids to small hydro and refrigeration systems.

Key scalable elements include:

- **Token issuance & smart contract flows:** Reusable across different renewable projects and adaptable to diverse local contexts.
- **Wallet integrations (CIP-30, ADA, USDA):** Enabling consistent user experience for global donors and investors.
- **Crowdfunding mechanics:** Iterated during the pilot and refined for wider deployment.

The **crowdinvesting model** has strong potential for global adoption, but scaling must proceed with caution. To avoid regulatory pitfalls, expansion will either:

1. Exclude jurisdictions where compliance risk is high, or
2. Develop frameworks aligned with **local securities and crowdfunding laws** to ensure sustainable growth.

Support Needed

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

To move from proof of concept to a functional MVP and scale toward global impact, we seek the following support:

- **Funding:** We are requesting **\$150K USD** to complete and demonstrate the MVP. We have applied to **Project Catalyst**, and direct financial support or backing of our Catalyst application would be key to progress.
 - **Integration of Cardano on Giveth:** 45,000 USD
 - **New tokenization platform:** 95,000 USD
 - **Research & operations (incl. UNDP OP-CCIT hours):** 10,000 USD
- **Legal & Policy Guidance:** Expert advice to design a regulatory-compliant framework, minimizing risks of token classification as securities across jurisdictions.

- **Technical Development:** Potential development support for the next stage, particularly in expanding wallet integrations, smart contract robustness, and scaling the dApp architecture.

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?)

Here are some options:

Transaction-based fees (traditional model): Most crowdfunding platforms operate by charging a percentage on the amount raised (commonly ~5%) and in some cases an additional fee on repayments or disbursements. A similar structure could be applied to renewable energy crowdinvesting to ensure sustainable operations.

Zero-fee sponsorship model: Alternatively, platform costs could be covered by a funding partner (e.g., UNDP, ecosystem sponsors, or philanthropic donors), allowing all raised funds to flow directly to projects. This approach enhances trust and accessibility, especially in early pilots.

Hybrid path: In early stages, the platform may rely on **grants and public partnerships** to subsidize costs. As adoption grows, a **low-fee or optional sponsorship model** could ensure long-term sustainability while preserving inclusivity.

Key Resources & Partnerships

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

Long-Term Ownership / Maintenance

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

OP/CCIT will be the owner of the solution in this regard.

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: [Backend](#) and [Frontend](#)
- Documentation / ReadMe
- [UNDP Project Documents](#)
- 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:

- “This experience helped us to develop a solution that can provide renewable energy to the communities in remote islands and protracted crisis countries, which we intend to scale.”)

Solution Maker's Perspective

- Compliance surfaced as a key challenge: in some jurisdictions, tokens may be treated as securities. We are exploring alternative designs and regulated crowdfunding models to reduce risk.
- Integrating with the Cardano tech stack proved more complex than expected. Limited tooling and emerging standards created friction but also gave us deeper technical understanding.