PRODUCT REQUIREMENTS DOCUMENT

ECO CYCLE- Redefining Nigeria's Waste Management Experience.

Document Owner: Group E

1. OVERVIEW

ECOCYCLE is a digital platform designed to address the waste management challenges faced by households in Nigeria. Currently, households struggle to efficiently dispose of waste due to a lack of visibility, communication, and technology-enabled waste collection services. This often results in unsafe practices such as burning waste, which negatively impacts both community health and the environment.

ECOCYCLE bridges the gap between households and waste pickup providers by providing a mobile/web solution that allows users to request pickups on-demand or via schedule, while enabling waste management companies to optimize routes and track service delivery.

2. PROBLEM STATEMENT

In Nigeria today, waste management remains a persistent and growing challenge, particularly at the household level. Rapid urbanization, high population density and limited waste infrastructure have resulted in irregular waste collection. Inability to track or request waste pickup leads to poor disposal practices. There is growing need for a centralized digital platform that empowers residents, streamlines service delivery and foster a culture of accountability, recycling and sustainability.

3. PROPOSED SOLUTION

This App seeks to bridge that gap by providing; Real-time scheduling and notifications for waste pick-ups: Easy reporting tools for missed services: Incentives for household level recycling: Feedback mechanisms for informed decision making by stakeholders.

4. GOALS AND OBJECTIVES

1.Enable households and organizations to schedule waste pickups via a mobile/web app.

2.Provide waste pickup trucks with visibility of service requests, optimized routing, and communication tools.

3.Reduce environmental pollution and health hazards by minimizing open burning of waste.

4.Promote a cleaner, healthier community ecosystem through recycling and digital waste management.

5. DEFINED USER PERSONAS

Household User (Primary):

- **Needs:** Reliable, convenient waste collection.
- **Pain Points:** Missed pickups, lack of transparency, resorting to unsafe disposal.

Truck Driver / Waste Collector (Secondary):

- **Needs:** Clear pickup requests, optimized routes, real-time communication.
- **Pain Points:** Fuel waste, inefficient scheduling, missed earnings.

Waste Company Admin (Secondary):

- **Needs:** Control over operations, workforce, and revenue tracking.
- **Pain Points:** Lack of visibility, manual record-keeping, inefficiency.

6. MVP Scope (In -Scope and Out of Scope)

In-Scope (MVP):

- Household mobile/web app: on-demand pickups, scheduling, payments, notifications, tracking.
- Driver app: request acceptance, status updates, GPS navigation.
- Admin dashboard: monitor requests, assign drivers, generate basic reports.

Out of Scope (Future Enhancements):

- AI-driven smart route optimization.
- Recycling marketplace integration.
- Rewards/wallet for eco-friendly households.
- Government policy and compliance modules.

7. USER STORIES & ACCEPTANCE

- **Household User**
  - **User Story 1:**
    On-demand Pickup: Request pickup instantly.
    Acceptance: Request confirmed, notifications sent, status tracked.
  - **User Story 2**
    Scheduling Pickups: Automate recurring pickups.
    Acceptance: Schedule set, auto-requests generated, reminders sent
  - **User Story 3**
    Digital Payments: Pay without cash.
    Acceptance: Card, wallet, bank transfer, USSD supported; receipt generated.

- **Driver User**
    - **User Story 1**

      Receiving Requests: Get notified of new jobs.

      Acceptance: Shows request details; accept/reject; disappears if assigned.
    - **User Story 2**

      Route Optimization: Efficient multi-pickup routes.

      Acceptance: Shortest route shown, recalculates on deviation, multiple stops supported.
    - **User Story 3**

      Updating Status: Track progress in real time.

      Acceptance: Status updates visible to users/admin; payment released on completion.
- **Admin User**
    - **User Story 1**

      Monitoring Requests: Track all pickups.

      Acceptance: Dashboard with filters, reassignment possible, status visible.
    - **User Story 2:**

      Managing Drivers: Manage workforce.

      Acceptance: Add/edit/suspend drivers; logs accessible; suspended drivers blocked.
    - **User Story 3:**

      Reporting: Generate insights.

      Acceptance: Daily/weekly/monthly reports exportable to Word/PDF/Excel.

8. FEATURE PRIORITIZATION

Core Features [MVP]

Sign-up feature	Users provide details like phone number, email address, and set up a password to create an account.

Login feature	Users with an account input their email address or phone number and password to use the app.
Homepage	Users can navigate the features of the app from the homepage
User profile	Users set up their profile as a primary user(customer which could be a household or organisation) or secondary user (driver)
View subscriptions	Serves as a self-service hub where users can choose their category (Family plan or Business plan) and manage their ongoing recycling plan (One-off, weekly, bi-weekly or monthly)
Schedule a pickup	Customers can schedule a time for their waste to be picked up.
Report missed pickup	Enables users to report issues like overflowing bins or missed collections.
Payment and invoices	Ensures financial clarity in the recycling chain.
Job Queue/Task List- Driver	Gives recycle truck drivers a clear, organized list of all assigned pickups and drop-offs
Accept/Reject Requests- Drivers	Allows recycle truck drivers to choose whether to take on a pickup request or not, especially in on-demand or flexible dispatch models.
Navigation & Integration- Drivers	Gives recycle truck drivers real-time directions, optimized routes, and integrated tools to carry out pickup efficiently
Real-time tracking –Drivers	Allows drivers to track collection activities and waste management operations.
Contact support- Users	Ensures users feel heard and problems get solved quickly, whether it’s a missed

	pickup, a payment error, or a compliance request.
Settings	Acts as a central hub for user control over security, payments, subscriptions, notifications, and compliance data.
Admin portal	Waste Inventory Tracking and ensuring compliance with waste management company

Should Have Features

Reward System	Encourages users to participate in recycling programs with rewards or incentives
Educational materials	Provides information on proper e-waste recycling and the hazards of improper disposal.
Reviews	Allows users to rate and review their experience with pickups, recyclers, or the app itself.

Could Have Features

Waste Categorization & Guidance	This feature helps users categorize their e-waste correctly (e.g., phones, batteries, appliances, cables, cans, perishables) and provides clear instructions on how to prepare each item for drop off or pickup
Impact Dashboard	This feature shows users the positive environmental and social impact of their recycling activities.
Pick up reminders	Send reminders to customers about their scheduled pick-up

Won't Have Features

Marketplace	Allows users and recyclers to buy, sell, or donate refurbished electronics, reusable components, or recycled raw materials directly on the app
Offline Mode	Allows users to use the app without an active internet connection.

9. PRODUCT ROADMAP

Week	Phase	Dates	Key Activities	Deliverables
Week 1	Planning & Design System	Sept 15 – Sept 21, 2025	-Draft & finalize **PRD** - Assign tasks to teams (design, frontend, backend) - Design **ECO CYCLE logo** (UI/UX designer) - Build **UX Design System** (colors, typography, components) - Define **color palette & typography guide** - Sketch **low-fidelity flows** (Signup, Pickup, Driver, Admin)	- Finalized PRD - Assigned team tasks - ECOCYCLE logo - Complete design system - Low-fidelity flow sketches
Week 2	UI Design + Dev Setup	Sept 22 – Sept 28, 2025	**Sketch wireframes** for all flows (customer, driver, admin) - Create **high-fidelity UI designs** for core features - **Frontend setup** (React Native/Flutter project initialization) - **Backend setup** (server + database schema, authentication)	-Full wireframes - High-fidelity designs - Frontend initialized with core UI - Backend server & database ready

Week 3	Development	Sept 29 – Oct 3, 2025	**Frontend Development:** - Implement core features (Profile, Subscriptions, Pickup Scheduling, Missed Pickup, Driver Dashboard, Accept/Reject, Tracking) **Backend Development:** - Build APIs (subscriptions, pickups, drivers, tracking) - Integrate payment gateway **Testing (Initial):** - Unit testing on frontend & backend modules	-Working core frontend features - Backend APIs integrated - Payment gateway functional - Initial tested build
Week 4	Testing, Pitch & Submission	Oct 3 – Oct 4, 2025	- **Full QA testing** (functional, usability, payments, tracking) - Bug fixing & refinements - **Create pitch deck** (problem, solution, SDGs, roadmap, MVP demo) - Prepare & deliver **pitch presentation** to stakeholders - Submit MVP for pilot rollout	- Tested MVP app - Bug-free build - Pitch deck created - Presentation delivered - Final submission & demo

10. PRODUCT METRICS

The metrics are designed to directly address the challenges outlined in the problem statement.

a. North Star Metric

- Properly Collected & Processed Waste

Since the main problem is irregular and inefficient waste collection, our north star is the percentage of waste that is collected on time and properly processed (recycled, composted, or safely disposed of).
Target: 50% in Year 1

b. Adoption & Usage Metrics

- Households/Communities Onboarded
  To solve the problem at the household level, we will track how many families adopt the app and service.
  Target: 10,000 households onboarded in Year 1

- Collection Frequency Adherence
  Because irregular waste collection is a core issue, we'll measure how often pickups happen as scheduled.
  Target: 90% adherence

- App Active Users
  Since the solution is a digital platform, we'll track active users who regularly engage with notifications, reports, and incentives.
  Target: 70% engagement

c. Operational Efficiency Metrics

- Average Collection Time per Route
  To address limited infrastructure, we'll monitor how quickly waste is collected across routes.
  Target: < 2 hours per route

- Waste Volume Collected per Trip
  Measuring efficiency in volume helps optimize limited resources.
  Target: 15% increase vs. baseline

- Illegal Dumping Reduction
  By creating accountability and easy reporting tools, we want to reduce illegal dumpsites.
  Target: 40% reduction

d. Impact Metrics

- Recycling Rate
  Since the app incentivizes household recycling, we'll track % of waste recycled.

Target: 30% of collected waste

- Landfill Diversion Rate
  To support sustainability, we'll measure how much waste is diverted away from landfills.
  Target: 45% diversion

- Community Cleanliness Index
  Feedback tools will allow us to survey residents.
  Target: +3 points improvement in community perception

e. Financial & Sustainability Metrics

- Revenue from Recyclables
  A circular economy approach means recyclables must generate income.
  Target: ~~₦~~50M+ in Year 1

- Payment Compliance Rate
  To sustain service delivery, we'll measure how many households pay for service.
  Target: 80% compliance

- Government Cost Savings
  A key stakeholder benefit is reducing government waste costs.
  Target: 20% annual savings

- Partnerships Established
  The platform should enable collaboration with recyclers, NGOs, and private firms.
  Target: 10 partnerships

11. RISKS AND MITIGATION

Risks:

- Infrastructure limitations: Inadequate internet connectivity, poor network coverage, or lack of access to smartphones in some areas.
- User adoption: Low adoption rates among households, waste collectors, or municipal authorities.
- Data security: Risk of data breaches or unauthorized access to user information.
- Regulatory compliance: Non-compliance with Nigerian waste management regulations or data protection laws.

- Scalability: Difficulty scaling the platform to meet growing demand or expanding to new areas.
- Partnership challenges: Difficulty partnering with waste collectors, municipal authorities, or other stakeholders.
- Funding: Insufficient funding to sustain the platform or expand its services.

Mitigations:

- Infrastructure limitations:
    - Develop offline-capable features or partner with telecom providers for affordable data plans.
    - Use SMS or USSD for areas with limited internet access.
- User adoption:
    - Conduct user research and testing to understand household needs and behaviors.
    - Develop user-friendly interfaces and provide training or support.
    - Offer incentives for early adopters or referrals.
- Data security:
    - Implement robust data encryption and secure storage.
    - Develop clear data protection policies and obtain user consent.
    - Regularly update and patch software to prevent vulnerabilities.
- Regulatory compliance:
    - Collaborate with regulatory bodies to ensure compliance with waste management laws.
    - Stay up-to-date with changes in regulations and adapt the platform accordingly.
- Scalability:
    - Design the platform with scalability in mind, using cloud infrastructure and flexible architecture.
    - Monitor performance and optimize resources as needed.
- Partnership challenges:
    - Develop strong relationships with waste collectors, municipal authorities, and other stakeholders.
    - Establish clear communication channels and expectations.
- Funding:
    - Develop a sustainable business model, such as subscription-based services or advertising.
    - Explore funding opportunities from government agencies, NGOs, or private investors.
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12. GO-TO-MARKET STRATEGY

Goal

To launch Ecocycle in Nigeria starting with Abuja, build trust among households and collectors, and then scale into Lagos and other cities by making waste management predictable, transparent, and community-driven.

KICK OFF: Abuja Estates & Communities

- Start small in 2–3 estates or districts in Abuja (e.g., Gwarinpa, Wuse, Maitama). Why? Abuja is politically stable, semi-organized estates, and AEPB (Abuja Environmental Protection Board) is easier to partner with than Lagos LAWMA.
- Use word-of-mouth + estate associations as entry points.

For Example: Run a 3-month pilot with 500 households → track adoption, show success, then expand.

Community Engagement First (Trust Building)

Waste in Nigeria is emotional. People have been cheated by informal collectors before. To win them:

- Community Meetings → Partner with estate associations, churches, and mosques. Do short 10–15 min demos during gatherings.
- Market Outreach → Distribute flyers in local markets with QR codes to download/join ecocycle.
- Radio Jingles (local language ads on Wazobia FM, Cool FM, and Hausa radio stations).

Nigerians trust people they know, so we make community leaders our first ambassadors.

Collector On-boarding

Collectors are not the enemy they are part of the system. If we ignore them, they will resist.

- Train and onboard independent collectors into the app (give them Ecocycle vests + ID cards for legitimacy).
- Incentivize them with instant digital payouts after every pickup.
- Build pride: “Be a Ecocycle Partner – Keep Nigeria Clean and Earn More.”

Acquisition Channels

- WhatsApp First: Nigerians live on WhatsApp. Launch a WhatsApp Business bot where users can: Book a pickup → Receive confirmation → Get receipts.
- Referral Program: "Get ₦500 off your next pickup when you invite a neighbor."
- Influencer Micro-Campaigns: Partner with eco-friendly Nigerian influencers (small ones, not just celebrities). Example: Abuja lifestyle bloggers, Naija health & wellness pages.

Partnerships:

- Abuja Environmental Protection Board (AEPB).
- Estate associations → offer group discounts.
- NGOs focused on sanitation & health.

Pricing Strategy

- Keep it affordable and transparent.
- Pay-per-pickup: ₦2000–₦4,000 depending on volume.
- Subscription: ₦5,000/month for weekly pickups.
- Digital receipts = no hidden fees or extortion.

Marketing Messaging

- "Turn your waste problems into peace of mind."
- "No more excuses. No more extortion. Just clean streets."
- "Book waste pickup in 3 taps."
- In Hausa: "Shara ba matsala bane – Ecocycle na tare da kai." (Waste is no problem – Ecocycle is with you.)

Growth & Expansion Plan

- Phase 1 (Oct–Dec 2025): Abuja pilot

1. Onboard 500 households.
2. Train 50 collectors.
3. Partner with 2 estate associations.

- Phase 2 (Q1 2026): Scale in Lagos

1. Partner with LAWMA.
2. Expand into estates in Ikeja, Surulere, Lekki.
3. Add subscription model + collector ratings.

- Phase 3 (Q2–Q4 2026): Expand Nationwide

1. Target Ibadan, Kano, Port Harcourt.
2. Build government dashboards for monitoring.

3. Position Ecocycle as a national sanitation platform.

Retention Strategy

Winning users is one thing — keeping them is another.

- Push Notifications: “Your pickup is scheduled for tomorrow at 9AM. Put your waste out.”
- Digital Receipts: Build trust by showing a clean, official record of every transaction.
- Gamification: Points for consistent pickups → discounts on future collections.
- Community Impact Reports: “This month, Ecocycle cleared 15 tonnes of waste from your area.”

Metrics for Success

- 500+ households on-boarded in Abuja pilot.
- 80% pickup completion rate.
- 50+ collectors signed up within 3 months.
- 70% retention rate after 2 months.
- 200+ illegal dumpsites reported & cleared in first year.

Long-Term Vision

Ecocycle becomes the “Uber for Waste” in Nigeria → expanding from Abuja → Lagos → Nationwide → then West Africa.

We’re not just launching an app. We’re rebuilding trust in waste management, starting where Nigerians live: in their homes, estates, WhatsApp groups, churches, mosques, and local markets.