



Introduction

The Problem:

- Low Recycling Rates: Only 10% of the city's 1.4 million tonnes of waste is recycled annually.
- Illegal Disposal Sites: Over 3,000 illegal disposal sites have emerged, increasing pollution and public health risks.
- Households contribute 40–45% of single use plastics, approximately 20–25% of single use plastics are contributed by commercial and retail waste which include restaurants. Industries contribute to the quantity of single use plastics because most of their goods are transported using these plastics. Social gathering and churches contribute approximately 5–10% of the single use plastics which are usually discarded on-site and mixed.

The Effects:

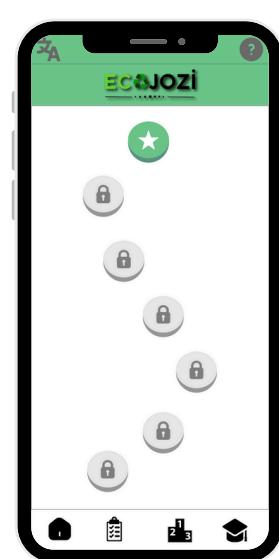
- Landfill Overcapacity: Robinson Deep, the city's largest landfill, is nearly full, leaving residents with limited disposal options.
- Air Pollution and Health Risks: The lack of alternatives leads to the burning or dumping of rubbish, causing serious air pollution and respiratory ailments.

Solution:

EcoJozi offers a sustainable solution to the waste crisis by making waste management a community-centric and engaging activity. Through its interactive website, gamified challenges, and local workshops.

EcoJozi empowers people to actively participate in making Makers Valley a cleaner and healthier place to live in.

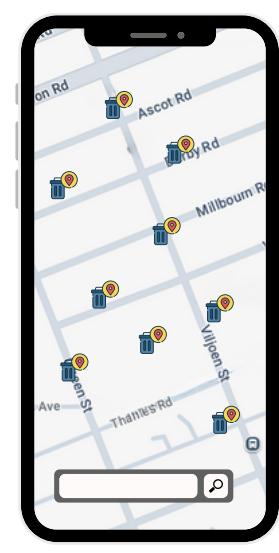
Gamification



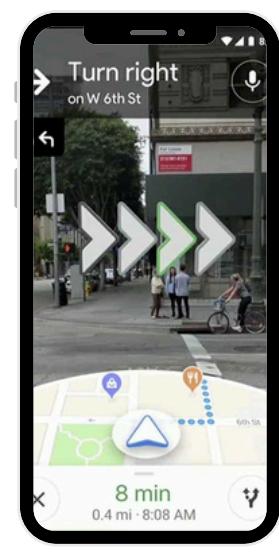
The image displays EcoJozi's task progression system. Users start at the first task and unlock new challenges as they advance, making waste management, showcasing EcoJozi's way of making wastemanagement fun and rewarding.



The image showcases EcoJozi's waste disposal feature. It assists the user in identifying the types of rubbish that belong at the different trash sites or cleanup places. The application ensures appropriate disposal, efficiency, and recycling practices by displaying visual indicators on the screen.



EcoJozi's waste map feature is displayed in the image. Users can enter their location to find nearby reported garbage locations. EcoJozi gets its waste statistics from partner businesses and community reports, which also provide updated evidence of waste removal.



The navigation feature of Ecojozi is displayed in the image. To improve accessibility and user engagement, users can follow real-time arrows displayed on their camera view, which will direct them exactly to the garbage sites or cleanup places.



To further enhance our waste disposal feature, the app includes an built in list of items that distinguishes between the wastes that are recyclable and non-recyclable. In addition, this ensures the users to quickly identify the correct disposal methods.

Top users are displayed on the app's leaderboard according to the quantity of chores, cleanups, and eco-challenges they have finished. Users are rewarded for their consistent environmental efforts, participation is encouraged, and friendly competitiveness is fostered.



Bacterial Contamination: Escherichia coli levels vary from 890,000 to 4 million MPN/100 mL, while total coliform counts range from 4.1 million to 39 million MPN/100 mL. Both values are above South African water quality standards for irrigation, recreational, and residential use.



Chemical Pollution: The river's concentrations of sodium, zinc, nickel, lithium, and lead are higher than what is advised for irrigation, recreational, and residential water, endangering the health of downstream users.

SCAN
ME! >

Context

EcoJozi uses workshops and gamified challenges to address waste management issues in Makers Valley. It promotes community involvement, making it possible for people without smartphones to participate. Additionally, EcoJozi encourages recycling and appropriate waste disposal, which reduces unlawful dumping and makes the area greener. Through partnerships, non-governmental organisations, and sponsorships, EcoJozi maintains its sustainability, scalability, and effect.

Design Element

EcoJozi integrates technology, community engagement, and sustainability to tackle waste issues in Johannesburg.

- Mobile App - Gamified challenges for a cleaner Johannesburg.
- Community Hubs - Physical workshops in youth clubs, churches, and community centres for those without smartphones.
- Sustainable Rewards - Participants receive benefits such as certificates and community recognition while collectively improving the city's environment.
- Cultural Connection - Integrates local music, art, and story telling to inspire action and celebrate Johannesburg's cultural identity.
- Data Privacy & Security - Protects users data with end-to-end encryption to ensure privacy and security.

Deploying The Design

Implementation Steps

Development: Cost: £12,000 – £15,000

Build the EcoJozi app with gamification, AR navigation, and waste tracking.

Community Engagement: Cost: £7,000 – £10,000

Train facilitators, host workshops, and provide PPE & educational materials.

Partner with waste management companies for promotion.

Marketing & Outreach: Cost: £2,000 – £3,000

Promote EcoJozi via social media, schools, and community awareness.

Monitoring & Impact Tracking: Cost: £3,000 – £4,000

Track participation and waste reduction through data collection & periodic reviews.

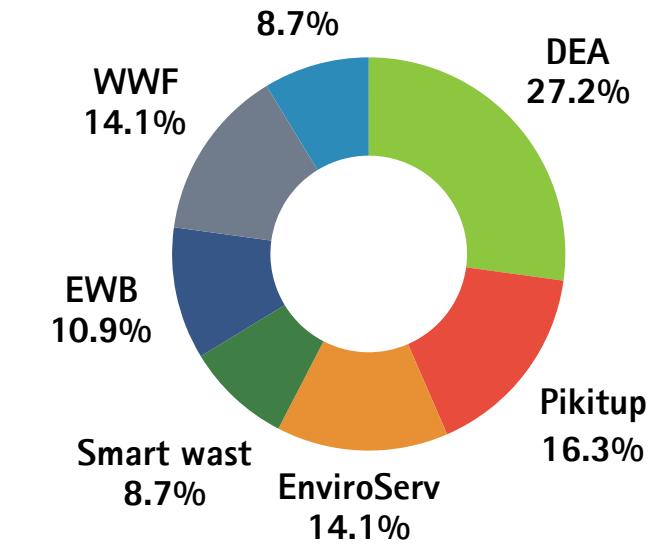
Rewards & Incentives: Cost: £3,000 – £5,000

Total Cost: £30,000 – £40,000 (approximately R700,000 – R950,000) for the EcoJozi project.

EcoJozi plans to secure fundings from the following sources:

Department of Environmental Affairs: £10,000 – £15,000.

Thundafund



Pikitup Partnership: £5,000 – £10,000.

EnviroServ: £5,000 – £8,000.

Smart Waste: £3,000–£5,000.

Engineers Without Boarders: £5,000,

WWF: £5,000 – £8,000.

Thunderfund: £3,000 – £5,000.



Promoting responsible consumption and recycling.



Creating cleaner, healthier urban environments.



Reducing emissions from waste burning and dumping.

References

Cost Estimation

<https://www.tandfonline.com/doi/pdf/10.1080/03736245.2024.2356563>
<https://www.wwf.org.za/>
<https://smartwaste.co.za/>
<https://www.enviroserv.co.za/>

Waste Problem

<https://infrastructurenews.co.za/2022/03/10/state-of-the-south-african-waste-industry/>
<https://pikitup.co.za/>
<https://climatechangewriters.com/stories/investigation-of-plastic-waste-management-in-landfills-around-johannesburg/>