

VARJYASARATHI.AI

No Waste, Better City

going→
ZERO
WASTE



Issues- Waste collection systems

- Negligence in waste segregation at source
- No monitoring agent to track the movement of wastes
- Recycling isn't done seriously
- Burden on authorities to collect waste timely
- Lack of Awareness

POLLUTION

Life of Plastic: India its own worst enemy in tackling polymer pollution; here is how

The country has tried to dilute its own legislation on dealing with plastic pollution in the past 6 years

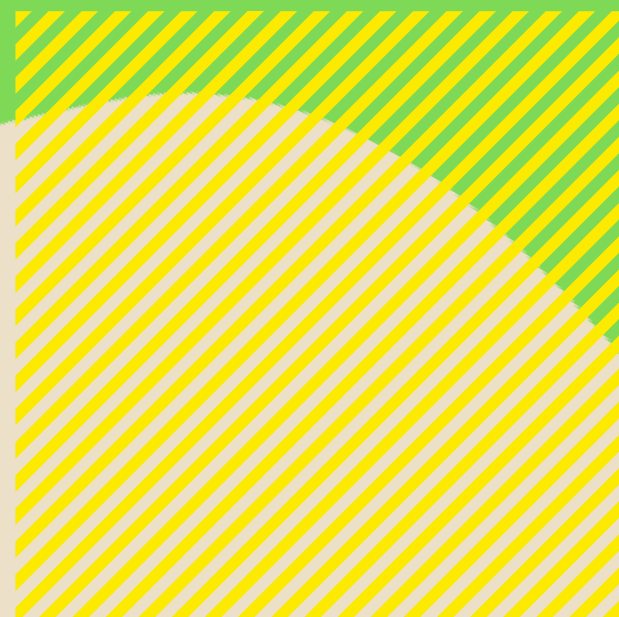


NEXT NEWS >

By DTE Staff



Our solution



**Our
Solution**





Provide segregation prompts



Facilitate waste pickup



VARJYA SARATHI

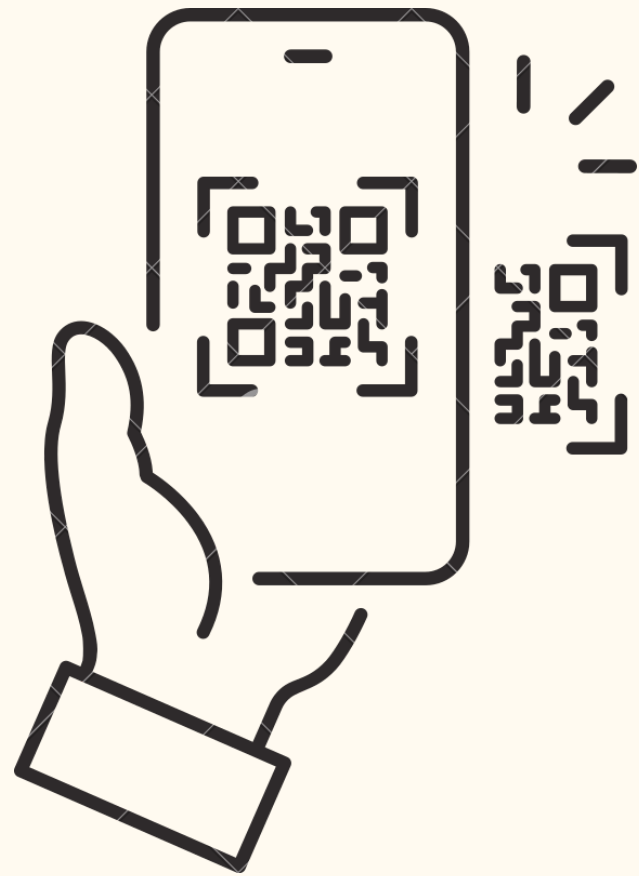


Platform to ship waste to recycling industries

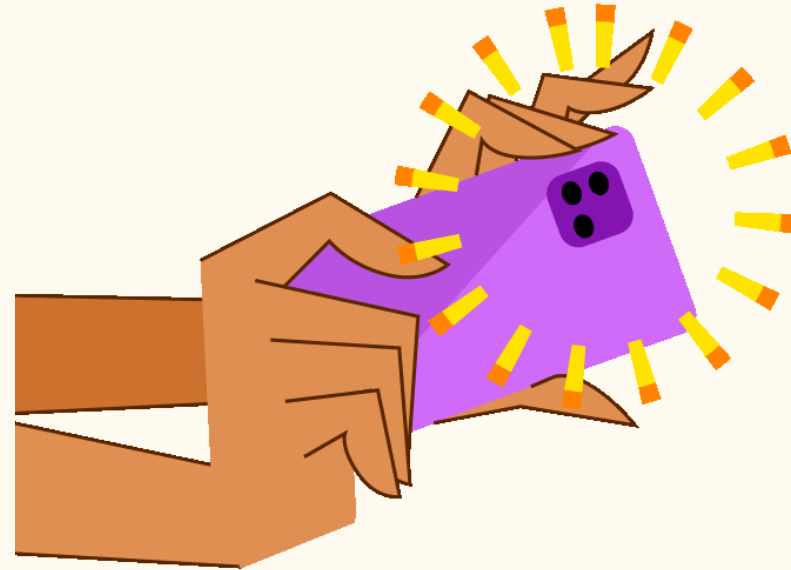


RECYCLE

4-step trash drop process



Scan the QR on dustbin



Take a picture of trash



Identification and prompts

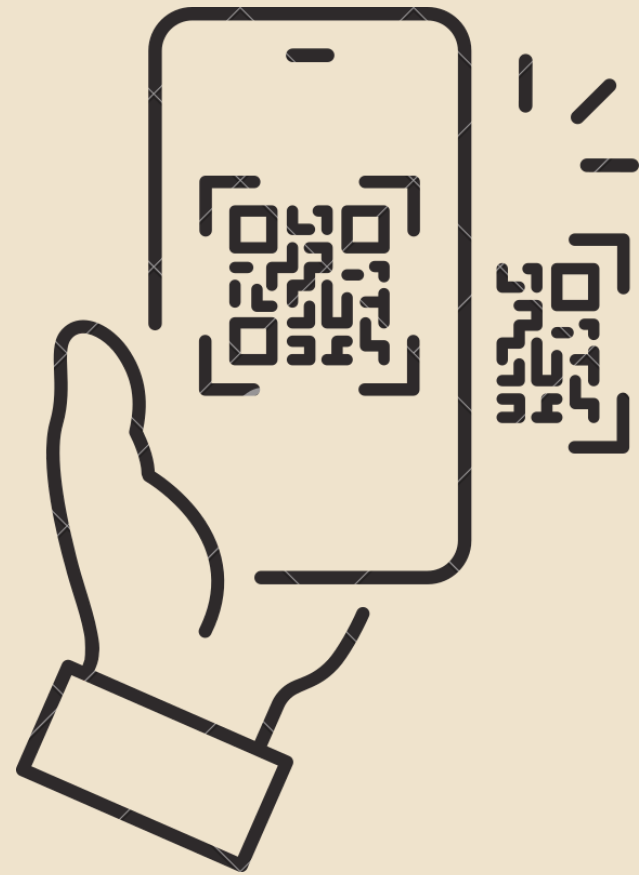


Drop the trash

3 Step Trash Clearance



Login to App to check
dustbins by priority



Scan the QR on dustbin



Pickup the trash



Take a picture of empty
dustbin for verification

Bidding- for Waste purchase



Making Recycling-

1. **Competitive**- Industries buy waste at the best value
2. **Rewarding**- Monetary compensation to users who provide trash
3. **Lifelong**- Making it a habit for lifelong practices

PRESENTING- A Web Portal for Bidders



Industrial Portal- Recycling Bidding

Enter userid

user1

Enter password

...



Login Successful

Select a commodity

Metals



Enter bidding price INR/quintal

45.00

-

+

Enter quantity in quintals

23.00

-

+

Submit

Your bid has been submitted successfully

How it Works?

1. User Authentication
2. Make a Bid for Trash Type, Price and Quantity
3. Wait for the Bid period to end
4. Get instant results

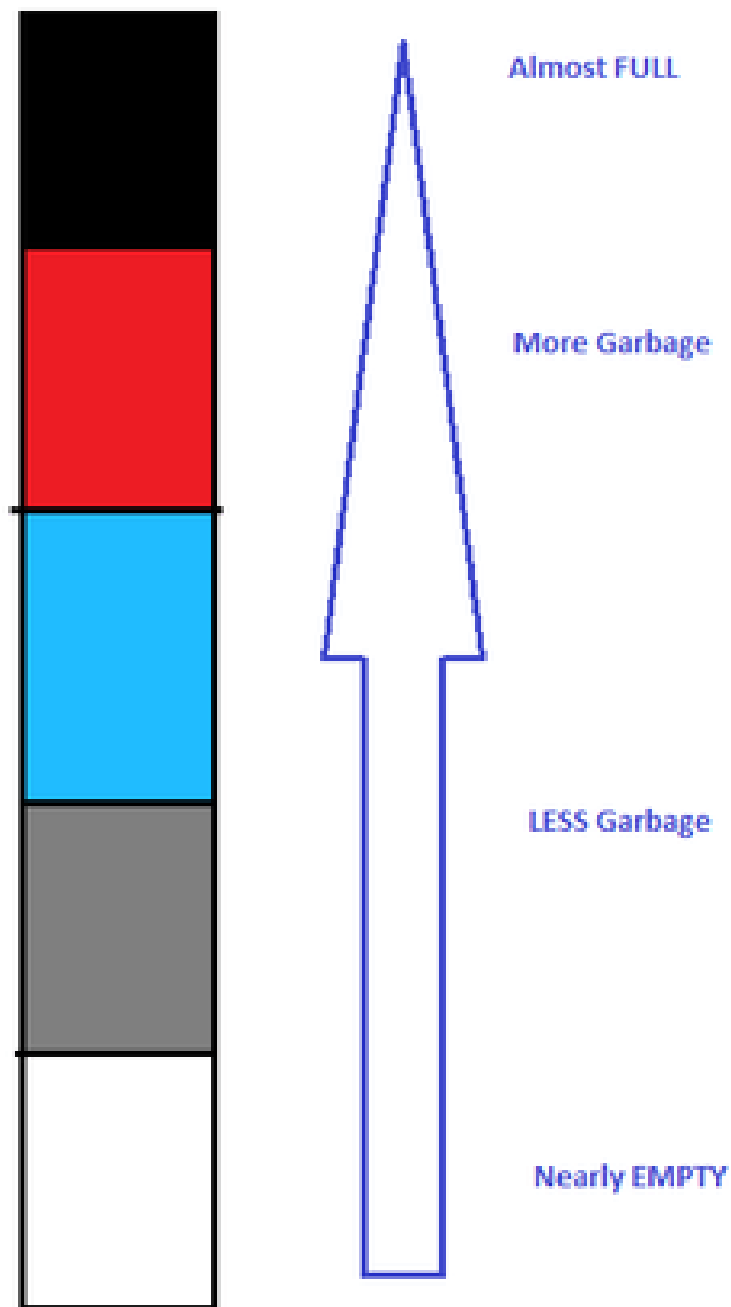
Introducing- The R-ROD™

What is R-ROD™?

R-Rod is a multi coloured rod/sticker divided into five categories, which will indicate the level of garbage in the bin. The user needs to check the colour and enter it during photo upload. Then this will be sent to our database and a report of this will be sent to the local municipal department. This will help in prioritization of garbage collection to the bins already filled.

Each colour ranging from Black to White (Completely filled to empty) has a unique weight score which determines the current level of trash in dustbin.

Score= Σ all reported scores / Σ no. of reports



Let's go Technical- App and ML

Machine Learning-

1. For Recyclable vs Organic Classification
Model used- **Xception, MobileNetV2, Novel CNN**
Results- Best results using Transfer learning with Xception layer with 200x200 px images.

	precision	recall	f1-score	support
0	0.78	0.97	0.86	1401
R	0.94	0.65	0.77	1112
accuracy			0.83	2513
macro avg	0.86	0.81	0.82	2513
weighted avg	0.85	0.83	0.82	2513

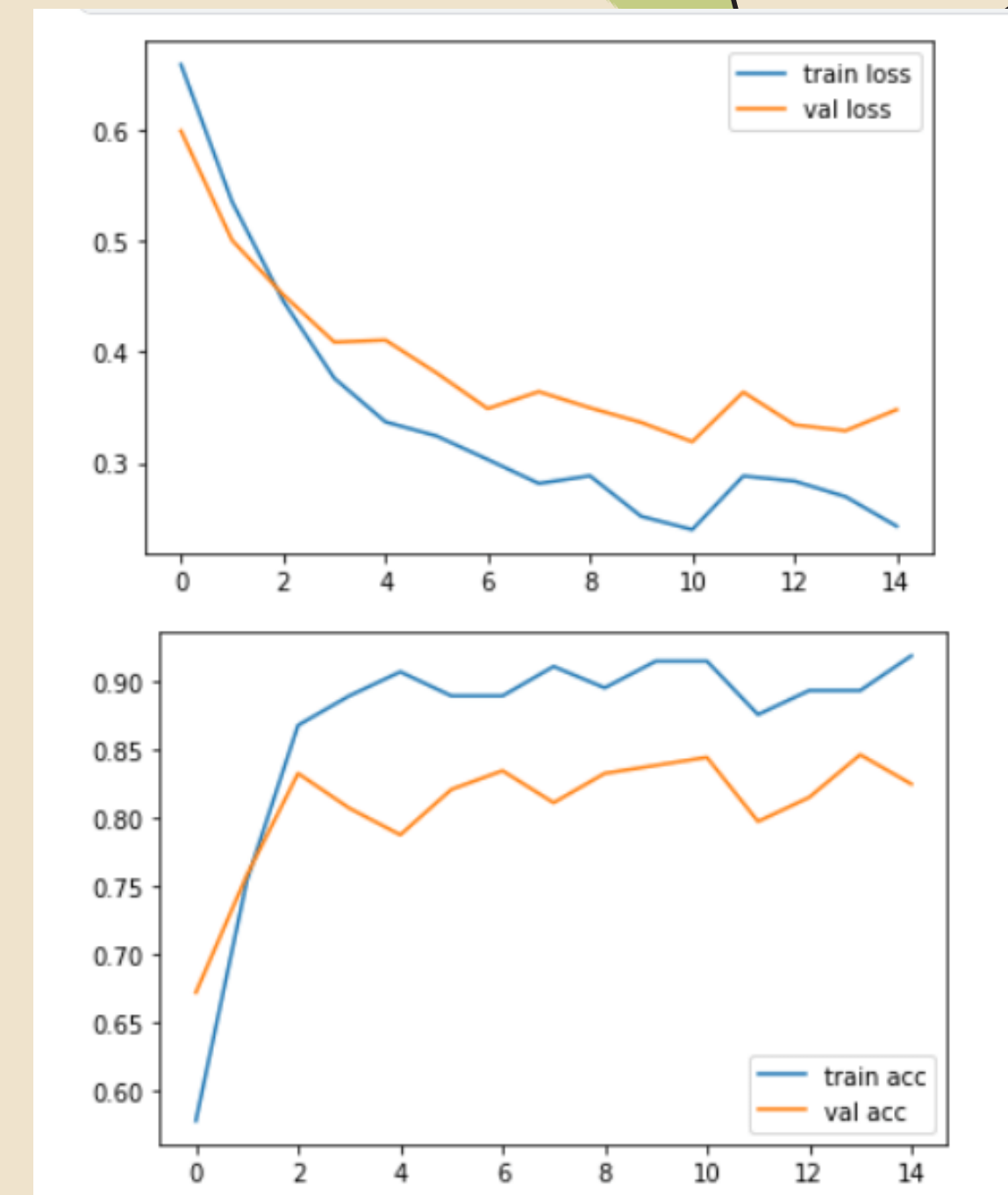


Fig. Performance metrics of Xception model

Let's go Technical- App and ML



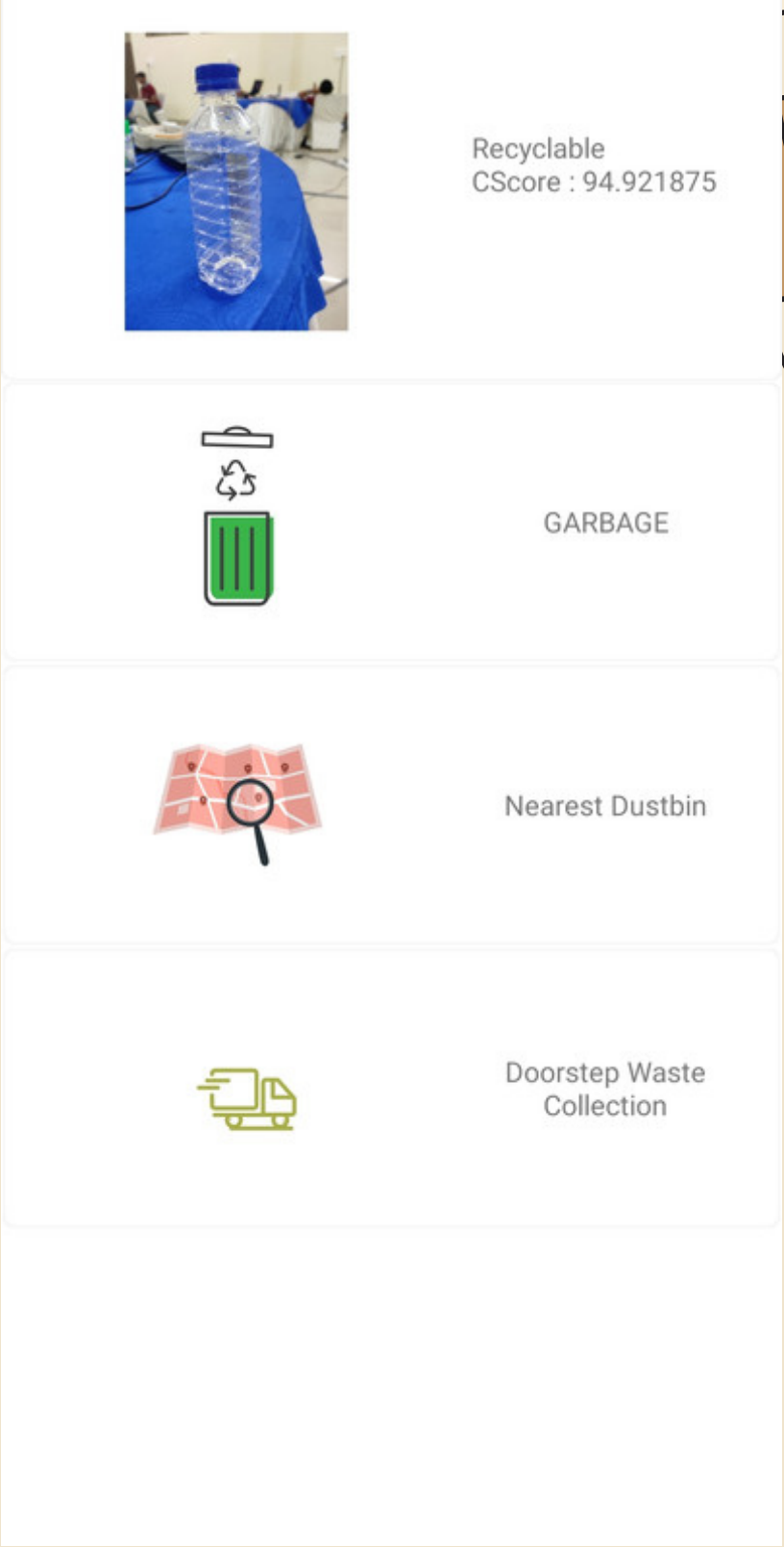
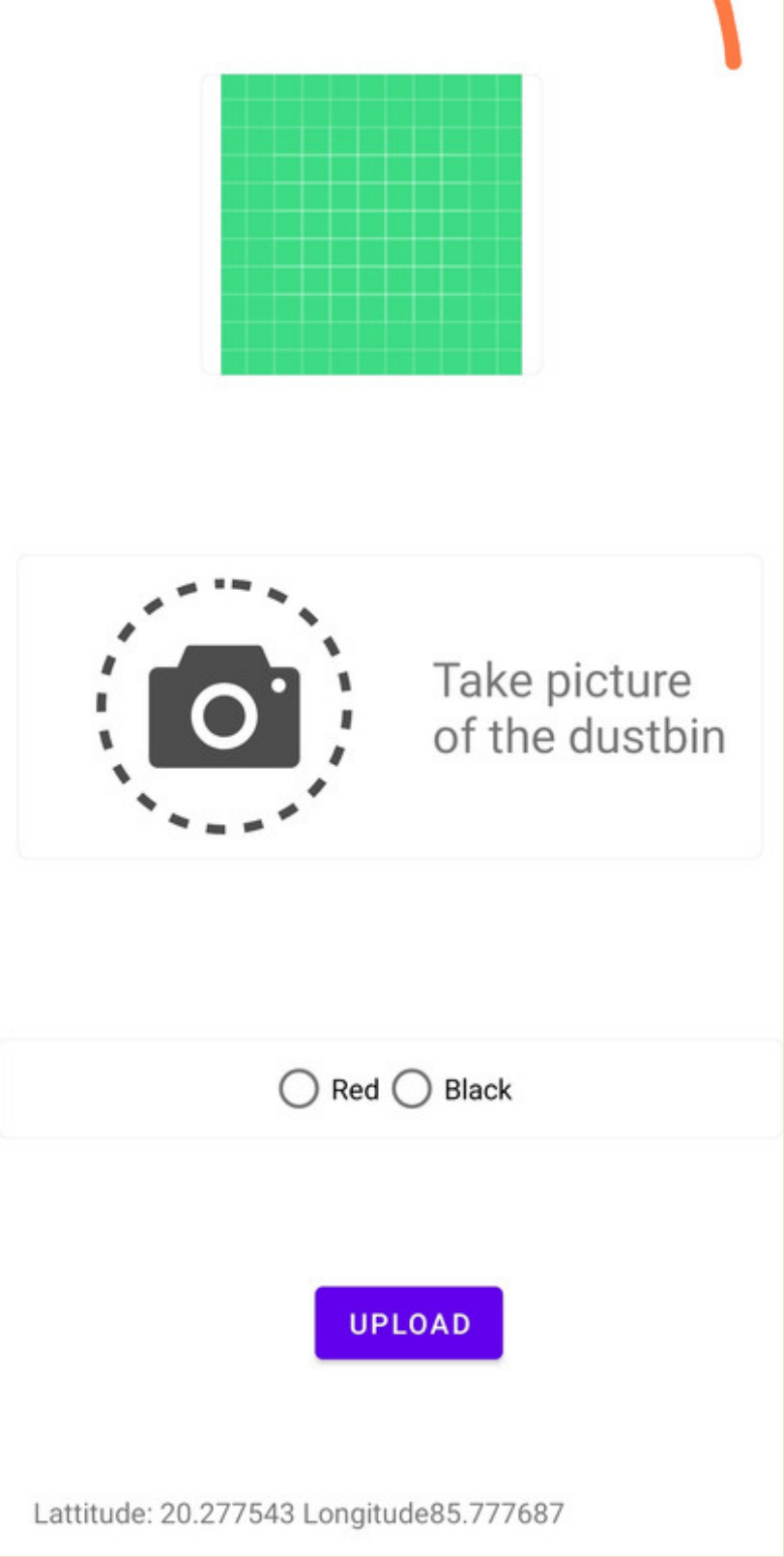
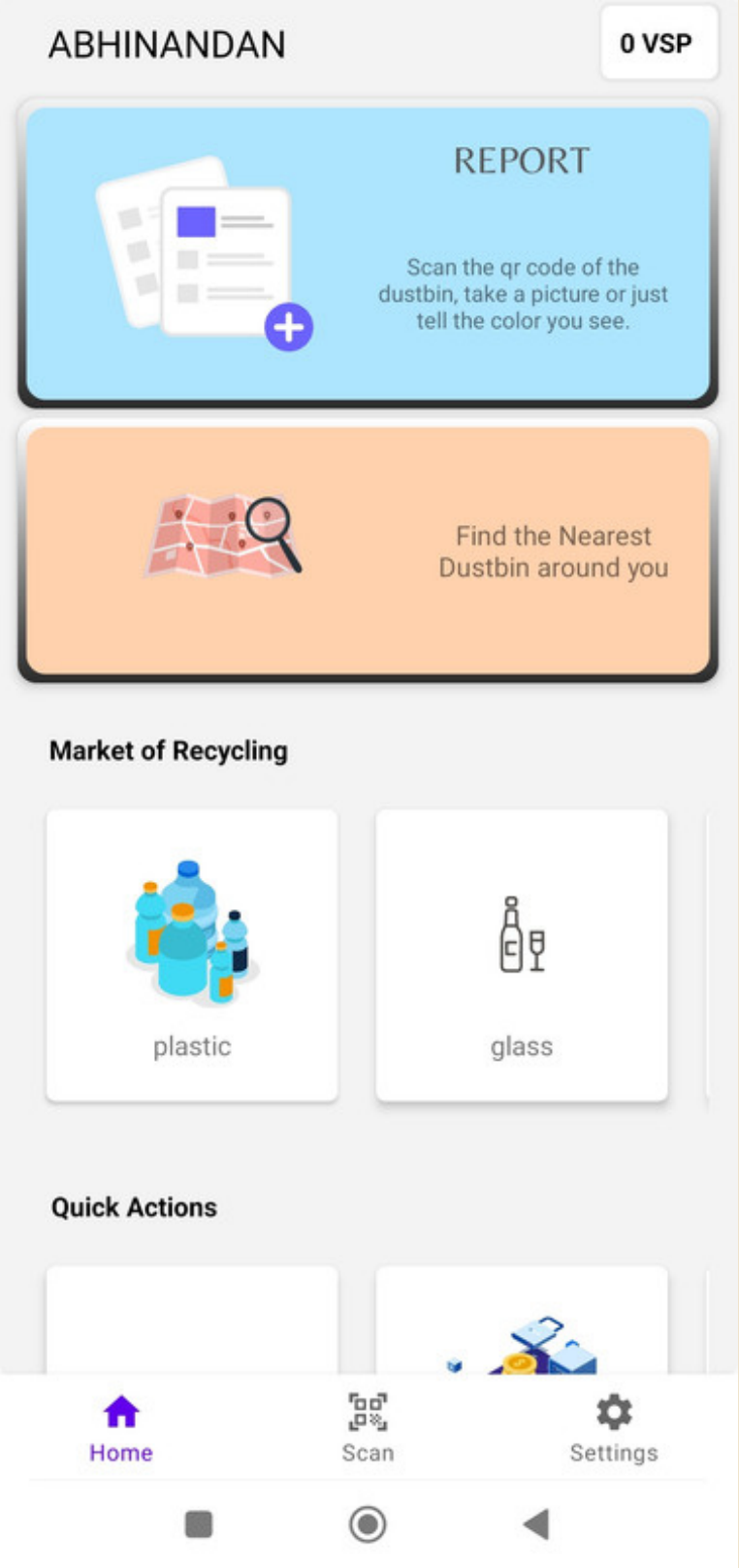
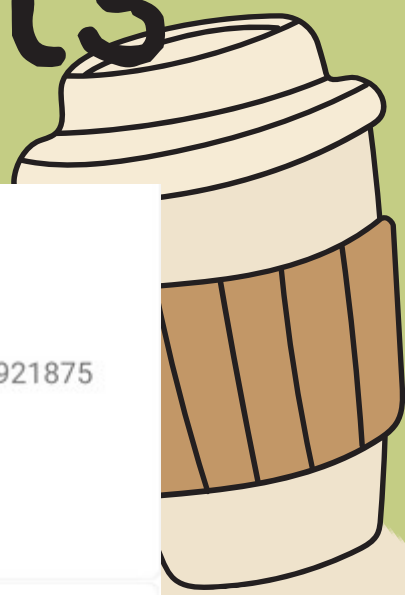
App Features-

1. Made with Android Studio
2. User authentication is done using Firebase (Database)
3. Cloud Firestore (A real-time database is used) for storing details
4. Stores **ML models in-app** for faster inferencing and offline classification capability
5. **Multiple Language support** such as Odia, Hindi etc.
6. **Google Maps integration** to find nearby dustbins.

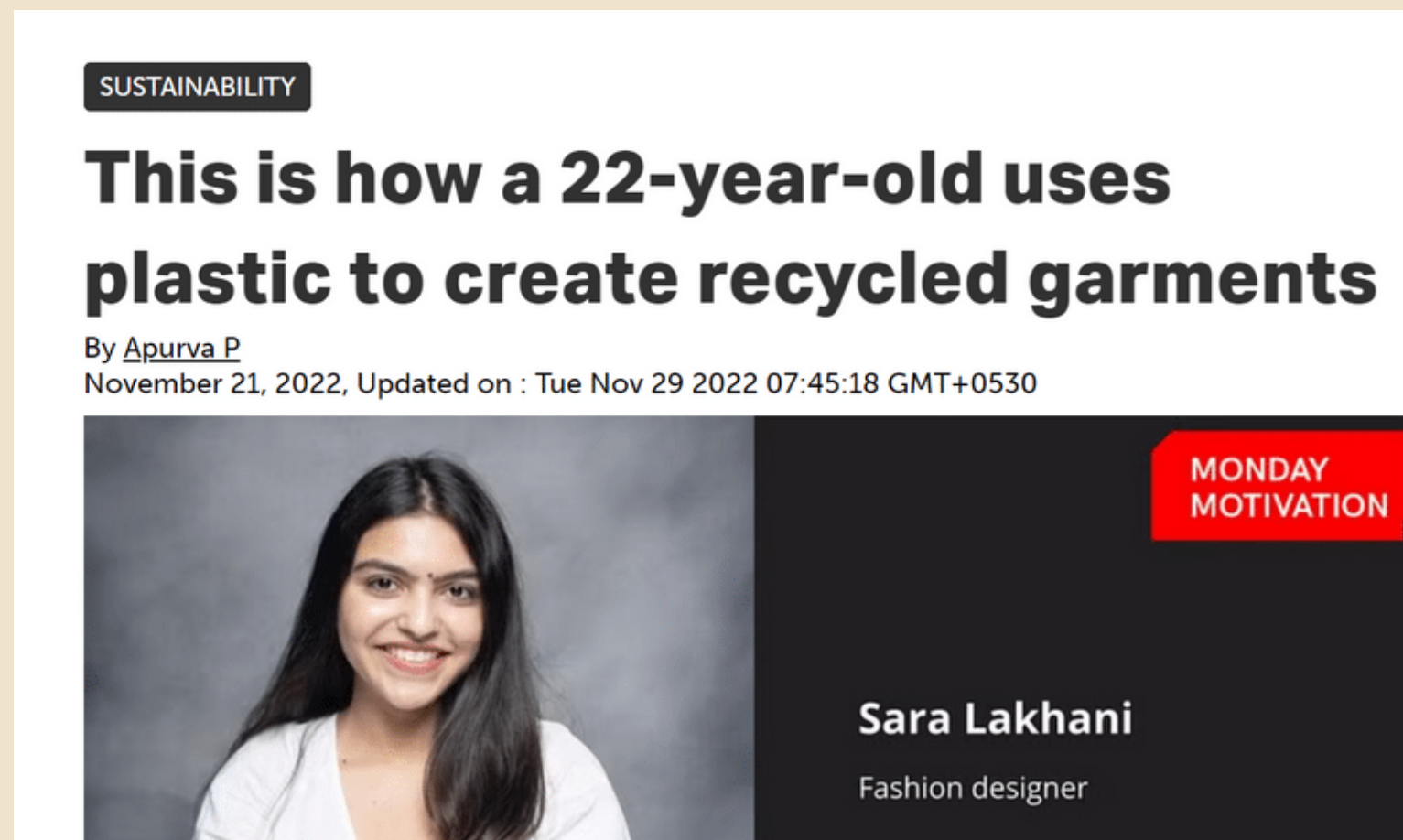
WebApp (Only for marketplace)-

1. Built using streamlit framework.
2. Enables people to bid in real time for different commodities.

Let's go Technical- App Screenshots



Let's talk business



Sources-

<https://yourstory.com/socialstory/2022/11/22-year-old-uses-plastic-create-recycled-garments>

<https://www.mordorintelligence.com/industry-reports/india-waste-management-market>



Source: Mordor Intelligence



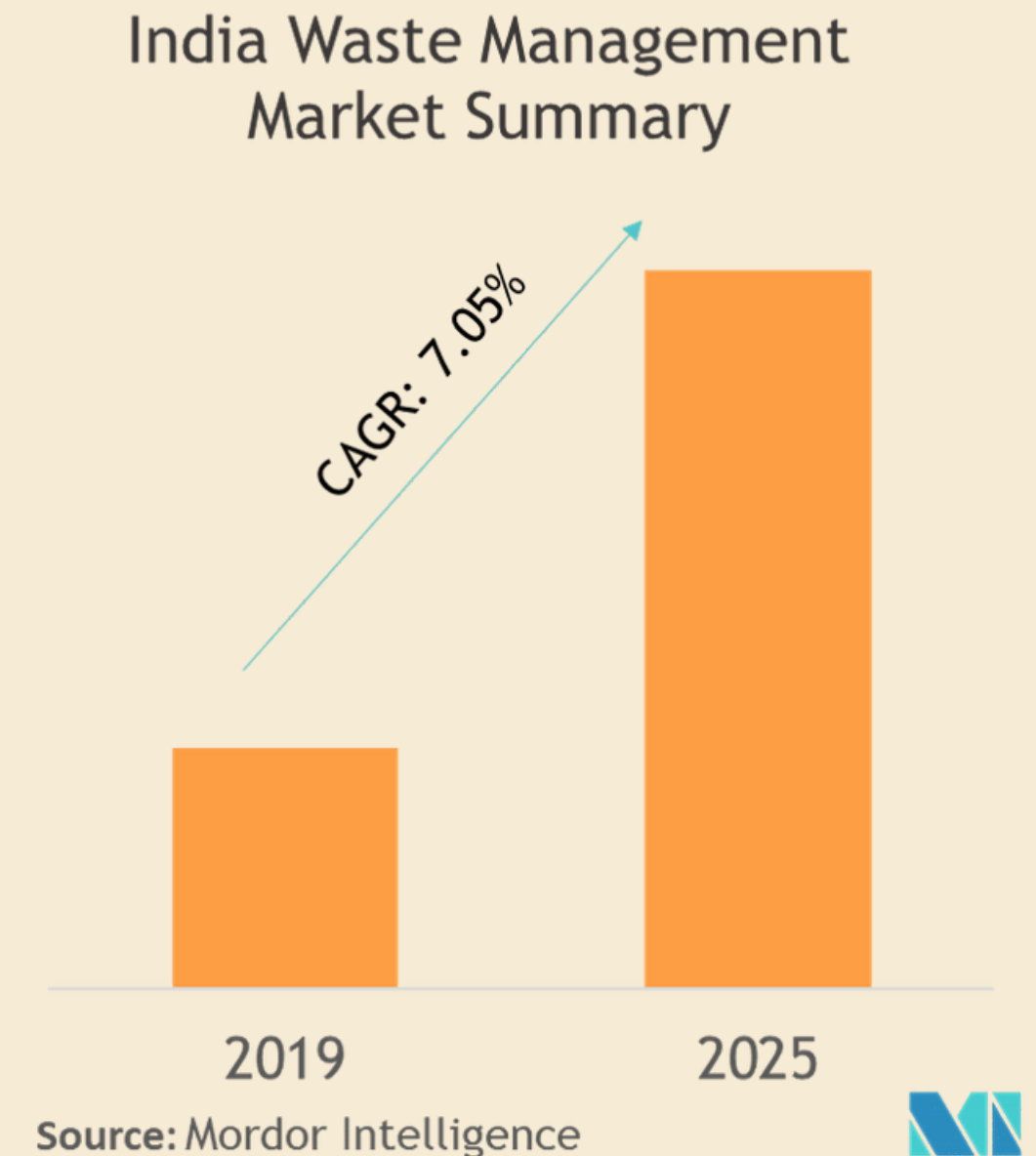
Market Cap and Opportunities

Waste management startups in India

curb^Waste recykal



Urban Rebox



Bintix- Collects dry waste from doorstep

Curbwaste- Realtime waste truck track, and dispatch by demand

Recykal- Provides a marketplace for waste products

Urban Rebox- Doorstep Trash Pickup

Market Cap and Opportunities

What we Offer

- Real-time status of all municipal dustbins.
- Efficient priority-based dustbin cleaning service
- Collect data from users about wastes and dustbin images to create a large crowd-sourced dataset.
- An AI-based guidance system to segregate at source, with in-app prompts.
- Incentives for users, for taking pics of wastes and using correct dustbins for disposal.
- Doorstep garbage pickup service on request, with real-time tracking.
- Marketplace to sell and buy waste materials to the highest bidder, secured by blockchain.



Introducing VSP Points-

1. People are awarded VSP points based on their waste contribution.
2. The VSP points can be converted to cash based on a unique multiplier which increases with growth in market.
3. These VSP points can act as investment funds for people, which are secured by blockchain.
4. VSP points are converted based on current market value, the multiplier is set such a way that there is always a profit.

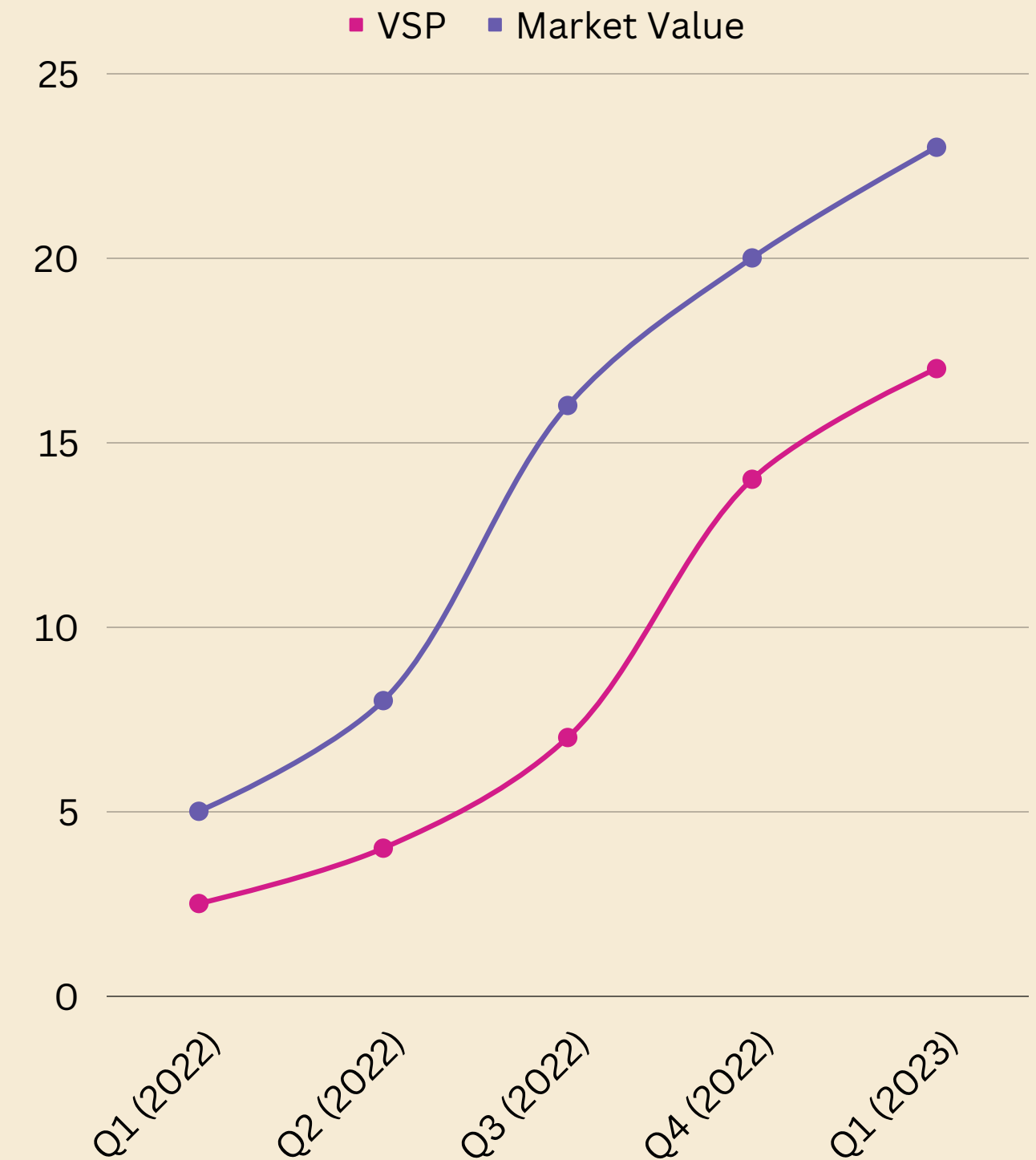


Fig. Growth of VSP with Market Value of commodity

OUR CITIES are in our hands

StellarHackers-

Abhinandan Roul

Shubhaprasad Padhy

ITER, Siksha 'O' Anusandhan Deemed to be
University

