RecyNaija

Executive Summary

Plastic pollution is a significant environmental challenge in Nigeria, with the country ranking ninth globally in terms of plastic waste contribution. Unfortunately, over 88% of the plastic waste generated in Nigeria is not recycled, leading to severe pollution of water bodies such as rivers, lakes, drains, lagoons, and the ocean. This situation calls for urgent action to increase plastic recycling rates and promote environmental sustainability in the country.

RecyNaija is a blockchain-based solution specifically designed to address the low PET bottle recycling rates in Nigeria. The project aims to incentivize individuals to recycle PET bottles by rewarding them with RecyCoins, a digital token built on the blockchain. By providing a tangible incentive for recycling, RecyNaija aims to increase awareness and participation in plastic recycling, leading to a cleaner environment.

Background & Context

Nigeria's plastic pollution crisis is fueled by the extensive use of plastic bags, cans, and bottles. With approximately 2.5 million tonnes of plastic waste generated annually, urgent measures are needed to tackle this environmental problem. The lack of effective recycling practices has resulted in a large portion of plastic waste ending up in water bodies, causing ecological damage and endangering marine life.

Value Proposition

RecyNaija offers an innovative and effective solution to the low PET bottle recycling rates in Nigeria. By introducing a blockchain-based rewards system, the project provides a compelling incentive for individuals to actively participate in recycling efforts. RecyCoins serve as a form of recognition and reward for responsible plastic waste management, driving behavioral change and promoting a cleaner environment. The transparency and traceability of the blockchain technology ensure the integrity of the recycling process and build trust among stakeholders.

Technical Description

RecyNaija will employ a range of advanced technologies to transform PET bottle recycling in Nigeria. The project utilizes custom-built recycling machines constructed from cardboard boxes, old bus validators equipped with Android and QR code capabilities, Arduino ESP32 boards, and LED indicators. This hardware setup forms the foundation of the recycling process.

To enable seamless execution of smart contracts based on the ERC20 standard, RecyNaija leverages Thirdweb, a powerful platform. These smart contracts, written in Solidity, govern the issuance and exchange of RecyCoins, the project's native tokens. A frontend interface allows users to interact with the recycling machine, while a backend and middleware solution, interacting with Thirdweb's SDK, facilitates integration with the Rootstock Blockchain RSK network's testnet. This ensures smooth data and transaction flow between the recycling machine and the RSK network. The Metamask wallet will be utilized for secure storage of the RecyCoins earned during the recycling process.

The project's infrastructure is supported by Render servers, providing reliable hosting services for efficient system operation. The development process will be through the use of Gitpod, a collaborative development environment that facilitates effective teamwork and project management.

By leveraging Thirdweb, Arduino, Solidity, Metamask, Render, and Gitpod, RecyNaija establishes a robust technological foundation for PET bottle recycling in Nigeria. These technologies enable PET bottle scanning, RecyCoin issuance and exchange through smart contracts, secure storage of tokens in the Metamask wallet, and seamless interaction with the RSK Blockchain network.

The user-friendly interface of RecyNaija revolves around a small machine equipped with an LCD screen, directly connected to the Rootstock blockchain network. When a PET bottle is scanned using the machine, users are rewarded with 1 RecyCoin token per bottle recycled.

The recycling process is straightforward: after scanning, users simply drop the bottle inside the machine when the light turns green. Once the bottle is deposited, individuals can claim their RecyCoin token using Metamask, a widely used cryptocurrency wallet. This step ensures that recycling efforts are accurately recorded on the Rootstock Testnet network, allowing for traceability of each PET bottle's origin and end.

RecyCoin tokens hold inherent value within the RecyNaija ecosystem, as they can be exchanged for stablecoins through the SwapStation website. This flexibility allows users to convert their RecyCoins into other digital assets if desired. Moreover, as recycling companies actively seek to purchase plastic bottles, the Swapping contract, funded by these companies, maintains a sufficient balance to exchange PET for RecyCoin or any other stable coin on the Rootstock blockchain.

RecyNaija's holistic approach empowers individuals by rewarding them with RecyCoins for their recycling efforts, fostering a culture of sustainability and environmental consciousness. These tokens serve as a tangible incentive, enabling users to redeem them for various rewards or

participate in eco-friendly campaigns. By integrating blockchain technology, RecyNaija not only promotes responsible recycling practices but also enhances transparency and accountability throughout the recycling process.

Market Analysis

RecyNaija targets the significant market opportunity presented by Nigeria's plastic waste crisis. With a staggering 2.5 million tonnes of plastic waste generated annually, there is immense potential for growth and impact. By leveraging blockchain technology and a rewards-based

system, RecyNaija differentiates itself from traditional recycling methods, offering a compelling solution to address the low recycling rates in the country.

Project Plan

The immediate focus for RecyNaija is to secure investment to enhance the project's Minimum Viable Product (MVP) and scale up its operations. This includes expanding the network of recycling machines across strategic locations in Nigeria and raising awareness about the RecyNaija initiative. The project aims to forge partnerships with local communities, businesses, and recycling companies to create a robust and sustainable recycling ecosystem.Additionally, RecyCoin envisions expanding the platform to recycle other materials like aluminum cans.

Team

Team Members:
Wisdom Nwakaku
The proposal author is the primary team member, bringing 4 years experience and expertise in blockchain technology, full stack development , recycling, and environmental challenges.
Emeka Chris
Mobile developer with 3 years experience in software development and fullstack dev.
Gavin Ursamali
Co-founder Conrad Robotics.

Resources:

The RecyNaija team comprises individuals with expertise in blockchain technology, full-stack development, recycling, and environmental challenges. The team has a deep understanding of the Nigerian market's needs and possesses the necessary skills to execute the project successfully. To bring the idea to life, RecyNaija will leverage resources such as blockchain platforms, smart contracts, scanning technology, and partnerships with recycling companies and local communities. Investment will be crucial to fund the project's growth and expand its impact nationwide.

In conclusion, RecyNaija aims to revolutionize plastic recycling in Nigeria by incentivizing individuals to actively participate in the process. Through the innovative use of blockchain technology and a rewards-based system, the project seeks to address the low PET bottle recycling rates and combat plastic pollution by fostering a sense of responsibility.